HANDBOOK OF PSYCHOLOGY OF EMOTIONS

Recent Theoretical Perspectives and Novel Empirical Findings

Volume 2

Changiz Mohiyeddini • Michael Eysenck
Stephanie Bauer

Editors

NOVA

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RECENT THEORETICAL PERSPECTIVES AND NOVEL EMPIRICAL FINDINGS

VOLUME 2

PSYCHOLOGY OF EMOTIONS, MOTIVATIONS AND ACTIONS

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VOLUME 2

CHANGIZ MOHIYEDDINI
MICHAEL EYSENCK
AND
STEPHANIE BAUER
EDITORS

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PREFACE

"The Handbook of Psychology of Emotions, Volume 2", is a timely, comprehensive, and authoritative edition consisting of chapters by an eminent group of international emotion researchers who provide a cutting-edge overview of all major aspects of human emotions. In addition to reviewing the current state of the art in a number of main research areas related to the topic of emotion, the authors present squarely an outlook for the future research on emotion.

Volume 2 includes the following four sections: Section One presents a comprehensive examination of the rule and impact of emotions in economical settings, specifically at the workplace, discussing the impact of individual differences, the role of emotions in the construction and enactment of doctor managers' identities, issues related to emotional labor, emotional exhaustion in human service jobs, the effects of emotional labor on strain, the role of emotions on group performance, emotions and price satisfaction, and the link between emotion and money. Section Two focuses on the evolution of empathy, empathy gaps and decisions, and on the neuropsychology of emotional and cognitive mechanisms in decision making. Section Three provides an examination of the association between emotions, morals, and values. It comprises a chapter on emotions and self-integrity, a chapter on moral emotions and prosocial behavior and a chapter on the implementation of emotions in artificial entities. The final Section Four deals with emotion and music providing a chapter on music as the language of emotion and a chapter on the link between emotions, mood, and musical preferences.

Chapter 1 – This chapter deals with individual differences in emotional experience and behavior in the workplace. The authors place emphasis on three research fields that allow for deeper understanding of individual differences: a) The authors focus on models and findings that analyze experiences and actions in the workplace under the assumption that they are dependent on emotional competencies; b) The authors take a closer look at job satisfaction as an important outcome from a person-specific perspective; c) The authors broaden our view on the work domain itself by including the life-domain-interdependency of moods and emotions. Our aim is to outline future research demands and directions as well as to sensitize practitioners who select, evaluate, and develop personnel to the importance of considering individual differences in how employees deal with emotionally charged situations.

Chapter 2 – As Fineman (1993) already posed, organizations can be considered as emotional arenas where work life takes place. Nonetheless, since emotions have been considered as the antithesis of rationality and difficult to measure, they have been relatively muted in organizational research. Recently, emotions have been hailed as the missing

ingredient for understanding organizational life. Also, although identity research in organizations has increased in recent years, none of the current perspectives has examined the role of emotions for understanding how individuals construct and enact professional identity. Therefore, this study tries to respond to the existing gaps in identity and emotions' literatures by trying to understand how emotions affect the construction and enactment of professional identities in a sample of 20 doctor managers from two Spanish hospitals. Grounded Theory methodology (Strauss and Corbin, 1998) was used to collect and analyse data from interviews, participant observation and hospital documentation. While not excluding other approaches, the authors found that a Social Identity Approach (SIA) was especially useful to analyse our data. The contribution of this chapter is threefold. First, our results provide new insights about how, in a work setting, emotions prioritise awareness of identity issues that need attention. Second, the authors discuss the role of emotions for understanding complex role identities by reference to the enactment of different sides of doctor managers' identities. Third and finally, we show how our analysis of the findings may be used to embellish the SIA by incorporating the consideration of emotions into this approach. This chapter is structured as follows. The first section addresses the emotional side of the organizational life, as a neglected aspect of the existing organizational studies. Then, the authors go on to trace the failure of the literature on work identity to address emotional issues. Drawing on emotion and identity literatures, we then show how the SIA may be embellished from the social constructionist knowledge on emotion. The value in adopting this approach lies in the opportunity to incorporate emotions into our understanding of how social identity is perceived and constructed in novel situations. Thereafter, the authors present the research procedure and method before examining our findings on how DMs defined themselves; the role that emotions played in these definitions; and how emotion affected identity enactment. In the conclusion, the authors discuss our findings and their implications for enhancing the SIA and for better understanding organizational life by incorporating emotions into the analysis.

Chapter 3 – Despite decades of research in emotional labor, the management and expression of prescribed emotions in customer-service settings (Hochschild, 1983), the term continues to remain shrouded in conceptual ambiguity. With some scholars treating it as a form of internal regulation involving surface and deep acting, and others viewing it as a set of behaviors, theoretical clarification becomes necessary for a better understanding of its predictors and outcomes. The present chapter summarizes the extant research to propose a new, broader definition that considers emotional labor as both the internal regulation and the outward display of appropriate emotions at work. Following this, it challenges assumptions regarding the relationship between emotional labor and stress, and suggests an alternative placement of the constructs within their nomological network. Specifically, it provides evidence that emotional labor might be better construed as one of several stress-based consequences that typically arises from job stressors such as organizational display rules and hostile customer exchanges. To further clarify the nature of the construct and its theoretical linkages, the stress literature is used to present a model of emotional labor that specifies its antecedents, mediators, and employee- and customer-based consequences. Implications and directions for future research are discussed.

Chapter 4 – This chapter examines the relationships between work organization of hospital wards and mental workload of nurses, especially emotional exhaustion. For this purpose an observational, "objective" analysis of hospital ward organization is applied in

order to avoid the limitations of self-reported questionnaires. The chapter examines by means of observation (five shifts per ward) which emotionally relevant characteristics of work organization of hospital wards (5 hospitals; 34 wards; 262 examined nurses) differ between wards. Based on six scales the wards can be classified concerning their quality of work organization (considering among other things ISO 6385 on Design of Work Systems). Objectively well designed wards and rather poorly designed ones significantly differ in nurses' perceptions of work organization, their perceived strain, and their medium-term emotional exhaustion. Scales measuring patient-centred objective organizational characteristics correspond significantly stronger with emotional exhaustion than those measuring generic characteristics which describe any kind of job. The approach is thought to assist work (re-)design because the highest levels of the applied anchored scales describe the desirable optimal quality of the respective characteristics.

Chapter 5 – It pays to be nice. Employees displaying positive emotions are said to have better relationships with colleagues and supervisors, be more persistent and productive, receive more support, get better performance evaluations and have overall better workplace outcomes. Not surprisingly, organizations foster the expression of positive emotions and suppression of negative feelings in customer interactions. Job incumbents in service are expected to manage their emotions and display certain emotions to affect clients' behavior in a beneficial way.

Chapter 6 – Past research has documented the beneficial and detrimental effects of both positive and negative moods on group dynamics and performance. Given that positive and negative moods can both be a double-edged sword in groups, this chapter explores the options that group leaders have for leveraging affect in their groups. On the one hand, a group leader can alter a group's mood to achieve the desired group dynamics and performance. On the other hand, a group leader may choose to alter the work environment in order to take advantage of a group's current mood. The costs and practical limitations of both approaches are discussed. Furthermore, this chapter highlights areas for future research that investigates the effects of moods and emotions in groups.

Chapter 7 – Although shopping and bargaining are known to have important emotional implications, the literatures on perceptions of price (un)fairness and price satisfaction emphasize their *cognitive* antecedents, content, and consequences and largely disregard the roles of emotions. Some limited research has considered negative emotions' relationships to price unfairness. On the other hand, research has shown that both positive and negative consumption-related emotions predict global customer satisfaction, and enduring personality traits have been shown to influence those consumption-related emotions. The authors propose and test a model in which perceptions of price (un)fairness and personality traits influence emotional responses to price which, in turn, influence price satisfaction. These findings integrate robust individual differences and positive as well as negative emotions into understandings of perceptions of price (un)fairness and price satisfaction, and demonstrate that emotions play a central role in consumers' responses to price.

Chapter 8 – This chapter presents an overview of finances in general – and expenditures in particular – exert influence on close, interpersonal relationships, potentially driving a wedge between them. Their influence in money matters has several facets, and can determine the quality, dynamics and outcome of close, romantic relationships. In the best circumstances, joint money-management issues can have a positive influence on partners' well-being and can broaden their experiences and widen their understanding of each other. Money matters can

bind people together: joint financial decisions can be an instrument of pursuing common goals, acquiring shared experiences or mutually gaining material goods. However, there is an abundance of less appealing issues related to money management that may overshadow and sour a relationship between partners. Conflicts over a partner's spending behavior, inability to compromise, overspending, and consequent hardships with paying off debts, are only a few of those daily experiences that are closely related to money. In this chapter the authors review strategies for seducing the person to whom one may be attracted, with a focus on the male's behavior, as it is still believed they need to signal wealth to raise female's attention. Second, the authors will review literature on partners' matching. The third section details a bundle of issues related to living in the same household and money management. The authors will first review money management patterns among couples and associated conflicts; and then we continue with an overview and assessment of documented strategies of influencing purchase decisions in a family setting. The fourth section will be about marketing and policy implications of the reviewed characteristics of family purchase decisions and money management.

Chapter 9 – Empathy is a heavily discussed subject. In this chapter, the authors review and discuss the major approaches to the study of the concept and discuss the established definitions of empathy. The trend toward integrative models is outlined and the divergence within the research displayed. Consequently, we suggest the Empathy Process Model (EPM) as a possible solution of the integrative efforts. This model enables a differentiated view of the step-by-step emergence in a specific empathic episode and might thus bridge the gap between foundational and applied research. By differentiating empathic responses, larger variations of empathic behavior can be analyzed, such as joint reflection or what we call the Empathic Short Circuit (ESC).

Chapter 10 – Empathy gaps occur when people are in one fleeting state and try to predict how they would behave in a different state. Research shows consistently that people underestimate those current influences. An empathy gap has also been shown for curiosity such that people underestimate the influence curiosity has on their decisions. The authors successfully replicate the original finding by Loewenstein, Prelec and Shatto (1998). In addition, the authors show that empathy gaps also occur when participants try to predict other people. The authors argue that the overreliance on current states is due to the use of simulation as prediction strategy. If, however, more use of a theory is facilitated by presenting participants a well-known other person (where theory use is likely), predictions become less egocentric and different from the self.

Chapter 11 – In the beginnings of decision-making research it has been proposed that making advantageous choices is only a result of rational cognitions. Reasoned considerations of the possible outcomes, their quantifiable favorability and their probabilities of occurrence were supposed to be the precondition for a good decision. Emotions were regarded as unnecessary or even negatively interfering influences. In contrast, lots of recent neuropsychological research has discovered that there are decision situations in which emotions are crucial for making good choices. It has been demonstrated that emotions can automatically guide persons towards advantageous options, even without conscious knowledge. Sometimes our decisions are even better because of preceding emotional reactions. However, the relative impact of emotion and cognition on decisions seems to depend upon the situation: In decisions under ambiguity, in which no explicit information about the rules for positive and negative outcomes is available, emotions seem to be

indispensably required for learning to prefer the advantageous options. In decisions under risk, in which the rules for outcomes and their probabilities are available to the decider, emotions are involved to a lesser degree, but they interact with required cognitive processes, such as executive functions. Consequently, depending on the situation, not only brain networks processing cognitive operations have been found to be involved in decision making. Also areas that process and evaluate emotions are active when decisions are made. These neural processes can interact, and therefore temporarily induced emotional states such as anger, fear, or happiness can affect the quality of decisions under ambiguity and risk. Stress, as one extreme form of emotions, elicits several hormonal changes that cause bodily arousal and activations or deactivations, respectively, in brain areas which are also involved in making decisions. Accordingly, it has been found that stress can affect decision-making behavior. This chapter reviews neuropsychological theories and lines of previous research explaining the role of emotions in decision making with a focus on findings on the behavioral and brain level.

Chapter 12 – The integrity of the self can be defined as the psychological experience that our actions are sensible and goal directed, that we are in control of them, that our behavior is morally adequate, that we are socially included, that our existence is coherent and continuous. Having self-integrity means dealing with our environment in a way that will lead to positive outcomes. States of self-integrity are therefore associated with positive and negative emotions. In this chapter the authors argue how threats to self-integrity are associated with negative emotions, whereas achievement of self-integrity in different domains is associated positive emotions. This perspective integrates existing accounts of how people deal with threats to the self in terms of cognitive dissonance, psychological reactance, and reactions to unfairness.

Chapter 13 – From the eighteenth century onwards, moral emotions are perceived as a specific group of emotions that generate prosocial behaviours. Yet, a stream of recent empirical research demonstrates that moral emotions may not always have positive interpersonal consequences. The current chapter focuses upon two exemplary moral emotions, namely shame and guilt, to question the definition of moral emotions. In emotion literature, shame has been understood as a negative feeling with negative interpersonal consequences such as withdrawal and avoidance behaviour. This negative view of shame seems in direct contrast with the view of shame as a moral emotion that motivates prosocial behaviour, and with empirical findings. I present a new view of shame, one in which this moral emotion is focused upon dealing with a damaged self. As a consequence, shame motivates performance and approach behaviours to restore this damaged self, and withdrawal or avoidance behaviour when it is too risky or too dangerous to restore the damaged self. The existing image of guilt in emotion literature is one of a negative emotion with very positive interpersonal consequences. On the contrary, with empirical studies I demonstrate that guilt can have many negative interpersonal consequences, such as promoting prosocial behaviour towards the victim of one's actions at the expense of others around, and withdrawal behaviour. Together, these findings reveal that, even for such exemplary moral emotions as shame and guilt, subsequent behaviours can vary from antisocial to prosocial. Therefore, there might be nothing intrinsically moral about moral emotions.

Chapter 14 – The chapter summarizes research on emotions in the context of robot and virtual agent development. First, several motives and reasons for the implementation of emotions in artificial entities are presented. Then, a choice of robot and agent systems that

model emotion based on various theories and assumptions are described. However, the common practice to implement emotions is also critically reflected against the background of theories on the relation of emotions and facial expressions. Based on this, alternative approaches are presented which implement a theory of mind module instead of emotions. In a second part, humans' emotional reactions to systems with implemented emotions and corresponding facial expressions are described.

Chapter 15 – Music has a universal appeal that is often attributed to its ability to make us feel a certain way, and to change how we are currently feeling. In fact, music is often said to be the language of emotion. Although the body of research on music and emotions has grown rapidly over the past two decades, many issues remain the subject of debate. How is emotion conveyed through musical features? Do listeners actually experience emotions in response to music, or are they simply perceiving emotions? Which particular emotions does music convey? What factors influence whether we like a particular piece of music? Can research on music and emotions inform us about emotions in general? How do experience and learning affect the perception of musical emotions? In this chapter, the authors provide an overview of research that addresses these and other related questions, with an emphasis on recent findings.

Chapter 16 – There appears to be some dispute in the literature about whether music induces emotions at all and whether musical emotions are comparable to emotions in general. However, a closer look reveals that divergent conclusions are often the result of different conceptions of emotions and different kinds of measures of emotional responses. This chapter begins by reviewing the evidence for the existence of musical emotions and summarizes the quite different mechanisms for inducing them. Then, the (still rather small) research concerning the relationship between musical emotions (and moods), both perceived and felt, and musical preferences is discussed. It is concluded that musical preferences are a result of the positive effects music can have, and the most important of these effects seems indeed to be to induce pleasant or desired moods and emotions in the listener.

PART I: EMOTIONS IN ECONOMICAL SETTINGS

Chapter 1

EMOTIONS IN THE WORKPLACE –
AN INDIVIDUAL DIFFERENCES PERSPECTIVE

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ABSTRACT

This chapter deals with individual differences in emotional experience and behavior in the workplace. We place emphasis on three research fields that allow for deeper understanding of individual differences:

a) We focus on models and findings that analyze experiences and actions in the workplace under the assumption that they are dependent on emotional competencies;
b) We take a closer look at job satisfaction as an important outcome from a person-specific perspective;
c) We broaden our view on the work domain itself by including the life-domain-interdependency of moods and emotions.

Our aim is to outline future research demands and directions as well as to sensitize practitioners who select, evaluate, and develop personnel to the importance of considering individual differences in how employees deal with emotionally charged situations.

INTRODUCTION

Considerable attention has been dedicated to the investigation of general emotional processes as well as the precise steps of forming emotional states (cf. Frijda, in this volume; Gross, 1998). In our view, an intrapersonal-situative perspective is only justified if we can demonstrate that there is inter-individual variance in these processes. The initiator of emotional processing is typically a stimulus that causes an emotional reaction. It can certainly be assumed that the workplace includes a large number of emotional stimuli that stem, for instance, from the interdependency of different people and their respective roles. The precise

analysis of stimuli causing emotional reactions in the workplace has already been presented elsewhere. Worth noting here is the influential work on Affective Events Theory (AET; Weiss and Cropanzano, 1996).

The seminal work of Lazarus and colleagues (1991; Lazarus and Folkman, 1984) on the appraisal and coping process handles inter-individual variance by stating that, depending on the evaluation of the situation by each person, a single situation can trigger completely different emotions or even prevent them altogether. For instance, a positive dispositional affectivity also implies an optimistic basic attitude towards one's own resources for combating problems, whereas individuals with a more negative affectivity consider their resources to be low (Carver, Scheier, and Weintraub, 1989).

We will begin by presenting in detail the importance of emotions for an adequate and eventually successful course of action in the workplace – in order to refute earlier attempts to ban emotions all together from professional behavior. Scherer (1994) describes emotions as an "environment-behavior interface". According to this definition, emotions not only drive individuals to process information or to show a certain reaction to specific stimuli, the "emotional interface" also causes individuals to disconnect from a rigid, automated interplay of stimulus-reaction.

According to Scherer (1994), this allows for in-depth evaluation, particularly in the case of emotions that are not excessively strong. In addition, it is important to note that considerable interindividual differences (and not only differences between situations) have been found with respect to the onset time, quality, and intensity of experienced emotions. Moreover, there is evidence that the interpretation of emotions is influenced by fundamental personality traits. The behavioral variability described by Scherer (1994) can lead to intra-psychic, inter-individually varying processes and does not suggest an automatic behavior in reaction to a certain stimulus.

The potential advantage of negative emotions. Taken together, we may assume that the emotional saturation of today's work environment has beneficial rather than counterproductive consequences. Therefore, emotions in general should not be excluded from organizational life. However, one question still remains unanswered: Should the organizational management of emotions be equated with fostering positive and constraining negative emotions? In addition to the appraisal of the positive effects of pleasant emotions, we would like to see this view expanded to cover so-called negative emotions and will refer to the benefit of negative emotions when corresponding findings are available. Further on in this chapter, when addressing the connection between emotions and job satisfaction, we will focus our attention on the so called "happy worker = productive worker" controversy. Of course, there is broad evidence that positive affective states are beneficial to job performance (e.g. Côté, 1999; Brief and Weiss, 2002). Especially under stressful conditions, negative emotions most likely adversely affect job performance. Beal, Weiss, Barros and Macdermid (2005) introduced a model suggesting that affective experiences may produce additional cognitive demands with potentially negative consequences on attentional resource allocation. This might be especially important in the face of highly complex work contexts. Nevertheless, it is worthwhile to take a closer look at different contexts and possible benefits that negative emotions might entail (Matthews, 1997). Whereas positive affective states signal that rewards are within someone's grasp, negative emotions provide crucial information about dangers in the view of approaching punishment. Positive emotions may tell us: "Keep going!", yet negative emotions trigger an orienting response and force us to collect

and implicate additional information from the environment. As a result, negative affective states may be a requisite of adaptive problem solving (e.g., Lazarus, 1981). Bandura and Cervone (1983) revealed that the amount of self-dissatisfaction experienced in combination with high degrees of dispositional self-efficacy predicts subsequent effort and persistence. Hence, negative mood may deepen information processing to reduce the discrepancy between expectations of goal attainment and the current state (Cervone, Kopp, Schaumann, and Scott, 1994). As an additional example, Forgas (1998) found individuals in a sad mood to be less vulnerable to judgmental biases such as the fundamental attribution error (i.e., incorrectly favoring internal causation of events). Likewise, sad mood, in comparison to happy mood, was found to foster systematic information processing and decrease halo effects (Sinclair, 1988). Within the context of performance evaluation, Moylan (2000) observed that negative mood has a positive impact on deep, balanced processing of complex information. Even anger has been shown to be beneficial in the context of negotiations, if it is adopted in an instrumental manner (Morris and Keltner, 2000). Within the framework of the feelings-as-information theory (see Schwarz, 2012, for a review), negative feelings have been found to trigger a systematic, detail-oriented, bottom-up processing style. For example, Bless, Bohner, Schwarz, and Strack (1990) found that sad mood increases engagement in systematic message elaboration and, therefore, reduces the susceptibility to weak persuasive arguments. Additional support arises from studies concerning risk taking (Mittal and Ross, 1998), accuracy in evaluating market trends (Au, Chan, Wang, and Vertinsky, 2003), and effort in multiple-goal pursuit (Louro, Pieters, and Zeelenberg, 2007). At the same time, positive moods facilitate a different pattern of information processing, characterized by thinking in a more holistic, open, optimistic, playful and creative manner, while being less focused on details and risks (e.g. Schwarz and Bless, 1991). In line with this, Fredrickson (1998) introduced a broaden-and-build model of positive emotions. According this model, positive emotions broaden our attention and action repertoires, allowing us to explore, play and savor. In the long run, these actions are considered to strengthen physical, intellectual and social resources. From an affective neuroscience perspective, Panksepp (1998) supports the importance of such play behavior. Derived from animal studies, Panksepp attributes playfulness to a unique processing within the midbrain, thalamus, and cortex. In conclusion, both positive and negative emotions may have a beneficial impact on job performance; and individuals may differ in their proficiency to react to one or the other emotional situation. In line with Gray's perspective concerning sensitivity to signals of reward and punishment (e.g. Gray, 1982; see below), individuals dispositionally differ in their processing of positive and negative cues. For example, Larsen and Ketelaar (1991) have shown that some individuals make ample use of negative emotional information, whereas others do not. Seen from an emotional competencies perspective, individuals may also differ in terms of their affinity or ability to show emotional awareness and affect utilization (see below under emotional competencies). Making oneself aware of negative emotions might make us aware of the necessity to change our course of action.

Reconsideration of common concepts and measures. In this chapter, we will often use the terms positive affectivity / negative affectivity (PA/NA; Watson, Clark, and Tellegen, 1988) or draw on the dimensions of neuroticism and extraversion (e.g. Eysenck and Eysenck, 1965; Costa and McCrae, 1980) to describe individuals' basic emotional attributes. This may require a few additional explanations: According to the prevailing understanding, that is, predominantly using the Big Five Personality to estimate emotional behavior, positive

emotions are identified almost exclusively through extraversion; negative emotions, on the other hand, are represented by neuroticism (cf. Bachorowski and Braaten, 1994; Larsen and Ketelaar, 1991; Watson and Clark, 1992).

This, however, presents a possibly inadequate simplification of both H.J. Eysenck's original conceptualization as well as empirical findings. That is, emotionality or emotional lability must not necessarily be limited to negative emotions (Eysenck, 1967; Cattell, 1965). In its original sense, emotional stability refers to intra-individual variability in affective experience as a personality characteristic and not only to the extent of emotional deflection in a negative direction.

The predictability for affective variability does, in fact, apply to a greater extent to neuroticism than to extraversion (McConville and Cooper, 1999; Williams, 1993). In addition to the quality and variability of affect, a rather quantitative aspect of emotional experiences, their intensity, might contribute to the understanding of emotional dispositions.

According to Larsen and Diener (1987), the intensity of an individual's affective responsiveness, irrespective of the valence of the eliciting stimulus, represents a stable personality characteristic. Building on this approach, Gross and John (1995) discovered differential associations of three facets of emotional expressivity, namely impulse strength and negative and positive expressivity. However, a comprehensive integration of these approaches and their application within the organizational field has not yet been conducted.

Moreover, the predictors of positive and negative affectivity that are often used must be examined from a methodological and conceptional perspective before findings can be understood correctly. Common measures include the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) and the Multidimensional Personality Questionnaire (MPQ; Tellegen, 1982) or it's short version, the MBQ-BF (Patrick, Curtin, and Tellegen, 2002).

Watson (1988) was able to determine a relative independence between these two factors by employing factor-analytical approaches. We can certainly assume that PA and NA indicate significantly different constructs, and, therefore, do not merely present two poles of one and the same dimension (just as little as the associated Big Five dimensions of extraversion and neuroticism do). Furthermore, Watson (2000) provided a biological explanation in the form of the Behavioral Facilitation System, which controls for positive affect, and the Behavioral Inhibition System, which controls for negative affect. In doing so, Watson and colleagues clearly associate PA/NA with the underlying neurobiological systems BAS and BIS (e.g. Watson, Wiese, Vaidya, and Tellegen, 1999).

The Behavioral Approach or Activation System (BAS; Gray, 1982; 1994; Fowles, 1980) serves as an attentional system that is sensitive to signals of reward and nonpunishment and may be responsible for eliciting positive affect. In contrast, the Behavioral Inhibition System (BIS) is sensitive to cues of punishment, nonreward, and novelty and may generate negative affect.

As a neurobiological base of the BAS, dopamine has been linked to individual differences in approach motivation, goal-oriented behavior, and positive affect (Depue, Luciana, Arbisi, Collins, and Leon, 1994; Depue and Collins, 1999; Panksepp, 1998; Gray and McNaughton, 2000). The BIS is associated with noradrenergic and serotonergic networks in the brainstem (Aston-Jones and Cohen, 2005). However, it remains unclear whether the PANAS as a psychometric substrate truly represents these independent systems.

There are numerous indicators for a considerably negative correlation between these two dimensions as well as several findings that show PA and NA comparably act as (opposing)

predictors for a range of target variables (Tellegen, Watson, and Clark, 1999; Diener, Smith, and Fujita, 1995; Judge and Locke, 1993; Connolly and Viswesvaran, 1999). We suppose that it might be the common, generally positive vs. negative proportion of variance that makes such predictions possible.

In particular, negative affectivity is associated with a wide range of varying degrees of anxiety, depression, neuroticism, general maladjustment, etc. (cf. Viswesvaran and Sanchez, 1998). Therefore, the recently established routine of exclusively using PA vs. NA measures of dispositional affectivity must be criticized for its certain degree of oversimplification. In the end, one might be tempted to focus research on nothing other than the positive and negative sides of multiple job behaviors.

More than this, findings concerning discriminant validity may be equally informative. We would like to encourage researchers to not waste the opportunity to be able to make differentiated statements. In this respect, the multidimensional approach of the Big Five is a useful approach. Regardless of the fact that the extraversion and neuroticism constructs also cover a broad range, the inclusion of conscientiousness, openness and agreeableness allows us to contrast them and more adequately interpret data obtained in self-evaluation reports. This is also important because self-reports are known to be easily distorted towards socially desirable answers.

EMOTIONAL COMPETENCIES AS DETERMINANTS OF OCCUPATIONAL PROFICIENCIES

There is no question that Emotional Intelligence (EI) is "hip" and *the* topic in the field of research on emotions currently discussed with regard to professional life. EI continues to be included in models of organizational competence and therefore reflects a new zeitgeist in which emotional self-awareness, empathy, the ability to regulate emotions, and the emotional influence of others present crucial challenges in the modern workplace. A specific starting point in terms of measuring methodology stems from the claim that all of the aforementioned items can be understood as abilities and are, at best, labeled as "intelligence". If we find "Emotional Intelligence" – as corresponding to academic intelligence with its verbal, numerical and spatial abilities – we could envision ourselves having gained access to the "holy grail" of personnel assessment in the 21st century. The term "Emotional Intelligence" initially sets out to establish an important addition to academic intelligence – the latter is already known to have substantial predictive validity for professional success (cf. Hunter and Hunter, 1984; Ree, Earles, and Teachout, 1994; Schmidt, Shaffer, and Oh, 2008). However, we should not be satisfied with a mere 10 to 30% of explained variance for professional success based on traditional measurements of intelligence. In fact, there is a consensus that we can no longer believe that a purely rational homo oeconomicus is best equipped with respect to all facets of professional success in the 21st century. It is perhaps this changing view that brought about such a high volume of popular scientific articles on the topic of EI, which did not always serve an appropriate amount of the assiduous conceptional and methodological development of EI. From our standpoint, there is neither a justification in theory nor in terms of test construction, nor is there a need for the term "Emotional Intelligence". The term we prefer is "emotional competencies", with which we do not intend

to adhere to the separation between emotional intelligence (as a dispositional aptitude) and emotional competencies (as learned capabilities) that has been presented by several authors (cf. Boyatzis, Goleman, and Rhee, 2000). We will, however, use the term "Emotional Intelligence" (EI) in the following section whenever we cite sources that have chosen to use such terminology.

Merits of EI research. We must admit that the approaches of EI have, by and large, not been developed to their fullest potential, neither conceptually nor methodologically nor empirically – at any rate they are not sufficiently valid to allow for the recommendation of EI measures for use in the practices of personnel selection and development. However, we clearly acknowledge the value of these efforts and encourage further investigation of emotional competencies. There are three reasons for this: a) The field of research on EI thankfully strives to develop competence-oriented measurement instruments at the interface between emotion and cognition. A valuable advancement of the research efforts surrounding EI is the overcoming of the previously accepted separation between (inhibiting) emotions and (desirably rational) cognitions in organizations. Mayer and Salovey (1997) knowingly placed their capability-based concept at this interface and called for the development of corresponding measures. This approach is admittedly not exclusive to EI research, as the effects of affective states on information processing in professional life have been studied for some time (cf. within the scope of the affect infusion model, Forgas, 1995; Forgas and George, 2001). A new development, however, is the consistent effort to also include these in psychometric measurement techniques. Their most prominent representative is surely the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, Caruso, 2002). b) The concepts of EI – at least in part – include a sensitivity for and management of negative emotions as a competence factor. In this respect, research on EI encourages one to go beyond a typical black/white perspective that concentrates on promoting positive emotions, on the one hand, and eliminating or overcoming negative emotions, on the other hand. This is reflected, for example, in a recent study by Ford and Tamir (2012), which addressed the question whether anger – an emotion that many attempt to eliminate from their professional lives – can in certain situations be a useful, i.e. emotionally intelligent, form of emotional expression. Accordingly, emotionally intelligent individuals (according to MSCEIT) tended to have an angry attitude in a confrontational situation and a joyful one in situations in which cooperation was required. This may illustrate that EI can in no way be equated with the ability to avoid unpleasant emotions while, at the same time, promoting pleasant emotions. Instead, EI reflects the use of emotions in an appropriate manner, regardless of their valence. For example, negative emotions can be a suitable instrument to attain a certain objective, even if they do not necessarily feel good (Salovey and Grewal, 2005). c) The field of research on EI is characterized by a comparably high level of differentiation and a multi-dimensional approach. As we have already mentioned and will continue to discuss in the following sections, there is still a significant lack of approaches within industrial/organizational psychology regarding the differentiation of the facets of emotional personality traits and competencies. Most likely, at the abstraction level of PA/NA and the Big Five, we cannot expect the highly valid predictions that we would like to see in order to estimate experience and behavior patterns in professional life. Note, however, that multi-dimensional, well-established approaches and psychometric measures are already available – mostly in the fields of personality and biological psychology. Even though multi-dimensional approaches within I/O psychology are often given second-class treatment, we do

perceive an exception in the trait-approaches of EI: The great attraction for the personnel-psychological field of application has led to many efforts to establish fine-grained differentiation.

Definition. A recent and quite general definition of Emotional Intelligence is provided by Mayer, Roberts and Barsade (2008, p. 511): "Emotional intelligence concerns the ability to carry out accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thought." Drawing on the most established model of EI, the Four-Branch Model (Mayer and Salovey, 1997) as well as the corresponding measurement, the MSCEIT (Mayer et al., 2002), the aforementioned definition combines these abilities to accurately perceive emotions and use emotions to facilitate thought as well as understand and manage emotion. Even though this might not be accepted as a complete description of the phenomenon of EI, we suggest that EI deals with a) an interaction between emotions and cognitions, b) the perception and the understanding of one's own feelings and c) precisely these abilities with regard to feelings of others, d) the conscious use of emotions, and e) the adequate regulation of emotions.

Ability vs. personality trait. Mayer's research group has distinguished between capability-based "mental ability models" and "mixed models", which attempt to integrate motives, social styles, self-related qualities and control-related qualities (Mayer et al., 2008). In fact, many self-evaluation measures go well beyond the traceable limits of what could be considered a uniform construct and seem to include almost anything imaginable, i.e., independence, impulse control, problem solving (Bar-On, 1997), conflict management (Goleman, Boyatzis, McKee, 2002), creativity (Tett, Fox, and Wang, 2005), self-esteem, and trait happiness (Petrides, 2009). For this reason, Ashkanasy and Daus (2005) proposed a division into three categories: ability-based models, more narrowly defined self-report measures based on the ability models, and mixed models. In our opinion, what is more important is the distinction between methods in which there are correct and incorrect answers (ability measures) and those which consist of self-report questionnaires, which record tendencies and personality traits (most often described as "trait measures"). The latter can be divided into those containing "neutral" behavioral tendencies related to one's personality and those directly inquiring about abilities (cf. WLEIS; Wong and Law, 2002). The latter ones do not measure ability itself but, rather, self-constructions of abilities that may or may not converge with actual abilities. Here, again, the question of socially desirable response styles arises (Day and Carroll, 2008; Ciarrochi, Chan, and Caputi, 2000). The ability and trait measures have regularly been discussed as rivaling approaches. The main protagonists of this dispute were mostly the proponents of the ability approach (cf. Mayer et al., 2008), on the one hand, and the trait approach (cf. Pérez, Petrides, and Furnham, 2005), on the other hand. The former correctly admit that accurate, self-evaluating statements on abilities, in particular intelligence, may be difficult for most people and, moreover, that such people may be susceptible to the effect of social desirability (Ciarrochi et al., 2000). On the other hand, proponents of the trait approach justifiably feel they are misunderstood, as they focus on the measurement of a completely different construct that concentrates on emotion-related behavioral dispositions and should be identified as a factor of lower order in common personality taxonomies (Pérez et al., 2005). It should come as no surprise that ability-related and personality-related measurements have very few commonalities and are associated with different constructs in the areas of cognitive performance, personality, and social functioning (Brackett and Mayer, 2003; Warwick and Nettelbeck, 2004; Brackett, Rivers, Shiffman,

Lerner, and Salovey, 2006; O'Connor and Little, 2003; Saklofske, Austin, and Minski, 2003). Conversely, even EI ability measures are described as poorly conceived. A remaining problem is the difficulty of applying the correct solution to emotion-related material with the same degree of objectivity, as is the case with traditional content from intelligence tests. Factor-analytical data suggest that the structure within the ability measures is significantly determined by the scoring method (expert vs. consensus; Roberts, Zeidner, and Matthews, 2001; Davies, Stankov, and Roberts, 1998). Moreover, these authors tend to express serious doubts regarding the reliability and stability of the factor structure. In addition, several findings disprove the assertion of ability of EI to uniquely account for variance above and beyond general mental abilities and personality (e.g., Bastian, Burns, and Nettelbeck, 2005; Amelang and Steinmayr, 2006). It is neither surprising nor problematic that trait measures and ability measures of Emotional Intelligence are only moderately correlated and usually account for different proportions of variance. Ability EI and trait EI, therefore, display two different, yet complementary constructs that, unfortunately, have been given a similar name. In both cases, there is still a need for continued conceptional and methodological development before they should be used in organizations. It seems necessary to expand the underlying models, improve psychometric characteristics, determine convergent and discriminant validity and establish norm data.

Classification and differentiation. Clearly classifying EI within the network of existing concepts in the fields of social competencies, intellectual performance, and personality continues to be a challenging task. A question that has not yet been answered clearly unanimously concerns differentiating EI from social intelligence (Davies et al., 1998; Weis and Süß, 2007; Barchard, 2003) and interpersonal intelligence in the sense of Gardner (1983). Social perceptiveness – which clearly comes close to the concept of social intelligence – was the sole factor clearly associated with cognitive intelligence within the measurements of EI included in the analysis by Barchard and Hakstian (2004). Numerous additional findings also point to overlapping concepts and attribute them to higher competencies in social interactions (e.g., Lopes, Brackett, Nezlek, Schütz, Sellin, and Salovey, 2004; Brackett et al., 2006). Furthermore, it should be discussed how EI fits into the framework of other concepts related to it, some of which have been identified as independent and other as overlapping parts, i.e., alexithymia (Parker, Taylor, and Bagby, 2001), empathy (Mayer, Caruso, and Salovey,1999; Fitness and Curtis, 2005; Schutte et al., 2001; Brackett et al., 2006), self-monitoring (Snyder, 1974; Schutte et al., 2001), and constructive thinking (Epstein, 1998). In a comprehensive analysis of diverse measurements of EI as well as established measurements of cognitive intelligence and personality, Barchard and Hakstian (2004) identified one factor among the five they selected that was clearly independent from cognitive intelligence. This factor, called "emotional congruence", presents an ability exclusively gauged by the measures of EI or otherwise, and this seems more probable to us, by a method factor. In fact, what is unique about this factor is the fact that it is based on a consensus scoring method, according to which individuals who have a certain score are assumed to process emotional stimuli in a way similar to that of the majority of people. In addition to this finding, measurements of self-reported EI overlapped just as they do with traditional personality measurements, as demonstrated in a corresponding study from Davies et al. (1998). Evidence of significant discriminant validity continues to be the exception.

EI and job performance. In a new and extensive meta-analysis, O'Boyle, Humphrey, Pollack, Hawver, and Story (2011) demonstrated that ability measures as well as the more

narrowly defined (in the sense of the four-branch model) and expanded ("mixed") measurements of trait EI can independently predict job performance. Most importantly, EI measures show incremental validity beyond the influences of cognitive intelligence and Big Five personality traits. Overall, the incremental proportion of variance explained by EI ability measures remains very low at 6.4%. A large portion of the variance is explained by cognitive intelligence and conscientiousness. A portion of the variance explained, which goes beyond all effects of general personality at above 13% each, was provided by both forms of trait EI. Moreover, this study provided additional insight into the convergent und discriminant validity of the three forms of emotional intelligence. As expected, ability measures display a clearer connection to the measurements of cognitive ability compared to both trait measures. Ability measures are also not completely independent of personality, as a slight connection can be seen with agreeableness, openness and emotional stability. Conversely, trait measurements of EI hardly show any connection to cognitive measurements, as expected. However, they do display strong inter-correlations with all factors of the Big Five. When comparing narrowly defined trait measurements with expanded ones, the latter show particularly strong correlations with neuroticism (with negative signs) and extraversion.

The number of studies on emotional competencies and professional success has rapidly increased in recent years. Within the course of research on their meta-analysis, O'Boyle et al. (2011) were able to draw on over 1,000 citations on the connection between EI, Big Five Personality, cognitive ability and job performance. At this point we would like to name but a few exemplary results. We are deliberately limiting these examples to studies that a) have been published in the last ten years, b) employ closely defined ability or trait measures and c) provide inspiring clues to how differentiated the connections can be due to the effects of individual facets of EI or moderator effects. According to Côté and Miners (2006), a compensatory effect can be attributed to EI, as a high level of EI (measured with the MSCEIT) can have a positive effect on supervisor ratings of task performance and organizational citizenship behavior if low manifestations of cognitive intelligence exist. In a study on food service employees, Sy, Tram, and O'Hara (2006) observed a positive correlation between EI and job satisfaction and performance. In addition, they showed that emotionally intelligent managers can have a positive effect on their employees, especially if the employees themselves have a low level of EI. When taking the criterion of professional success into consideration, the question repeatedly arises as to which form of success one should refer. Quite often we limit this to self-evaluations or judgments of superiors. Objective indications in the field of sales, for example, were provided by Byron, Terranova, and Nowicki (2007). They recorded higher sale numbers for building-supply and automobile salespersons if these persons had greater abilities in recognizing non-verbal, emotional expressions. With regard to objective sales numbers, this effect was not linked to a correspondingly significant self-evaluation of performance. Another interesting interaction has been consistently demonstrated, i.e., the common impact of EI and conscientiousness. Douglas, Frink, and Ferris (2004) showed that conscientiousness only has a positive effect on student performance (exam scores, peer ratings) if a high level of trait EI exists. In the case of low EI, this effect was the exact opposite (very conscientious individuals demonstrate lower performance levels). In a similar manner, the interaction between conscientiousness und ability EI was shown in a study by Rode et al. (2007) regarding performance in public speaking, group work, and academic tasks. All in all, EI and conscientiousness are a favorable

combination to transfer emotional competence into a motivated and more elaborated form of performance.

Emotional competencies and leadership behavior and effectiveness. The field of EI can be considered even more popular when one includes the possible relationships between EI and leadership behavior and effectiveness. Despite the large number of studies published, this area of research is still in a very early stage due to inconsistent concepts and findings. In recent years, transformational leadership, introduced in 1985 by Bass, has become the most popular conceptualization in leadership research. According to Avolio and Bass (2004), transformational leadership consists of four factors:

1. idealized influence that energizes followers with a clear sense of purpose and charisma and establishes identification through exemplary ethical conduct;
2. inspirational motivation, articulating enthusiasm, optimism, and a compelling vision of the future.
3. intellectual stimulation, encouraging followers to question and rethink ways to solve problems; and
4. individual consideration, understanding the needs of each follower and supporting their development.

Whereas the proponents of this approach attribute an "emotional appeal" (Avolio et al., 2004, p.37) to transformational leadership and state that such leaders achieve their goals by meeting the emotional needs of each employee (Bass, 1990), they never, to our knowledge, precisely define the emotional components of transformational behavior.

However, there is empirical evidence that feelings of optimism and frustration mediate the effect of transformational leadership style on subordinate performance (McColl-Kennedy and Anderson, 2002). Notwithstanding the incomplete conceptualization, several attempts have been made to relate measures of EI to subordinate evaluations of transformational leadership. Results reveal a first impression of the importance of the inclusion of moderator variables into such studies. Jin, Seo, and Shapiro (2008) found that the relationship between ability EI (MSCEIT) and transformational leadership behavior is moderated by the leaders' experienced emotional intensity. Interestingly, emotionally intelligent leaders who reported low emotional intensity (measured through event sampling method) were judged to be transformational leaders. Rubin, Munz, and Bommer (2005) only detected a positive relationship between emotion recognition (DANVA, Nowicki and Duke, 2001) and transformational leadership behavior within the highly extraverted subgroup of their managerial sample. However, personality factors of positive affectivity and agreeableness explained more variance within transformational leadership. It should be noted that some authors did not find any effects of ability EI on leadership behavior (e.g. Weinberger, 2009). There are mixed results concerning a relationship between trait EI measures and transformational leadership behavior. While single-source, self-report measures occasionally show such a correlation (e.g. Downey, Papageorgiou, and Stough, 2006; Barbuto and Burbach, 2006), trait EI most often failed to predict subordinate ratings (Moss, Ritossa, and Ngu, 2006; Lindebaum and Cartwright, 2010). Similar to the aforementioned results regarding transformational leadership behavior, research linking EI and leadership performance advises us to pay attention to possible moderating or mediating variables. In a study by Byron (2007), female (but not male) managers with high emotion recognition scores

were rated as particularly successful by their supervisors and received higher satisfaction ratings from their subordinates. In addition, behaviors of persuasiveness and supportiveness mediated the EI-leadership link differently across both genders. Perceiving and using emotions (as measures by the MSCEIT) served as predictors for subordinate's ratings of supervisor effectiveness in a study by Kerr, Garvin, Heaton, and Boyle (2006). To the contrary, understanding or managing emotions had no relationship to perceptions of being an effective leader. We would highly appreciate more studies that consider both control variables (cognitive intelligence, personality) and different facets of leadership outcomes. In one of the few studies that did so, Rosete, and Ciarrochi (2005) used ratings from a performance management system to examine the impact of MSCEIT-EI. With the help of stepwise regression analyses, they found that the factor of perceiving emotions explained variance within the rating concerning the "how" of performance (building effective working relationships) above and beyond cognitive intelligence and personality. No effects were detected for the "what" of performance (delivering results). Walter, Cole, and Humphrey (2011) recently reviewed the literature on EI and leadership. Despite the overwhelming number of published articles, only a few met the demands of a satisfactory sample size, non-student samples, simultaneous control for cognitive intelligence and personality, and multiple-source assessment of predictor and criterion. At first glance, studies connecting trait-based, i.e. personality-based, EI to leadership success appear promising (e.g. Hopkins and Bilimoria, 2008; Young and Dulewicz, 2007). Again, we must object to the overinclusiveness of the measures that the bulk of research has used. Within the field of leadership behavior and effectiveness, this should cause particular concern. Still, a remarkable gap exists between leadership models and appropriate testing measures, which can only be bridged by precisely worded a-priori hypotheses regarding which facets of EI should be relevant for leadership outcomes and why. In addition, research in this area is compelled to carefully consider possible moderator and mediator effects to explain how and under which circumstances EI exerts an influence on leadership effectiveness.

Emotional competencies and performance under stress. Of course it is also worth examining the effects of emotional competencies with regard to performance under burdens and stress. According to Lam and Kirby (2002), the factors of perceiving and regulating emotions (measured with the help of MEIS; Mayer et al., 1999) uniquely contribute to predicting performance beyond cognitive intelligence in a logical reasoning test under time pressure. However, the factor of understanding emotions – which in this study correlated with general intelligence – did not provide additional information to explain performance. Lopes, Grewal, Kadis, Gall, and Salovey (2006) successfully connected a performance index of EI (MSCEIT) with a wide range of work performance measures, including both hard success figures as well as emotion-related and stress-related behavior, i.e. company rank, merit increase, and peer and supervisor ratings of interpersonal facilitation, mood, and stress tolerance. In a study by Lenaghan, Buda, and Eisner (2007), EI was observed to mitigate the adverse well-being effects of work-family conflicts.. This corresponds to previous results of senior managers shown by Carmeli (2003) that indicate a moderator effect of emotional intelligence in predictions of career commitment as dependent on work-family conflict. Emotional clarity, the ability to identify, distinguish, and label specific emotions, is one factors of the trait meta-mood scale (TMMS, Salovey, Mayer, Goldman, Turvey and Palfai, 1995) and is associated with the labeling subscale of the Mood Awareness Scale (Swinkels and Giuliano, 1995). Within the scope of mood-inducing experiments, high emotional

awareness is related to a lower mood congruency bias – according to this, persons who are generally more aware of their emotions do not allow themselves to change their judgments towards the direction of their mood's valence (Ciarrochi, Caputi, and Mayer, 2003). The influence of these facets on cognitive appraisal processes was shown by Gohm and Clore (2002). Persons who intensively deal with identifying their emotions are the same who demonstrate active, planful coping and a positive way of looking at emotional events and, furthermore, report high levels of positive well-being. With respect to health behaviors, EI has been shown to act as a possible coping resource (Saklofske, Austin, Galloway, and Davidson, 2007). In a professional context, Landa, López-Zafra, Berrios Martos, and Aguilar-Luzón (2010) found that high emotional clarity (together with high manifestations in mood repair) protected against stress in nurses. Giardini and Frese (2006) confirm the protective function of emotional competencies in stressful situations. Emotional competency (measured here by peer ratings) moderates, for example, the association between time pressure and emotional dissonance. Additional evidence for a protective function of EI against distress has been provided by Mikolajczak, Luminet, and Menil (2006) with respect to students during exams and, by the same authors, regarding levels of burnout and somatic complaints in nurses (Mikolajczak, Menil, and Luminet, 2007). Furthermore, this research group has been one of the few to provide proof of EI's impact on stress responses in terms of neuroendocrine measures. Within a public speaking paradigm, lower salivary cortisol responses have been detected for high EI subjects (Mikolajczak, Roy, Luminet, Fillée, and de Timary, 2007).

Emotional competencies and emotional labor. Special mention must be made to emotional labor and thus the observation of inter-individual differences in managing emotions that occur as a regular component of a given work task. This is particularly interesting because stress-related symptoms and success in professional conversations are connected to the manner in which emotions are regulated (Moore, Zoellner, and Mollenholt, 2008). Joseph and Newman (2010) presented a meta-analysis that demonstrates the incremental validity of trait and performance measurements of EI compared to cognitive intelligence and Big Five personality. The influence of EI (performance measures) is, however, dependent on the extent to which emotional labor was a part of the work task. Similar to this study, Wong and Law (2002) draw our attention to the importance of how much a person's work is characterized by intense emotional labor. For example, they found a moderating effect of emotional labor on the relationship between EI and job performance and attitudes: EI has a particularly positive effect on supervisor judgments with regard to performance if a high level of emotion work must be completed. Brotheridge (2006) reports a positive relation between ability EI (in the form of MSCEIT) and "deep acting", i.e., consciously modifying feelings in order to express the desired emotion (e.g., Hochschild, 1983; Grandey, 2000). In many cases, deep acting – compared to surface acting (managing observable expressions) – has proven to be the most effective and stress-reducing form of dealing with emotional labor, also in terms of affective delivery ratings and emotional exhaustion (Grandey, 2003). In the study by Brotheridge (2006), high levels of EI in service workers had an effect on the perception of situational demands in the form of greater awareness that the work requires emotional expression. These situational demands, in turn, influenced the form of emotional labor. A construct related to the expressive components of emotional competence is that of self-monitoring, which deals with the tendency or ability to adapt one's own expressive behavior (self-presentation, non-verbal affective display) to the situative conditions in an adequate way, also by being able to willfully suppress, intensify, or change certain emotional expressions (Snyder, 1974). Bono

and Vey (2007) requested their subjects to apply emotion regulation by asking them to show arbitrary anger or enthusiasm without necessarily feeling these emotions. The authors presented the positive effects of higher self-monitoring on – as they call it – emotional performance at various levels: lower self-reported stress reactions, a greater extent of deep acting behavior, and smaller changes in blood pressure. In a study by Schutte et al. (2001), self-monitoring was shown to be associated with EI self-report measures.

Barrett, Gross, Christensen, and Benvenuto (2001) suggest emotion differentiation ("granularity") as a possible underlying ability accounting for differences in applying emotion regulation strategies. According to the concept of granularity, some individuals precisely distinguish between certain emotional experiences, i.e., show low co-occurrences of discrete emotional states across time. Others experience emotional states in a rather undifferentiated fashion on a positive-negative valence dimension, i.e., they tend to report covarying states of nervousness, anger, sadness, shame, and guilt or happiness, joy, enthusiasm, and amusement, respectively. Greater emotion differentiation is assumed to be associated with more highly activated emotional knowledge and, following this, a more adaptive use of specific emotional cues in order to adequately regulate emotions. By means of a 14-day diary protocol, Barrett et al. (2001) identified individuals who experience emotions in a highly differentiated manner compared to others, which reported large correlations between a wide range of similarly valenced emotional states. Highly differentiated subjects reported more frequent regulation of negative emotions compared to low granulated persons and even more so in the case of highly intensive emotional states. However, these effects did not generalize to positive emotional states, which might not demand emotion regulation to the same extent. Focusing on the covariance of experienced anger and aggressive behavior, Pond et al. (2012) found that highly differentiated subjects reported less frequent aggression following angry feelings compared to low differentiators. This suggests that highly granulated persons make ample use of regulation strategies to prevent undesirable behavioral responses. In a study conducted by Farh, Seo, and Tesluk (2012), the extent of managerial work demands (i.e. being confronted with diverse, complex demands at work) reveals itself as a moderating context variable. In particular, a high level of ability in the perception of emotional cues had a positive influence on teamwork effectiveness and, more precisely, under high managerial work demands. Such complex working conditions evidently contain important emotional cues that must be looked at and interpreted with a high level of EI. In another recent study by Austin, Dore, and O'Donovan (2008), low scores on conscientiousness, extraversion, and EI as well as high degrees of neuroticism go together with the tendency towards surface acting. Here, EI possibly acts as a mediator between personality and an emotion regulation strategy. The strategy of deep acting could not be connected to EI; however, it was be related to agreeableness and extraversion. An interactive effect between positive affectivity and Trait-EI (WEIS) on emotional labor strategies was demonstrated by Cheung and Tang (2009). Individuals who considered themselves to have a high ability of regulating emotions tended to prefer using surface acting if they had a low PA at the same time. Individuals with a strong tendency towards regulation of emotion and who also had a high level of PA increasingly demonstrated the strategies of deep acting or the expression of genuine emotion. Despite these findings that suggest an influence of dispositional emotional competencies on the emotion regulation process, it remains unclear whether this also has an effect on the consequences of emotional labor such as emotional exhaustion, affective well-being, and job satisfaction (Johnson and Spector, 2007).

Implications. The differing demands concerning emotional labor may serve as an appropriate example of how profitable it is to raise the question, in which professional contexts EI could possibly have an impact. Besides tasks in the services sector, research repeatedly dealt with the situation of negotiations. By the means of two negotiation simulations, Mueller and Curhan (2006) demonstrated that the positive effect of EI on negotiation success is mediated by positive mood. In addition to better results, the negotiating partners of those subjects with high abilities in understanding of emotions (by the means of MSCEIT) were more satisfied with the conversation. These effects, as well as additional benefits in the form of liking the counterpart and willingness to negotiate with the same person again, have been mediated by the positive mood induced. Without relying on retrospective and subjective judgments of the negotiating partners, Elfenbein, Foo, White, Tan, and Aik (2007) chose turnover results as a criterion to demonstrate the aforementioned effects. Subjects dealing as salespersons in their negotiation paradigm benefitted from emotion recognition accuracy and thus increased their overall turnover and payoff. The same article by Elfenbein, et al. (2007) provides additional meta-analytic evidence for the positive impact of emotion recognition accuracy on different outcomes of workplace effectiveness across a wide range of occupational sectors. With respect to trait models of EI, we would highly recommend breaking emotional competencies down to their essential mechanisms, namely expression, recognition, regulation, utilization, etc. Moreover, corresponding psychometric measures should be designed as neutral emotional-cognitive styles without positive or negative connotations. From a methodical point of view, this would certainly entail the advantage of providing measures that are robust against biases arising from socially desirable responding. Even if we draw the conclusion that ability measures of EI do not meet the high demands of an intelligence test, it will nevertheless be worthwhile to continue their in-depth validation. Instead of a classical intelligence test, what is necessary is the development of "objective personality tests" in terms of R. B. Cattell (Cattell and Warburton, 1967) or "performance tests of personality" in terms of Cronbach (1970). It might also be adequate to relabel ability measures of EI as implicit measures of emotional thinking styles and personality. This might lead to the detection of synergies of ability and trait approaches in search of combined incremental validities. In addition, integrating additional measurement techniques that are well known from the field of objective personality tests is considered fruitful. There are sporadic but promising attempts to steer the research of emotional competencies into this direction, e.g., by means of emotional stroop tasks (Coffey, Berenbaum and Kerns, 2003). Furthermore, approaches including response latencies, speed of emotional information processing, and emotional aperture may be inspiring (Higgins, Shah, and Friedman, 1997; Austin, 2004; Sanchez-Burks and Huy, 2009).

Moreover, we suggest the incorporation of insights from neuroscience and the utilization of psychophysiological and neuroendocrine methods to account for the construct validation of emotional competencies. On the level of peripheral physiology, Fredrickson and Levenson (1998) have focused their attention on the speed of recovery of cardiocascular responses to emotional stress. Although the research branch of organizational neuroscience in general and the comprehensive search for neurobiological bases of emotional competencies in particular are still in the initial stage, first approaches are already being discussed (Becker and Cropanzano, 2010; Bechara, Tranel, and Damasio, 2000; Bar-On, Tranel, Denburg, and Bechara, 2003). Finally, more research efforts are required to understand the possible interactions between emotional competencies, on the one hand, and specific tasks or

organizational characteristics, on the other hand: "Emotional fit" may be more crucial than absolute levels of EI.

The pivotal question is: Does the particular context reward a certain kind of emotional behavior? In the face of certain professional challenges (e.g., persuasion in an appraisal interview), a specific emotional behavior (e.g., self-revelation of experiences of strain) could be highly beneficial. To the contrary, exactly the same emotional behavior will be highly counterproductive within another context (presentation of the annual balance sheet in front of shareholders).

In contrast to academic intelligence, emotional competencies carry the potential to affect performance in both a favorable or adverse directions, depending on the context. With reference to moderating effects of contextual variables, strong synergetic effects of emotional competencies within teams have been found to only occur under certain conditions of organizational culture and team composition (Elfenbein, Polzer and Ambady, 2007). If we once again take a look at the field of emotional labor, we can learn that the impact of emotionally competent behavior cannot be estimated without knowing the specific demands concerning organizational display rules (Opengart, 2005; Brotheridge and Grandey, 2002). The logical conclusion to be drawn is the necessity to conduct careful emotional task and requirements analyses before deciding which emotional disposition might fit best.

EMOTION AND INDIVIDUAL DIFFERENCES IN JOB SATISFACTION

The term job *satisfaction* might intuitively be seen as denoting a purely emotional state. Whether or not we decide to include satisfaction in a taxonomy of basic emotions (Ekman, 1999), however, in most conceptualizations of job satisfaction, cognitive evaluations in terms of target/actual comparisons represent an additional and supposedly antecedent component of job satisfaction (e.g., Brief, 1998; Weiss, Nicholas, and Daus, 1999). In fact, Locke defined job satisfaction as an attitude with both affective and cognitive components, a "pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976, p. 1304). To a great extent, early research on job satisfaction has been dedicated to the cognitive component, i.e., the evaluation of job features against subjective expectations in order to identify job characteristics that determine job satisfaction (e.g., Hackman and Oldham, 1976; Rice, McFarlin, and Bennett, 1989; Agho, Mueller, and Price, 1993). Until recently, affective or even dispositional factors have attracted far less attention.

In line with the predictions of the Affective Events Theory (AET; Weiss and Cropanzano, 1996), situational affective states influence self-reported job satisfaction (Fisher, 2000; Ilies and Judge, 2002). These affective determinants could be rated as equal to and perhaps even more important than cognitive evaluations (Weiss et al., 1999).

Building on the model of mood congruency (Bower, 1981), affective states can be expected to activate cognitive semantic networks, which carry emotional valence that is consistent with the current mood state, thereby increasing the probability that being in a positive mood increases job satisfaction ratings, including corresponding cognitive evaluations. In addition, per definition, dispositional positive affect increases the probability of state affective well-being. Therefore, it is likely that individuals interpret job experiences

according to their affective disposition (Lazarus, 1991). In the following, we will briefly summarize the ways in which affective factors might have an effect on job satisfaction.

Importance of affective dispositions. There is evidence of substantial temporal stability of job satisfaction within an individual (by means of a within-subject design: Staw and Ross, 1985; meta-analysis by Dormann and Zapf, 2001). Across a mean interval of 27 months, Watson and Slack (1993) found job satisfaction at the second measurement point to be determined by PA and NA at the first point of measurement. Indeed, major job changes within this time period and occupational quality had a significant impact on most of the facets of job satisfaction; nevertheless, dispositional personality made an independent contribution to satisfaction with work (9.5%) and co-workers (11.4%), regardless of any job changes and contextual variables. Even a considerable hereditary impact has been discovered. Arvey, Bouchard, Segal, and Abraham (1989) detected a 30% covariance of job satisfaction between monozygotic twins reared apart. Of course, no one would assume that job satisfaction itself is genetically determined. Instead, certain genetically-based personality characteristics mediate these influences – namely, positive and negative affectivity and Big Five dimensions (predominantly extraversion, emotional stability and conscientiousness; Ilies and Judge, 2003). Further evidence of the importance of affective dispositions is provided by longitudinal findings that displayed substantial correlations between affective disposition of young adults in their twenties and job satisfaction in the sixth and seventh decades of life (Staw, Bell, and Clausen, 1986).

Positive vs. negative affectivity. There are inconsistent findings concerning the question which facets of affective processes – the positive or the negative – explain more variance in job satisfaction. Moreover, it remains to be seen whether positive and negative affectivity affect different components of job satisfaction. According to the concept of PA/NA (Watson, 1988), these dimensions should appear orthogonal. Therefore, positive and negative affectivity should exert independent and differentiated impacts on individual experiences and behavior. Derived from the arousal theory of H. J. Eysenck (e.g. Strelau and Eysenck, 1987), some researchers hypothesize that extraversion and associated constructs such as positive affectivity have the strongest impact (Connolly and Viswesvaran, 2000). In line with Gray's (1981) model of personality, there are clear interindividual differences with respect to sensitivity to signals of reward and punishment. In fact, extraverts have shown to be highly susceptible to rewarding events (here: a false feedback of success) but less reactive to negative mood induction treatments (Larsen and Ketelaar, 1991). Conversely, subjects high on neuroticism intensely react to negative but not positive events. State positive affect was found to be predicted by dispositional extraversion, whereas state negative affect was found to be predicted by dispositional emotional lability (Costa and McCrae, 1980). In addition, neurophysiological findings suggest that two independent underlying systems are responsible for processing different classes of emotional stimuli (see above; Depue and Collins, 1999; Cacioppo, Gardner, and Berntson, 1999). In fact, it is important to note that different job characteristics and experiences in the work domain are known to evoke different affective reactions, e.g., "hassles" are known to only affect negative affective reactions, whereas "uplifts" lead to positive affective reactions (Kanner, Coyne, Schaefer and Lazarus, 1981). Hence, the removal of hassles may not automatically result in an increase in positive affective reactions. Likewise, the absence of uplifts probably does not trigger negative affective reactions (Stallings, Dunham, Gatz, Baker and Bengtson, 1997).

When taken together, one is likely to find a differentiated relational pattern between positive and negative affectivity, job characteristics, emotional reactions, and facets of job satisfaction. In contrast to this expectation, however, the majority of studies do not observe differential correlations, but rather concurrent effects of positive and negative affect (just in opposite directions), on job satisfaction measures (see Judge and Larsen, 2001, for a review). However, note that in a meta-analytic review, Connolly and Viswesvaran (2000) found positive emotionality to be a stronger predictor of job satisfaction than negative emotionality. In the same vein, Agho et al. (1993) found a particularly strong effect of positive emotionality and work motivation on job satisfaction and the evaluation of other work characteristics (e.g., having control at work, distributive justice), which are known to be relevant for job satisfaction. In their comparative estimation of four different models, they found that a combination of contextual characteristics (opportunity, routinization and distributive justice) and personality variables (positive affectivity and work motivation) provided the best explanation of variance (57%) in job satisfaction. The objective of a study by Fisher (2002) using experience sampling methodology was to examine different causes and consequences of positive versus negative affect. Positive affective reactions within a two-week period were predicted by job characteristics of enrichment (task identity, skill variety, task significance, autonomy, and feedback) and positive dispositional affectivity, whereas negative reactions were predicted by role conflict and negative affectivity. Brief, Burke, George, Robinson, and Webster (1988) as well as Schaubroeck, Ganster, and Fox (1992) showed that work-related stress experiences play an important mediating role between basic personality characteristics and job satisfaction. Brief, Butcher, and Robertson (1995) presented a study that is in line with the assumption of reinforcement sensitivity as suggested by Gray (1981; see above). In addition, this study illustrates the susceptibility of satisfaction judgments to biases based on volatile mood states. They showed that persons with higher levels of negative affectivity (measured by an anxiety scale) could not be motivated to declare a more favorable level of job satisfaction when they were given positive stimuli such as small gifts (cookies, soft-drinks, wind-up toys) during the survey – contrary to those with lower levels of anxiety, who were most certainly influenced by the gifts.

Specificity level of measures. In addition, several studies point to the advantages or even necessity of breaking down rather general measures of affective states and ratings of job satisfaction to their individual components. In fact, from the measurement point of view, a convergence of specificity level in predictor and criterion assessment often facilitates the detection of significant associations. Moreover, positive and negative affect as well as distinct positive (pride, joy etc.) and negative (sadness, anger) emotional experiences may have differential associations with satisfaction ratings and other work-related evaluations. While Grandey, Tam, and Brauburger (2002) failed to observe a connection between positive affective reactions during work and general job satisfaction, they found dispositional positive affectivity to reliably predict job satisfaction. In addition, negative affectivity had no direct relation to job satisfaction, but predicted the amount of negative emotional reactions during work. The occurrence of sadness was closely related to intentions to leave the job. Interpersonal mistreatment from customers was found to be the main cause of anger, while recognition from supervisors for work performance was an important cause of pride. In line with such a differentiated approach, Necowitz and Roznowski (1994) found that negative emotionality was associated with satisfaction with regard to work, supervision, and coworkers but was unrelated to satisfaction ratings regarding pay und promotions. In a large-scale meta-

analysis, Thoresen, Kaplan, Barsky, Warren, and de Chermont (2003) again detected both a positive effect of positive affectivity and a negative effect of negative affectivity on job satisfaction. Some of these associations were also found for related criteria such as organizational commitment and turnover intentions. Whereas the effects of positive and negative affectivity on overall job satisfaction were of approximately the same size in the aforementioned meta-analytic review, some more nuanced impacts of personality were identified. Positive affectivity was found to primarily account for the sense of personal accomplishment; on the contrary, negative affectivity had a notably strong impact on feelings of depersonalization and emotional exhaustion.

Warr (1990) proposed a model of affective well-being that extended the two-dimensional PA/NA taxonomy. By adding a third dimension and rotating the axes of pleasure and arousal, he obtained three indicators of affective well-being: displeased-pleased, anxious-contented, and depressed-enthusiastic. Job depression-enthusiasm is more closely associated with intrinsic job satisfaction than anxiety-contentment. On the one hand, intrinsic job satisfaction as well as job characteristics of skill use and personal control are particularly associated with variations in low-arousal pleasure, i.e. on the depressed-enthusiastic continuum. On the other hand, anxiety-contentment is related to the degree of reported work overload. High-level employment seems to carry higher levels of arousal, leading to increased enthusiasm and simultaneously increased anxiety. Fisher (2000) found that positive emotions such as contentment, happiness and enthusiasm were positively related to job satisfaction, while embarrassment and worry displayed negative associations with job satisfaction, especially with regard to supervisor satisfaction. Barsky and Kaplan (2007) called attention to another specific emotionally-relevant attitude that may play an important mediating role: the tendency towards feelings of injustice. When taken together, we return to the question posed at the beginning, namely how worthwhile it is to measure detailed emotional facets of job satisfaction. In our view, for a more comprehensive understanding of the predictors and consequences of individual job satisfaction, it seems highly desirable to develop models and measures of emotional facets of job satisfaction. These models and measures should be differentiated enough to grasp differential effects. At the same time, they should still be restricted in terms of the number of distinct emotions, because they would otherwise quickly exceed both theoretical parsimony and practical manageability. Finally, Ilies and Judge (2002) raised the question whether self-reported job satisfaction should be looked upon as a stable attitude at all. Consequently, the authors ask whether there could even be a dispositional factor in the variability of the perceived job satisfaction. They collected experience sampling data over a 4-week period, which allowed for the detection of within-subject effects beyond traditional cross-sectional between-subjects designs. Mood and job satisfaction varied to a considerable extent within and between the participating individuals (dynamic covariation). These findings are consistent with other studies using time-sampled mood ratings and connecting those to job satisfaction measures (Weiss et al., 1999). Both extraversion and neuroticism had a direct effect on mood levels. Neuroticism also provides insight – very much in the sense of its original conception in terms of instability – on a significant part of the variability of assessments of mood and satisfaction. This constitutes an important contribution to the understanding of intraindividual variations, not as stochastic error but rather as an expression of individual differences in experiencing job satisfaction.

Additional methodological issues. Moreover, the methodological question must be posed as to what extent the measures of dispositional affectivity, on the one hand, and job

satisfaction, on the other hand, could possibly be contaminated by additional influential factors that create a connection between them – namely either the effect of an individual's habitual affectivity on job satisfaction or similar response styles of the individual in both surveys. If the latter explanation holds true, the shared variance between the predictor and the criterion would have little to do with affectivity or job satisfaction, making their intercorrelation a possible methodological artifact.

The often generalized form in which both personality factors and job satisfaction are assessed calls into question "something" is merely measured as a positive or negative feeling and associated with one another. The often replicated correlation pattern between the Big Five and job satisfaction (with significant associations between job satisfaction and extraversion, neuroticism and conscientiousness; e.g., Ilies and Judge, 2003) is conspicuously similar to associations found between the Big Five and other outcome criteria such as subjective professional and leadership success (DeRue, Nahrgang, Wellman and Humphrey, 2011), self-esteem (Robins, Tracy, Trzesniewski, Potter and Gosling, 2001), subjective well-being, and life satisfaction (Hayes and Joseph, 2003; Gonzalez Gutierrez, Jimenez, Hernandez and Puente, 2005). Self-rated outcomes like these might have in common the fact that most people consider them worth striving for.

Accordingly, there are associations between social desirability and job satisfaction, even though an analysis by Ones and Viswesvaran (1998) indicated that social desirability was not a significant moderator of the link between personality ratings and both job satisfaction and job performance. By the same token, we know that facets of socially desired responses (self-deception and impression management) influence Big Five ratings (E, N, C, but also A and O) – in particular in selection situations (e.g., Barrick and Mount, 1996), even though the predictive validity with regard to success criteria remains relatively unaffected by the degree to which social desirability co-varies with personality ratings. It is also very important to study the overlap in terms of content and language in scales used as predictors and criteria (e.g., optimism and positive affectivity, health problems and negative affectivity; for more details see Stone-Romero, 1996).

Conclusions and prospects. In summary, a number of studies on affective determinants of job satisfaction have, without a doubt, already provided important insights. However, both in terms of theory and empirical research, a more thorough integration has yet to be conducted. Above all, we would welcome a more differentiated measurement on the dispositional predictor side. In the future, it would be worthwhile to record daily experiences in the workplace as well as facets of job satisfaction in a more detailed way and in the language of affectivity – and less so in the conventional cognitive terminology of evaluation. Researchers should collect data that help to clearly contrast influences on two different areas of job satisfaction, i.e., "affective responses and work fulfillment" and "cognitive evaluations of the job". Moreover, we are in favor of using longitudinal study designs that should ideally comprise more than two measurement points. This would allow for the use of analytical methods (e.g., latent growth modeling approaches, time series analyses, etc.) that would help us come to a deeper understanding of how people react and adapt to events and transitions in the work domain (e.g., Jokisaari and Nurmi, 2009; Weiss, Wiese, and Freund, 2012; Wiese and Ritter, 2012). Moreover, repeated measurements will open the possibility to consider and hopefully explain interindivdual differences in the variability of satisfaction assessments. Positive and negative life events within and beyond the work domain affect our well-being. It has been stated that these reactive changes are typically not enduring, i.e., most people return

to their personal set points. As elaborated by Diener, Lucas, and Scollon (2006), set points differ between individuals; and individuals differ in terms of whether they return to their old or a new set point. From an applied perspective, such theoretical and methodological advancements will help us answer very crucial questions, namely: Why are some employees more susceptible to decreases or increases in (certain aspects of) job satisfaction? How can we support an individual with specific personality characteristics to increase particular forms of job satisfaction?

LIFE-DOMAIN INTERDEPENDENCY OF MOODS AND EMOTIONS

Many young and middle-aged adults attempt to coordinate competing demands from the work and non-work domains. The non-work domain include family, partnerships, leisure time, volunteering, etc. Particularly, the work-partnership and work-family interplay has evolved into a very active research field within I/O psychology, though it is dominated by a content-focus on interdomain conflicts. Overall, recent research in the work and family domains is mostly led by the assumption that work and family experiences are interrelated. Spillover theory, for instance, assumes positive correlations between work and family experiences (Staines, 1980). A number of studies have focused on the question whether stressful experiences at work might increase anger expression and marital conflicts at home with, however, mixed results (Bolger, DeLongis, Kessler, and Wethington, 1989; Repetti, 1987, 1989). Other studies, some of which will be summarized below, have focused on the actual spillover of positive and negative mood from one domain to the other as well as on the actual crossover of moods within dyads. In addition, there is also recent research on interindividual differences in the subjective conceptions of the emotional interplay of work and family experiences as well as on the compensatory role of family life in terms of an emotional buffer in the face of work-related failures.

Mood transfer between the work and family domains. One study that explicitly focused on the possible direct spillover of mood states from family to work and from work to family was conducted by Williams and Alliger (1994). They used an experience sampling method (Larsen and Csikszentmihalyi, 1983) to collect immediate daily data on mood states on multiple occasions in the work and family settings. Participants received watches that were programmed to randomly send alarm signals eight times per day over a one-week period. Each time participants indicated their current mood states. The measurement was based on Russell's (1980) circumplex model and focused on different poles of positive (elation, calmness) and negative (distress, fatigue) affect. Williams and Alliger (1994) showed that unpleasant mood states spilled over from work to family as well as from family to work. Spillover from family to work was much less pronounced. In fact, no significant spillover effects were found for calmness; and spillover for elation was exclusively found from family to work but not from work to family. With respect to the spillover of negative mood, all effects were stronger for women than for men. To interpret this effect, Williams and Alliger (1994) referred to the traditionally higher overall demands for co-ordinating work and family among women as well as possible biological factors that might cause a longer persistence of mood states among females.

In a study with 74 university employees, Judge and Ilies (2004) asked participants to indicate their current mood and job satisfaction three times per day in the workplace as well as their current mood at home once in the evening on working days and twice per day on non-working days. Mood was measured with the PANAS (Watson et al., 1988). They showed that positive mood at work predicted positive mood at home (but left negative mood at home unaffected) and that negative mood at work predicted negative mood at home (but left positive mood at home unaffected). Similarly, although not at the fore of their study, Judge and Ilies (2004) noted that the previous day's mood at home was associated with mood at work. Moreover, Judge and Ilies (2004) found that state ratings of job satisfaction assessed in the workplace predicted positive mood experienced at home.

Ilies, Wilson, and Wagner (2009) reported similar results based on two-week diary data from 101 university employees. On each work day, participants were asked to complete short questionnaires at three measurement points (morning, afternoon, evening) including items on job satisfaction, marital satisfaction and ratings of positive and negative affect (using Watson et al.'s PANAS, see above). With respect to affect measurement, it is important to note that only affect in the workplace was rated by the participants themselves. Their positive and negative affect at home was reported by their spouses. This procedure shields results from same-source bias; however, it might have shortcomings regarding validity. Ilies et al. (2009) found that daily job satisfaction was positively associated with positive affect subsequently assessed at home and negatively associated with negative affect subsequently assessed at home. Moreover, negative affect experienced at home was associated with negative affect at home. Positive affect experienced at work was slightly positively associated with positive affect at home; however, the association failed to reach significance. This is similar to the findings reported by Williams and Alliger (1994), who demonstrated negative mood spillover to be much more pronounced than positive mood spillover. In addition, Ilies et al. (2009) found daily job and marital satisfaction to be positively interrelated. This also converges with findings from a study with 76 employed adults by Heller and Watson (2005). Based on diary records taken twice per working day for three weeks, they demonstrated both concurrent and lagged associations between state satisfaction in the work and marital domains. In addition, Heller and Watson's (2005) results hint to current mood (measured with the PANAS) partially mediating these cross-domain satisfaction associations. Cross-domain associations between work and marital satisfaction have also been identified in a longitudinal 12-year panel survey conducted by Rogers and May (2003) with marital-to-work spillover being particularly pronounced. In addition to mood spillover between life domains, it is also possible to analyze crossover effects, i.e., the transfer of moods from one person to another,. Song, Foo, and Uy (2008), for instance, investigated spillover and crossover effects in an eight-day diary study with 50 dual-earner couples. They provided PANAS-based mood ratings in the work and family domains four times on working days (early morning, late morning, late afternoon, late evening) and three time per day on the weekend (excluding measurement in the early morning). They found evidence for spillover effects for positive and negative moods in both directions (i.e., from work to family and from family to work) as well as for crossover of positive and negative moods within couples. Crossover effects, however, turned out to be less enduring than spillover effects. Moreover, crossover effects strongly decreased as the measurement gap between wife's and husband's ratings grew. Remarkably, crossover effects were more pronounced among childless couples than among parents. Song

et al. (2008) speculate that this may be due to a tendency to suppress the expression of negative affect so as to not distress one's children.

In their aforementioned study, Illies et al. (2009) explicitly referred to role boundary theory (Ashforth, Kreiner, and Fugate, 2000) to explain interindividual differences in the strength of interdomain spillover. Role boundary theory suggests interindividual differences in the degree to which individuals create and maintain boundaries between the work and family domains. Individuals who segment their roles in these domains are expected to be less likely to think about the work domain when at home or to think about home when at work. In contrast, people who do not segment and instead attempt to integrate their roles, have weak work-family boundaries. These individuals should be particularly susceptible to interdomain mood spillover. In fact, Illies et al. (2009) found that individuals high in role integration showed particularly strong associations between job satisfaction and subsequent positive affect at home compared to individuals who segmented their roles. In the same vein, individuals with highly integrated roles also showed the strongest association with daily job dissatisfaction and negative affect at home and demonstrated the strongest links between positive mood states at work and home. Hence, it seems promising to investigate in more depth the potential moderating role of integration versus segmentation, which might be conceptualized as individual characteristics (e.g., differences in individual preferences for either role integration or segmentation) as well as a work characteristic (i.e., jobs might differ in the degree to which they explicitly or implicitly require availability at home).

Subjective beliefs concerning mood transfer. Another way to conceptualize the work-family interplay of moods is to focus on subjective beliefs on how moods interact in one's life. Focusing on different positive facets of the work-family interplay, Wiese, Seiger, Schmid, and Freund (2010) suggested and tested a self-report enhancement questionnaire in two samples of working adults (N1 = 107, N2 = 146). They conceptually distinguished between three facets, i.e., the transfer of positive mood, the transfer of competencies, and cross-domain compensation, and expected to find them in both directions, i.e., from work to family and from family to work. Confirmatory factor analyses supported the suggested 6-factor solution across both samples. To measure the transfer mood, items such as "If I feel good at home, I'm in a good mood at work, too." were used. Across both samples the transfer of positive moods turned out to be independent from work-family conflict reports, attesting to the measure's discriminant validity. When comparing the mean levels of the two transfer directions in the two samples, positive mood transfer from work to family was consistently higher than positive mood transfer from family to work. Another mood-focused measurement of positive spillover reports was suggested by Carlson, Kacmar, Wayne and Grzywacz (2006). However, they concentrated on whether moods experienced in one domain were perceived to enhance functionality in another domain (e.g., "My involvement in my family puts me in a good mood and this helps me to be a better worker."). Hanson, Hammer and Colton (2006) published an instrument with a positive affective spillover scale that involves both items on direct mood spillover (e.g., "Being in a positive mood at work helps me to be in a positive mood at home.") and items focusing on increased functioning in the transferred-to-domain (e.g., "Having a good day with my family allows me to be optimistic at work."). Converging with Wiese et al.'s (2010) findings, Hanson et al. (2006) reported stronger positive affective spillover from work to family than from family to work.

The aforementioned self-report scales have in common that they measure positive affective spillover as idiosyncratic beliefs or self-constructions concerning the work-family

interplay. This clearly differs from separately measuring positive and negative mood at work and at home and then relating these momentary mood ratings to each other as was done in the diary studies described above. Although these two approaches operationalize two very different things, we suggest that both are important. In fact, self-constructions and beliefs are crucial parts of our experiences and self-regulatory activities, even if they might be inaccurate or biased (see Wiese et al., 2010). Of course, it would be most interesting to know whether and how the actual occurrence of mood transfer is related to self-constructions of such transfer processes.

Compensatory effects. Finally, in addition to spillover and crossover of mood, which describe positive associations between moods of either positive or negative valence, the interplay of affect in the work and family domains may also be experienced in a compensatory manner, i.e., positive experiences in one domain may buffer negative experiences in the other domain (see Greenhaus and Powell, 2006; Staines, 1980). Wiese et al. (2010) investigated this compensatory facet of the work-family interplay in an experiment with 63 working adults. After a baseline assessment of their momentary affective well-being, participants were asked to remember an experience of failure in the work domain. As expected, most participants showed an affective well-being drop after the failure induction. They were then randomly assigned to a) describe a positive experience in the family domain (cross-domain compensation), b) describe a positive work-related experience (intradomain compensation), or c) a control group. While writing down their experiences, state affective well-being was measured repeatedly to be able to compare the pace of emotional recovery in the three experimental groups. Wiese et al. (2010) found faster emotional recovery in both experimental groups compared to the control group with the cross-compensation group being slightly more efficient in counteracting the negative emotional effects of a failure experience.

In sum, as shown in the studies summarized above, we might deepen our understanding of work-related emotions if we consider the effects of emotional experiences in the broader life contexts of employees. Spillover, crossover, and compensatory mechanisms might play a substantial role in both intraindividual and interindividual differences in emotional experiences at work.

CONCLUSION

Without any doubt, emotions are important for understanding adaptive courses of action in the work domain. Depending on situational demands, both positive and negative emotions may have beneficial impacts on job-related outcomes. Most importantly, individuals differ in their susceptibility to and processing of specific emotional cues. Therefore, individual differences in how employees deal with emotionally charged situations have to be taken into account when conceptualizing and investigating the interplay between work demands, employees' behavior, and outcomes. With respect to emotional competencies and determinants of job satisfaction, there is a need for conceptual and methodological improvement. The development of instruments that are needed for both empirical research and practical application in personnel psychology has to build on clear assumptions concerning the relevant criteria of convergent and discriminant validity, including validation by means of biological measures. Future research would clearly profit from a more fine-

grained, multi-dimensional approach to explain the complex functions of emotionally relevant personality traits and competencies. Moreover, considering moderator and mediator relationships will help to understand the interplay of dispositional personality factors, affective states as well as contextual characteristics. This may lead to discover "emotional fit" as a crucial resource to optimally deal with specific emotional challenges. We highly recommend using longitudinal study designs to explain the dynamic covariations of emotions, moods and work-related outcomes. This will help to deepen our understanding of differences in the variability of emotional experiences at work within and between individuals as well as the life-domain interdependency of such differences.

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Chapter 2

THE PSYCHOLOGY OF EMOTIONS AT WORK: THE ROLE OF EMOTIONS IN THE CONSTRUCTION AND ENACTMENT OF DOCTOR MANAGERS' IDENTITIES

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ABSTRACT

As Fineman (1993) already posed, organizations can be considered as emotional arenas where work life takes place. Nonetheless, since emotions have been considered as the antithesis of rationality and difficult to measure, they have been relatively muted in organizational research. Recently, emotions have been hailed as the missing ingredient for understanding organizational life.

Also, although identity research in organizations has increased in recent years, none of the current perspectives has examined the role of emotions for understanding how individuals construct and enact professional identity.

Therefore, this study tries to respond to the existing gaps in identity and emotions' literatures by trying to understand how emotions affect the construction and enactment of professional identities in a sample of 20 doctor managers from two Spanish hospitals. Grounded Theory methodology (Strauss and Corbin, 1998) was used to collect and analyse data from interviews, participant observation and hospital documentation.

While not excluding other approaches, we found that a Social Identity Approach (SIA) was especially useful to analyse our data. The contribution of this chapter is threefold. First, our results provide new insights about how, in a work setting, emotions prioritise awareness of identity issues that need attention. Second, we discuss the role of emotions for understanding complex role identities by reference to the enactment of

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different sides of doctor managers' identities. Third and finally, we show how our analysis of the findings may be used to embellish the SIA by incorporating the consideration of emotions into this approach.

This chapter is structured as follows. The first section addresses the emotional side of the organizational life, as a neglected aspect of the existing organizational studies. Then, we go on to trace the failure of the literature on work identity to address emotional issues. Drawing on emotion and identity literatures, we then show how the SIA may be embellished from the social constructionist knowledge on emotion. The value in adopting this approach lies in the opportunity to incorporate emotions into our understanding of how social identity is perceived and constructed in novel situations. Thereafter, we present the research procedure and method before examining our findings on how DMs defined themselves; the role that emotions played in these definitions; and how emotion affected identity enactment. In the conclusion, we discuss our findings and their implications for enhancing the SIA and for better understanding organizational life by incorporating emotions into the analysis.

1. INTRODUCTION

As Fineman (1993) already pointed out almost twenty years ago, organizations can be considered as emotional arenas where work life takes place. Nonetheless, since emotions have been considered as the antithesis of rationality and difficult to measure, they have been relatively muted in organizational research during long time (Briner, 1999). As Waldron (1994:392) reported "the restricted vocabulary of operationalized variables and standardized surveys seems particularly ill-suited for representing the passions that erupt forcefully, if only intermittently, to define and redefine relationships among co-workers". But, recently, emotions have been hailed as the missing ingredient for understanding organizational life (Ashkanasy and Ashton-James, 2005). On the other hand, although identity research in organizations has increased in recent years (Alvesson, Ashcraft and Thomas, 2008), none of the current perspectives has examined the role of emotion for understanding how individuals construct and enact their professional identities.

Therefore, in this chapter we start with a brief overview of the importance of the study of emotions in the workplace, go on to describe the scarce attention received by emotions in work identity research, and in particular highlight this gap in the Social Identity Approach (SIA). Then, we show how the analysis of emotions helps explain and understand key social psychological processes such as professional identity construction. To illustrate that point, we describe our empirical work on how emotions affect the construction and enactment of professional identities in a sample of 20 doctor managers from two Spanish hospitals. To describe our empirical study, we present the context, research procedure and method before examining our findings on how DMs defined themselves; the role that emotions played in these definitions; and how emotion affected identity enactment. The data presented allow us to support our argument that emotions play a key role in shaping professional identity construction.

The contribution of this chapter is threefold. First, our results provide new insights about how, in a work setting, emotions prioritise awareness of identity issues that need attention. In particular, emotions help construct work identities by initiating and guiding the normative and comparative fit processes, and also by validating or invalidating the rationalisation process of

identity construction through social interactions with other actors. Second, we discuss the role of emotions for understanding complex role identities by reference to the enactment of different sides of doctor managers' identities. Third and finally, we show how our analysis of the findings may be used to embellish the SIA by incorporating the consideration of emotions into this approach.

2. WHY IS IT IMPORTANT TO STUDY EMOTIONS IN THE WORKPLACE AND WHY HAVE THEY BEEN NEGLECTED?

Emotion has recently become seen as a key focus for understanding the changes that now characterise the contemporary workplace (Briner 1999). With an abundance of research articles and even some special journal issues over the last two decades (Ashkanasy, 2004; Fox, 2002, Humphrey, 2002), Barsade, Brief and Spataro (2003) have declared that emotion research has transformed the study of organizational behaviour.

While there is some truth to this statement, this is not to say that workplace emotions have been examined in their fullest sense. In many ways, the particular attention given to the study of emotional labour since its conceptualisation by Hoschild (1983), has meant that emotion research has become synonymous with examining the means by which management attempt to shape subordinate worker displays of feelings for organizational purposes (Rafaeli and Sutton, 1990; Sutton and Rafaeli, 1988; Van Maanen and Kunda, 1989; Morris and Feldman, 1996; Ashforth and Tomiuk, 2000; Bolton and Boyd, 2003). Fineman (1993) for instance, explored the occupation socialization practices that defined the rules for appropriate expression of emotions for different professions such as nurses, doctors and social workers. Nonetheless, these studies have focused too much on how social norms and "feeling" rules shape work behaviour (Scheff, 1990), and have forgotten that emotions are not only scripted norms as being conceived by this approach, but also can act as functional and pre-conscious responses that provide information and help the rationalisation processes as the authors of this chapter understand.

More recently, studies on emotional dimensions of the workplace have expanded beyond just workers' expressions of organizationally scripted emotions to include employees' felt emotions, and distinguish between both, the experience and expression of emotions (Domagalski and Steelman, 2005; Booth and Mann, 2005; Maree Hayward and Rae Tuckey, 2011).

Also, the studies of emotions in the workplace have moved from deterministic, superficial, positivist and reductionist models aimed to identify organizational antecedents and outcomes of expressed emotions (Rafaeli and Sutton, 1989; Weiss and Cropanzano, 1996; George and Brief, 1996) towards a more in-depth comprehensive understanding from social constructionist perspectives (Gibson and Callister, 2009; Grandey et al., 2002; Mumby and Putnam, 1992; Fineman and Sturdy, 1999; Coupland et al., 2008; Patient et al., 2003) that includes an analysis on the social contexts in which emotions are felt or displayed and that conceives emotions as socially sustained practices fundamental to an appropriate understanding of the complexity of human relations (Vince, 2006) and organizational behaviour. We build on this view for this chapter, approaching emotions not only as psychological states but also as an aspect of the social self and as a product of the way

systems of meanings are created and negotiated between people (Parrot and Harré, 1996). By approaching emotions in this way, we try to respond to the call of Fineman (2000:3) for more attention to the social and relational context of emotion

But while the dominant discourse on emotions has been slanted towards the influence of management on worker displays of emotion or towards the influence of expressed and felt emotions over organizational outcomes (Hareli and Rafaeli, 2008), little research has focused on the influence of expressed and felt emotions over outcomes at an individual level. In this vein, Domagalski (1999) has called for the focus to be now directed towards examining worker outcomes instead of the usual emphasis on organizational outcomes. Although some scholars have answered her call by focusing on outcomes at an individual level such as job satisfaction (Glomb, 2002) and stress (Côté, 2005), the influence of expressed and felt emotions on identity as an individual outcome remains unexplored.

For instance, the Affective Events Theory (AET) (Weiss and Cropanzano, 1996) does not consider explicitly the workplace affective events previous to identity change that are indeed a clear example of antecedent of affect in organizations. Neither has it addressed professional identity as a consequence of emotions in organizations. Overall, the linearity of this model makes it inadequate to use it as a framework to understand the role of emotions in identity construction.

In sum, we can say that despite the dramatic increase in research attention over the past two decades to understand emotions as a core concept of organizational life, there is still a lot to do for understanding the outcomes of felt and expressed particular emotions at an individual level. In particular, emotions have not been explored jointly with another key concept to understand social psychological processes in organizational life, which is professional identity as an important individual outcome of such processes. While the interpretive approach to the study of identity has included some emotional descriptions in the reported narratives, stories and accounts about identities, the role these emotions play in the construction of professional identities has not been analysed. Also, while in the last few years scholars have focused attention to the different means people use to craft work identities (Elsbach, 2004, Ibarra, 1999, Ibarra and Barbulescu, 2010), emotions have not been explicitly addressed as one of these means by which individuals craft these identities. Altogether, the relation between emotions and identity has remained unexplored by the existing research. In view of this shortage, in the next section we suggest what use can be the joint study of identity and emotions to understand work and organizational dynamics.

3. EMOTIONS AND IDENTITY: A FORGOTTEN COUPLE IN ORGANIZATIONAL BEHAVIOUR RESEARCH

While several assessments of research into identity in work and organizations from different theoretical perspectives have emerged in the last five years (Alvesson et al., 2008; Ashforth et al; 2008; Jaros, 2009; Marks and Thompson, 2010), none of these directly address emotions as a key element in how identity develops and is experienced. This is not to say that emotion is never mentioned, however. Meyer et al. (2006), for example, argue that social identities have cognitive, emotional and evaluative aspects which according to Jaros (2009) might mean that in some settings emotion becomes more crucial to identity construction or

maintenance than cognition. Nevertheless as Harquail (1998) notes, detailed conceptualisation of emotion and its place in understanding identity in the workplace has never attracted serious research attention.

This neglect of the role of emotion in identity by organizational researchers seems surprising mainly for two reasons. First, because emotion has become a popular focus in a number of organizational research areas such as emotional labour as it has been shown in the first section of this chapter. For instance, while Ashforth and Humphrey (1993) do refer to the influence of identity on the negative effects of emotional labour, they do not explore the influence of "felt and displayed emotions" on the construction of professional identity. Although recently, some studies have started to explore the influence of emotions in the rationalization (Vince 2006) and narratives construction processes (Gabriel et al., 2010), the relationship between emotions and identity remains largely unexplored.

And secondly, this neglect seems curious because considerable research linking identity and emotion theoretically has been undertaken outside of the fields of management, work and organization (Stryker, 2004; Mackie et al., 2008). Among the most important findings has been Simons' (1999) or Mackie's (2008) evidence that the salience of identities affects the level of emotional reaction. That is, in comparison to their effects on less valued identities, events threatening highly meaningful identities engender stronger negative emotions whereas events reinforcing such identities engender stronger positive emotions. Emotion is also found not only to signal threat or satisfaction to the person but also who or what they are (Thoits, 2003).

Taken as a whole, the research reviewed by Stryker provides compelling evidence of the importance of emotions in the construction and experience of identity. Yet, in itself this evidence does not provide a way to apply what is known about emotion and identity in this general sense to existing perspectives on identity in the workplace. In thinking further about this issue, the next section considers the extent of the task to integrate emotion into a conventional approach to examining professional identity such as social categorisation and social identity theories.

4. MISSING EMOTIONS IN SOCIAL IDENTITY APPROACH

It is now 30 years since the publication of Tajfel and Turner's (1979) seminal account of social identity's importance for understanding organizational and other forms of social life (Hogg and Terry, 2001; Albert et al., 2000). Since then, Tajfel's (1978:63) exposition of Social Identity Theory (SIT) has been acknowledged in a body of research that has not merely validated his original ideas and principles in a host of settings but also, with the development of social categorization theory (SCT), extended its reach to encompass the antecedents of identification.

Therefore, the Social Identity Approach (SIA) arises as a useful starting point for our case study because we examine professional identities as a social group category and explore doctors' and managers' occupations as targets of identification. The SIA comprises two theories. Social Categorisation Theory (SCT) focuses on those aspects of identity which derive from the groups we belong to and how we set about socially defining ourselves in important memberships. Social Identity Theory (SIT) examines the processes by which

collections of individuals perceive and act towards their own and other relevant groups. Both theories have been found helpful for illuminating identity definitions and relations between organizational groups including those that can evolve between DMs, clinical groups and hospital managers (Hallier and Forbes, 2004; 2005). Moreover, Ashforth and Mael (1989) concluded that applying SCT to organizational problems can help with understanding the resolution of multiple role demands and the ordering of multiple identities. And so, because DMs perform separate roles as clinicians and as managers, this framework is not just applicable for understanding identification through group membership but also the situation where the target of identity is the DM role itself.

Despite Tajfel's original conception of social identity included an emotional emphasis when describing social identity as to "the individual's knowledge that s/he belongs to certain social groups together with some emotional and value significance to him/her of this group membership" (1972:37), SIA has not examined the possibility that emotions play a part in the construction and experience of professional identity at work. Instead, SIT and SCT have retained a cognitive-focused examination of how individuals or groups construct and interpret identification.

Therefore, on the contrary of what can be expected by this initial conceptualisation of social identity and although Tajfel envisaged a theory that could attend to both the cognitive and emotional bases of intergroup differentiation, neither SIT nor SCT has considered the emotional issues that the initial development of these theories had promised. Yet, both components of the Social Identity Approach (SIA) have developed through an important cognitive agenda (Haslam, 2004). For instance, SCT has focused only in self-categorizations as cognitive representations of the self (Oakes et al., 1994) without considering that they're also emotional representations.

This is not to say that emotions could not become incorporated if they have a place in identity. And as we have already indicated in the previous section of this chapter there is much reason to believe this is possible. Both theories already contain certain identity processes which we would expect to not merely be understandable in terms of cognitions but also emotions as the following case study will illustrate.

Tajfel's original scope for SIT, for example, included sources of identity salience; the individual's and group's responses to threats to group status and self-esteem from other groups and uncertainty, as well as the causes of stereotyping of outgroups and ingroup bias in members' quest for positive distinctiveness. These aspects of social identity experience implicitly emphasise motives and values that we would expect to contain emotional as well as cognitive content. Such findings also point us to how emotion might clarify the meaning and importance of social identity in ways that could strengthen the conventional explanations of SIT. But while recently Haslam and Ellemers (2005) have begun to consider the motivational bases for identification, emotional issues remain largely unattended by the SIA.

In sum, then, these are all scenarios that may potentially arise in the case of a work transition involving considerable role and membership change at work such as those facing the doctor manager. Nevertheless, these also are issues which while touched on by SIA theories, have failed to be treated outside of a purely cognitive account of the processes involved. Consequently, while some of the basic ideas about emotion and identity could be sketched out from the assumptions underpinning social identity and self categorization theories, essentially the study to follow was an exploratory investigation which sees identity as a social construction. Thus, we adopted an interpretive approach that inductively allowed

ideas to emerge (Skinner, 1985; Starkey, 1990). We entered with some notions of the issues that might be of theoretical importance, but our main stance was to develop explanations of doctors' emotional and socially constructed experiences from the data that emerged. Part of the value in applying this approach to the experiences of doctor managers, thus, lies in the opportunity to extend our understanding of how social identity is perceived, altered and impacts in novel situations that in part lie outside of the scenarios already covered by the formal SIA frameworks.

5. A CASE STUDY TO ILLUSTRATE THE USEFULNESS OF INCORPORATING EMOTIONS IN THE SIA

5.1. Case Study and Research Context

As in many other Western European countries, the 1990s saw a New Public Management (NPM) logic adopted by the Spanish Health Service as part of a reform agenda to improve efficiency and effectiveness. Catalonia was one of the first regions to implement these changes with its Parliament passing the Law for Healthcare Administration in Catalonia (LOSC) in 1990. Besides separating provision and purchase of healthcare services; introducing contractual relationships between these parties and creating a competitive environment within healthcare provision (Gallego, 2000), Catalonia was unusual in introducing private sector management logic into public hospitals. Clinicians were incorporated more fully into management by devolving accountability for units' resources to doctor managers. Although it might be tempting to see this initiative as no different to others in north-Europe and particularly in the UK, there are notable variations. For example, unlike the UK, where doctors are appointed to clinical director for a fixed term, Spanish DMs often remain in the role for the rest of their career. This provided the opportunity to examine the evolution of doctor managers' identity experiences over considerable lengths of service. Such differences make Catalan hospitals suitable as "extreme case" contexts (Eisenhardt, 1989) for exploring identification within the managerial role in professions like medicine that have traditionally been regarded as vocational.

The fieldwork was conducted in two teaching hospitals in a health region of Catalonia. Both hospitals were theoretically sampled because they were experiencing organisational changes driven by an NPM logic that included increasing clinical directors' involvement in management.

To maximise opportunities for comparison, we selected a privately managed public hospital (Hospital A) and a public-owned and managed hospital (Hospital B). Both teaching hospitals were similar in size and in their specialties. In Hospital B, 'clinical director' was a permanent position and selection was by entrance examination, whereas in Hospital A appointment was by senior management. In Hospital A, senior management could demote clinical directors back to doctors, whereas in Hospital B this was not possible. Another difference between these hospitals was hospital directors' clinical expertise: whereas the medical director of Hospital A had a clinical specialty in preventive medicine and public health, in Hospital B the medical director had no clinical specialty but a masters' degree in health management. Although the job description for DMs in Hospital A included more

management emphasis than in Hospital B, no differences were found when participants from each hospital were asked to describe their jobs and to allocate actual and ideal percentages to the time devoted to each of these duties: clinical work, administrative tasks, people management, financial management, teaching and research. Variations in these perceived percentages and comments by DMs confirmed that their roles were not clearly defined. That said, most of them grouped people management, administrative tasks and financial management into one broad category termed "administrative work".

5.2. Methodology

Our study adopted a constructionist perspective using a Grounded Theory methodology (Glaser and Strauss, 1967), although we entered with some notions of the issues that might be of theoretical importance. Therefore, we adopted the Straussian mode of this methodology (Strauss and Corbin, 1998). This methodology was suitable to our research since we aimed to extend theory (Locke, 2001) of professional identity construction by understanding how DMs assemble, understand and enact their identities. Following Craib (1997), we recognised our subjectivity as researchers and our results as social constructions of DMs' realities. Fieldwork was undertaken over 12 months by one of the authors, a Spanish 27 year-old female. She presented herself as a PhD researcher and an economist when negotiating access with senior management but once in the field she also presented herself as a psychologist. This latter category combined with the white coat that senior management recommended she wear, helped participants to trust her almost as an insider. In fact, DMs referred her as to "the hospital's psychologist"[1.] This label was indeed helpful in eliciting participants' candour. Using a reflexive approach to interviews (Alvesson, 2003), also helped us understand how interviewees constructed the interview situation and the interviewer's role.

To ensure an emic perspective, senior and middle management were asked to identify the middle management ranks within the hospitals. They identified clinical directors (doctors), ward managers (nurses) and middle managers from general services. Data were collected through several methods. A primary method was in-depth semi-structured interviews with 20 out of 34 clinical directors; 10 at Hospital A and 10 at Hospital B. Interviews lasted 2 to 4 hours over two rounds and were recorded and transcribed. Opportunities to build theory were sought by diversifying our sample of clinical directors by age, **speciality**, gender, tenure in their position, previous training in management, tenure in the hospital and number of staff. To ensure appropriate selection, informal conversations and participant observation were undertaken.

The interviews were framed by a number of core question areas: how participants defined themselves as professionals; perceptions of difficulties and experiences of their managerial role, content of their managerial role, role transition and relationships with senior management and with subordinates. However, participants were free to raise and explore anything they considered salient to their experiences. We also interviewed senior managers from both hospitals to compare their impressions with those of clinical directors.

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[1] For instance, in Hospital A while having a coffee alone in the bar, she overheard a group of doctor managers say: "Have you already talked to the psychologist? It's so therapeutic, you'll see." I felt that at least I was giving them something back in return for their rich information.

Other data used included handwritten field notes taken from participant observation of doctors at work and from "hanging around" observing the dynamics that occurred in relation to our research interests. In interactions with actors such as hospital managers and unit clinicians, gesture, tone of voice, and choice of language were observed as manifestations of DMs' felt emotions. Interviews and observation were the main data collection methods as they have proved suitable elsewhere for understanding actors' subjective feelings, personal meanings and emotional interpersonal dynamics in specific contexts (Fineman, 2004; Sturdy, 2003). Nevertheless, hospital documentation and records covering the period studied also were examined to provide information about the setting and enrich our understanding of the data collected from interviews and participant observation. These included hospital pamphlets, websites, news articles, internal department files on jobs descriptions and performance assessment templates.

We entered the field with two broad research questions: How did our sample of DMs experience their roles as managers and what factors influenced their perceptions? To answer these questions, analysis of the data adopted what Glaser and Strauss (1967) call constant comparison analysis where data gathering and data analysis activities are intertwined. No preconceptions were imposed with theory emerging from 'constant comparison' of interview data, observational notes and documentary evidence.

The data were initially organized into first-order codes such as "self-definitions" (i.e. doctor), "meaning of management" (i.e. distance from reality), "meaning of clinical work" (i.e. close to reality), "difficulties perceived" (i.e. lack of autonomy), "emotions" (i.e. loneliness). These were integrated into emerged key categories and then interrogated for fit while being alert to the possibility of contrasts and disconfirming data. As we proceeded from open coding into axial and selective coding (Strauss and Corbin, 1998), analysis explored differences within professional identity as the key category that emerged. Thereafter, we attempted to explain the source of any differences, identifying the relation between their identities, previous exposure to management, tenure in their positions and the emotions reported. At this point we returned to the literature and discovered a fit between our emergent model and SIA as a suitable theoretical framework. NVivo software was used to organise these data from interviews and participant observation.

5.3. Emotions and the Construction, Meaning and Enactment of DM's Identities

Our findings are presented in two sections: the first considers the role that felt emotions played in the construction and meaning of our DMs' identities. In the second, we examine how felt emotions shaped the enactment of their identities in different interactive settings. In the first section the results are drawn from our interviews, whereas in the second they derive from interviews and participant observations.

Becoming with Feeling
In this section, we consider how our DMs defined themselves as professionals. All DMs defined themselves as clinicians no matter their age, medical specialty (clinical and non-

clinical, and within the former, surgical and non-surgical[2]), gender, length of hospital employment, or their reasons for entering clinical management. While we had expected that DMs working in the privately managed hospital would define themselves primarily as managers because of the private sector's explicit commercial emphasis, this too had no differentiating effect:

> I'm a doctor. I mean, a doctor by definition is someone who feels that they are a doctor. Appearance is another thing, isn't it? How it is portrayed … if you do any managing. But when you're with a patient, a doctor is a doctor. (Dr. C)
> Above anything else I'm a doctor, but you have to get involved in management and you have to do it well. (Dr. G)

These quotes exemplify Rousseau's (1998) distinction between situated and deep structure identification. That is, DMs' deep-seated identity was that of doctor since for them medicine was a vocation, whereas the notion of manager, though often perceived as an important role, was something they did for supplementary reasons. As deeply meaningful, the "doctor" categorisation lay embedded at the core of the self, whereas the manager role might or might not be integrated into their DM identity as a surface layer. For some, this outer layer contributed to their self-definitions but for others it was insufficiently meaningful to become self-defining. In this way, both categories were constituted according to their relevance and importance to their definition of self.

Given that our entire sample defined themselves essentially as doctors the question arises as to why only some DMs identified with managing. Reference to SCT suggests that the employee's readiness to adopt a new identity emanates from assessments of what are referred to as comparative and normative fit. A person seeks comparative fit by defining themself in terms of the group that they regard as most similar to their own characteristics compared to other available memberships (Oakes, 1987; Haslam and Turner, 1998). Yet we found comparative fit was not merely a purely cognitive process of choosing between available role/group identities. Rather, it was emotions elicited by doing management alongside clinical work which first signalled to them the attractiveness and meaning of their role as an identity. For example, in some DMs, a lack of match between the characteristics of managing and their pre-existing doctor identity emanated from how management activity induced feelings of anxiety, sadness and insecurity:

> I feel awful when I get to my office, close the door and see all the papers and things I have to do all over my desk....all of a sudden I just want to get out from my office and go back again to the operating theatre where I really feel I'm in control....here (his office) it's all uncontrollable and that makes me feel stupid and anxious...I was happier when I just attended to my clinical duties (Dr. F)

Following Stryker (2004), these unmet expectations not only directed their negative feelings towards themselves but also externally towards the hospital managers. Thus emotions not only influenced their negative definitions of managing but also generated a need to disassociate their role as a DM from the identity of manager. To do this, they relied on the

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[2] Non clinical specialities have a low degree of patient contact whereas clinical specialities have a high degree of patient contact. Surgical specialities help acute problems through direct and invasive intervention.

defense mechanism of projection in which a person ascribes a fear onto another person or group (Holmes, 1978). In this way, DMs projected their fears about managing onto hospital managers as the only people who 'managed'. As DMs they were doing something different referred to as "organising their unit". Disgust and contempt for managing even spread to the vocabulary of management:

> Could you tell how much of your daily work is providing care, how much is management? (interrupting) I don't actually see many patients now. But I don't like the word management very much (grimaces in disgust). I prefer organization (Dr.V)

Negative emotions centering on the value of managing also emerged in DMs' efforts at achieving normative fit. Like comparative fit, normative fit is seen as an important matching process in determining the person's readiness to adopt a social identity. Here, the person seeks consistency between their expectations and the presumed goals, values, and behaviours associated with belonging to a particular group. However, SCT says little about whether this process is begun before or after accepting a role. In our study, those DMs who rejected a management identity had undertaken very little preparation and experienced the most negative emotions. Indeed, where negative affect about managing became salient, DMs had usually accepted a management post for instrumental reasons such as promotion, work change, salary improvement or work-life balance.

In order to feel self-worth while managing, these DMs felt it was crucial to emphasise their medical practice as doctors. Their lack of fit with the goals and values of managing was underscored in the positive emotions elicited by clinical work such as feelings of control, enthusiasm, security, self-confidence, self-efficacy and belongingness to a meaningful group. These emotions not only underpinned these DMs' self-esteem but also tied them to the practice of clinical work. As the following quote illustrates, once they became a DM the opportunity to practice their clinical skills became essential if they were to continue to see themselves as doctors:

> What I could not do, what I could never do is stop providing medical care (said emphatically). That's to say, if I stop operating, if I stop operating … I might just as well give up. That is what I could never stop doing … but everything else you do because you have to …That's why I'm a doctor (Dr. B)

By contrast, those DMs who identified themselves with their management roles were mostly characterised by a passion to "lead" and "command" and to improve clinical working practices. This matching of self with other managers and management's goals mainly occurred because the idea of leading and the language of management and business were seen as natural to them. Usually, they had sought out some prior exposure to management work under the guidance of a former head of unit or been brought up in their family's business.

> For budgetary reasons, I'm buying prostheses cheaper than anyone else in Catalonia! Why? Well, because I know the market, because all my family has always been in business, because doing business is in my blood, because my father was a businessman and my brothers still are. So, yeah, I've lived in a business environment all my life. And,

hell, I've got principles. Look, in this world, everybody's selling, you know. But when I tell other doctors that, they tell me I'm mad (Dr. G)

From this, we might assume that this enthusiasm merely reflected DMs feeling increasingly positive emotions of security, ability and power as they gain experience of managing. Yet, some novice DMs exhibited equally positive emotions and meanings towards managing. Like their more experienced colleagues, these novice DMs defined themselves as "born leaders" and recounted instances where they had shown natural leadership at school. Two of them were so convinced of their 'born' leadership qualities that they believed they could see these "leadership traits" in their children.

This is not to say that management identifiers always displayed positive emotions from managing. Unlike their colleagues, however, these negative emotions were not directed at their managerial identity. Instead, these emotions were accounted for by projecting their origin onto the inadequacies of the hospital health system. Typically, expressions of intense anger and frustration arose from what they saw as their lack of autonomy and resources to manage their units adequately.

If you have technical expertise but … well … can't control the money, if you can't get hold of the money to buy material or personnel, if you can't take that decision, then you're in a straitjacket that … well, chokes you! (Dr. R)

Equally, a sense of the isolation of their positions was felt by almost all DMs. But while commonly experienced in the role, these feelings of loneliness gave rise to different emotional responses between fledgling and experienced DMs.

For inexperienced DMs this feeling of loneliness was felt as intense sadness and provoked attempts to escape into clinical work. However, with time, these feelings eventually became accommodated as a price of being a manager:

I'm a born leader! (said passionately). But I'm finding it difficult because I was much happier when I was everybody's mate, one of the lads (sadly). It was much easier then. The leader is just so lonely! I'd like to go out for a few drinks and get drunk now and again with my workmates but I can't! And today I'd like to go out for lunch with them and have a paella … I'd love to … but I won't. Mmm … I also like the trade union world but I can't get involved because I'm a director. But I've got used to it now! (Dr. G)

Thus, in contrast to those who merely endured their managing role, negative emotions among management identifiers, whatever their intensity, could be kept separate from the value they felt for managing. For them, their identities adapted sufficiently so that while their self-definition was still primarily that of doctor they could assimilate their managerial identification enough to see themselves positively as members of a distinct group that was different from management and from medics (Nicholson, 1984).

In considering these different responses to managing, these findings suggest several possibilities for how emotion might add to the usual process of identity construction under SCT. For instance, doctors' identification was found not just to be reliant on a process of cognitive 'matching' of characteristics that defines the self and the role. In addition, the emotions provoked by these early experiences of managing appeared to unconsciously signal

the value of the managing role identity as positive or negative. That is, DMs' emotions conveyed the importance of incorporating the managing role into their identity with positive emotions motivating identification and negative emotions confirming its inconsequentiality. In also associating certain emotions with particular tasks or interactions, feelings also helped DMs to develop the meaning given to the role. In these two ways, emotions that emanated from particular experiences enabled doctors to develop their rationales of managing that in turn helped them explain the causes of negative experiences. Of particular note here was the way that both management identifiers and those who merely tolerated managing used projection to shift negative aspects of the role away from themselves and onto the members and goals of hospital management. In taking Vince's (2006) findings a step further, therefore, DMs' negative emotional experiences shaped identity rationales and meanings that the process of projection could then protect and refine. In the next section we explore further this relationship between emotions and identity rationales by considering the ways that emotions impacted on the enacting of these complex identities among our leader DMs.

Emotions and the Enactment of Multiple Self-Categories

Emotions were not only vital in the process of constructing and providing explanation of the DM identity but were also important in signaling which particular self-categories to use in particular interactions and settings. That is, once constructed, these identities and the explanations that derived from these emotions then went on to shape the emotions and behaviours that arose subsequently in interactions with other organisational figures such as medical directors or clinical colleagues.

In this sense, DMs were not engaging in surface performances in the ways identified by Goffman (1959) and Hochschild (1983). Rather, the categories adopted were adaptive and arose from emotions elicited as identity-appropriate for particular encounters and relationships with adjacent outgroups such as senior managers or their unit's clinicians.

For example, some DMs came to feel that their personal autonomy and status were constantly undermined by the hospital management agenda. In a situation where disagreeable relationships with senior managers developed and the general status of DMs was perceived as low and threatened, SIT would suggest they would resort to a social competition strategy of identity protection (Haslam, 2004). Thus, to protect their self-esteem, the clinical role would be used to directly challenge the legitimacy of management's authority, decisions and superiority. So it was that particular medical aspects of their DM identity were indeed employed as a social competition tactic predicted by SIT to expose senior managers' ignorance of what was happening on the ground or their lack of clinical knowledge:

> Dr. A (medical director) is talking with me as a manager, using some managerial terminology. We are in his office. Suddenly, the medical director burst into his office (without knocking at the door) saying that she needs to see him urgently in her office upstairs to talk about the paediatrics budget. He rapidly changes his tone of voice (making it stronger), his pose (he was relaxed sitting backwards in his armchair and he suddenly comes forward and tense his posture), his facial expression (frowning) and says to her (in a very serious and defensive manner) that he can't go to her office because he has some paediatric clinics to do and proposes she come downstairs to his office again tomorrow at 4 p.m. if she wants to talk. (Note from participant observation).

Yet, while this illustrates conventional social competition behaviour, it also illustrates how these DMs' 'emotions in interaction' were shaped by their earlier rationalizations of their own leadership identity and by the specific meanings they attached to 'others' in hospital management. In providing a version of self that complements with their views of managers and others, these rationalizations then went on to provoke feelings of anger and hostility in interactions with these others. In this way, existing identity rationalisations led to emotions which subconsciously indicated the appropriateness of the DM identity to be enacted. Thus, their emotional experiences served as signals that acted to steer DMs' cognitions about how to define and present their identity. The result of this process was that social competition behaviour did not emerge solely from a cognitive assessment of the interaction itself or from the emotions felt only in the dynamics of the encounter. Rather, the identity constructions and meanings developed in earlier emotion experiences provoked emotion responses that shaped the social competition and other behaviours that arose.

Other examples illustrate the same process but with different emotions and outcome identity behaviour. For instance, DMs projected unpalatable feelings shaped by their own rationalizations onto others in order to control the importance of their own negative affect (Vince, 2006). That is, negative emotions were projected onto some medical directors as the group that was most unhappy with the hospital system. Here, we found empathic emotions such as compassion and concern expressed towards particular senior figures. In hospital A, for example, DMs' commiseration for a medical director in his compromising role, contrasts strikingly with their contempt for the CEO:

> Well, I think that the hospital directors are under a lot of economic pressure (long silence as if in reproach). Perhaps they have the same values as we do, but they can't … they don't transmit them (sadly). What about the management? Ah (raises her voice, angrily) The management … well, they certainly don't have values! They have absolutely no idea (contemptuously, angrily). They have no idea about the reality of hospital life. One day I told them to come and see it for themselves but … well … they hardly ever come. I don't think anyone has ever gone into the Intensive Care Unit. Except for the director, of course (Shows her warmth for the director in her tone of voice). But managers and all that sort … I really want them to come one day! (vengeful tone) I hope they have a heart attack and they come and see what a state we are in! I mean, the management hasn't got a bloody clue about what things are like and about the reality of the hospital! (indignant) (Dr. V)

What this highlights is the way that prior rationalizations of intense emotions subsequently shaped emotional consequences for the relationships that developed between DMs and others, and which set a social tone to their evolving relationships in their organizations.

For example, DMs spoke with deep sadness about how their appointment immediately found them excluded from social gatherings arranged by their clinical staff.

Drawing on SIT, these exclusions can be seen either as a betrayal of the loyalties of past membership or as a threat to the new relationship. Yet, given the most meaningful self category was still that of "doctor", DMs mostly saw their past colleagues' behaviours as a saddening personal rejection. Instead of reacting with overt hostility towards clinicians and

identifying themselves unequivocally as "managers" as predicted by SIT, they continued to seek acceptance by their former membership as a way to manage their feelings of desertion.

In this way, DMs saw the doctor category as a critical facet of their identity they should adopt with clinical staff. However, when dealing with a former DM a different component self-category was elicited:

> I'd prefer that they (Unit clinicians) look at me as a colleague rather than a boss. Why? I don't know, I suppose that the relationship is easier (long silence). It's easier for me that they consider me as a colleague, a colleague that gives orders a bit more or organises a bit more but….I prefer that they consider me as their colleague…..But, I mean…when I'm talking about colleagues, I referred to them, not to him (referring to the former head of unit), I'm his boss now. (Dr. B)

If we consider these examples alongside the corresponding tactics used to cope with over-demanding senior managers, they show how emotions elicited by pre-rationalisations of identity threat from encounters with another person or group activates an appropriate slice of the DM identity to shape a defence (see Figure 1).

In our sample, we identified three types of emotion that reflected how "the other" had been constructed: these were empathy; loss and sadness; and anger and hostility. Empathic emotions arose from projections of sympathy and solidarity with less well off 'others', whereas feelings of loss emanated from abandonment by a valued clinical membership. In the third, anger surfaced from a perceived threat to authority, autonomy and status by an already stereotyped management group. Thus, DMs enacted a particular "side" of their identity depending on the emotions that existing rationalisations of their identity and others prompted in them.
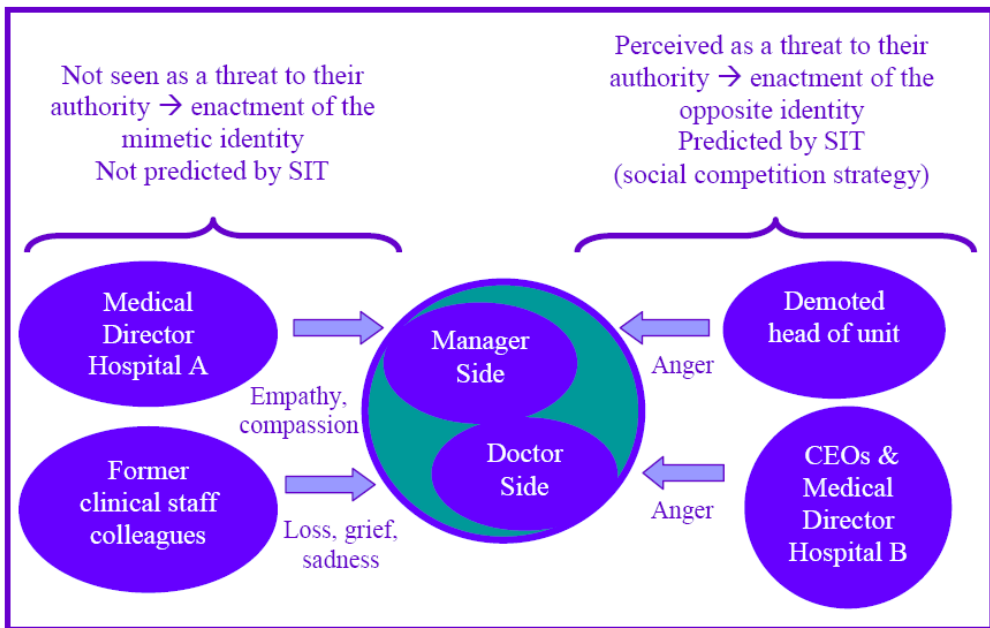
Figure 1. Emotions and the enactment of doctor managers' multifaceted identities.

So, to disarm a threat from a representative of another group (e.g CEOs, medical director from Hospital B and the former head of unit) they displayed the contrary "side" to the manifest identity of the person or people with whom they were interacting. However, when perceiving an outgroup relationship as a threat of abandonment or as someone similar and worthy of compassion, DMs displayed the same identity as the one represented by the person with whom they were interacting.

In sum, existing identity constructions and meanings attached to others directed emotional responses in interaction so that identity enactment was kept appropriate. Appropriateness was found to be reflected in whichever facet of their identity DMs' emotions activated to protect their self esteem.

CONCLUSION

Our findings have suggested a central role for emotions in the construction, meaning and enactment of DMs' professional identities. On the contrary of what Arlie Hoschild's (1983) seminal work on emotional labour states, emotions do not act as scripted responses but as functional responses that allow DMs to construct their work identities through the validation or invalidation of the role meanings developed in their early experiences and to enact the appropriate side of their multi-faceted identities in each situation. In this chapter, we have tried to illustrate how the relationship between emotions, cognition and behaviour is more complex than linear and positivistic psychological models pretend to transmit. Our empirical study shows how emotions and rationality are intertwined and nurture each other in an iterative process in which emotions signal important information to rationalise and construct meanings, and then these meanings are validated or invalidated through social interactions that elicit emotions that again prompt to revise or to confirm the previous cognitions. Therefore, we plead for those who think that there is no such thing as pure cognition; thinking is always brushed with emotion, feeling shapes experiences and rational thought as our data have illustrated.

Also, our investigation supports the notion that social identity cannot be understood just as a process of cognitive assessments of social comparison based on best fit; inter-group status; and identity expectation and threat in particular settings (Jagger, 1989). Within these processes, our findings showed that emotions did not act just as an outcome of DMs' experiences but also provided signals that helped them shape the eventual cognitive definitions, meaning and enactments of their identities. As such, the main contribution of this study is to provide some pointers as to how the incorporation of emotions into the SIA might proceed and enhance our understanding of social identity in work settings. These are illustrated in Figure 2.

In first considering how emotions contribute to identity construction in a new work role, several embellishments to SCT are suggested by our findings. Firstly, while not suggesting that emotions always drive identification, the assumption that cognition mainly underpins the key matching processes of comparative and normative fit seems mistaken. Our doctors' behaviours suggested that readiness to identify or incorporate a new role into existing self definitions also can be initiated by emotional responses to experiences of tasks and interactions.

Such emotions were of two kinds: First, emotions that indicated to the person the value or importance s/he places on adopting or rejecting a particular identity. Here affect provided information about the emotional familiarity and satisfaction of a particular role that then contributed to the cognitive fit assessment by which DMs' decided their motivation to identify with managing.

Second, emotions operated in a similar fashion as indicators of how close DMs' values and goals were to those of the management role and group. In these two ways, affect was found to initiate and guide comparative and normative fit. In this sense, emotional experiences provided guidance to DMs about where their cognitive attention was needed.

Besides providing emotional data that determined the strength of motivation to identify, doctors' early emotion experiences were also found to shape the meaning that the identity was given. Whether identifying with managing or not, these emotions helped to direct our doctors' cognitive efforts to explain their identities to themselves and others. Here, DMs' initial emotional experiences of managing (e.g., experiences with role models and initial relationship with senior managers) became rationalized into the meanings they gave to management and by projecting complementary explanations onto other groups such as hospital managers and clinicians. This chimes with Vince's (2006) findings that initial emotional responses help to shape explanatory rationalizations. This role for emotion, thus, may be seen to precede existing SIA processes of meaning such as identity salience, positive distinctiveness, and member prototypicality and which have all been largely seen to be shaped only by cognitive comparison of relevant groups (Oakes et al., 1994; Oakes and Turner, 1990). Besides this, DMs' emotion-shaped explanations point us to several other ways in which this process is important and used.
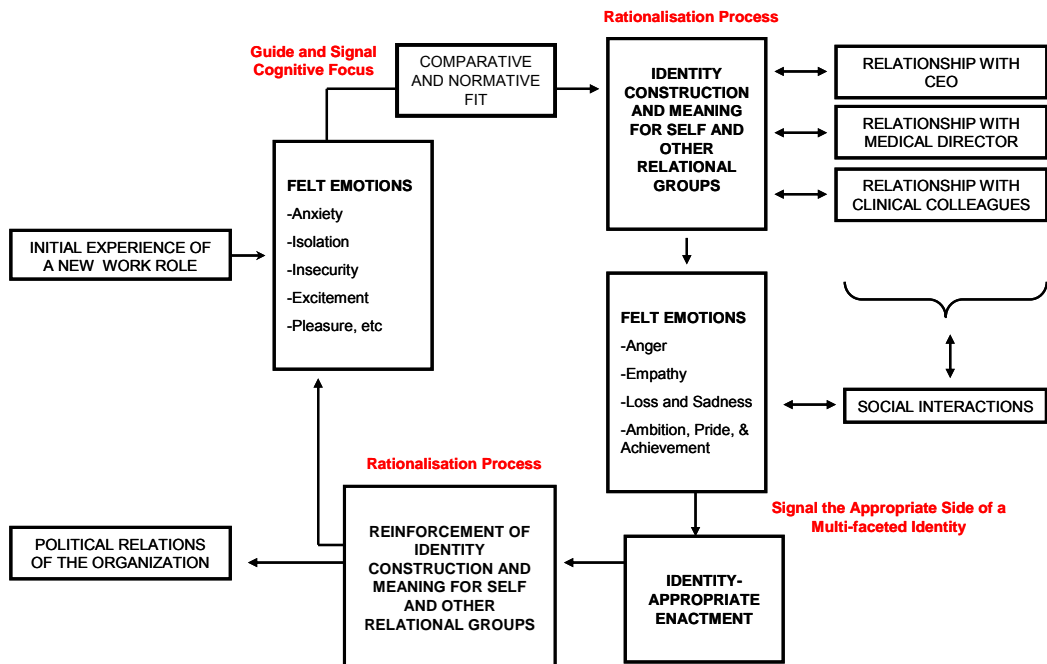
Figure 2. The role of emotions in the Meaning, Construction and Enactment of Doctor Managers' Identities.

These included the use of emotions to shape adaptive explanations by projecting negative features of the role onto other managers; the claiming of special abilities of leadership; and the need to use clinical expertise to disassociate from management.

While all of these embellishments can be seen as complementary to conventional SIT processes to enhance self-esteem, DMs' identity rationalisations also were used in a way quite different to the usual role of identity salience in the SIA. SIT suggests that the form of intergroup behaviours used are drawn separately from longstanding in and out-group stereotyping as well as in-the-moment cognitions of legitimacy and stability of status relations. Yet, in the course of carrying out their roles, DMs' emotion-influenced rationalisations provoked the emergence of identity appropriate emotions that then shaped their behaviour towards other organisational actors. Our findings, therefore, suggest that in addition to the importance of emotions in the processes of identity readiness and construction, they also may affect the type of relationships that emerge and further bolster the meanings given to their identity and those they give to outgroups, thus illustrating the complex relation between emotion, cognition and behaviour. Also, our findings chime with Intergroup Emotion Theory (Mackie et al., 2008: 1864) proposition that "emotions are generated by belonging to, and by deriving identity from one social group rather than another" and point to the social nature of emotions.

Our last point examines the selected aspects of identity enactment used by our sample to offer additional insights about the nature of identity-congruent behaviour. The SIA assumes that some form of recognisable behavioural continuity in a salient identity is pursued. And while our findings do not refute this assumption, they do expand the notion of what constitutes and causes identity congruence. In particular, they reveal that identity appropriate behaviour does not have to be displayed as an all-encompassing version of the identity, nor emanate purely from perceptions of similarity and difference. Instead, in a multi-faceted identity, as with DMs, appropriate parts of the whole can be drawn upon to meet the needs of different settings and interactions. And while DMs' side behaviour often emerged to meet the threats posed by particular situations where the identity's status was not fully acknowledged by others, it was provoked by emotions that reflected their earlier emotion-shaped explanations of their preferred professional identity. Given that this process links emotions, and identity construction and meaning to the emergence of a specific behavioural repertoire among professionals, it is not unrealistic to see this explanation as also informing our understanding of how particular emotional and political relational patterns originate and spread across organisations.

In contrast to the logic that separates the cognitive processes of identity readiness deployed in SCT from those of identity behaviour in SIT, it follows from all our findings that the role of emotion in identity construction, meaning and behaviour is best understood by a single explanatory framework. In this, we are not saying that emotion will always drive social identification.

Nevertheless, what our study has indicated is that to fully understand the development and enactment of identity in complex roles requires an analysis of how the person's emotional readings contribute to early cognitive identity assessments and later identity-appropriate behaviours. While neglected so far in social identity theory and research, our analysis of the role of emotions in identity development and behaviour offers considerable promise as a starting point from which to enhance the SIA and other approaches to identity.

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Chapter 3

EMOTIONAL LABOR:
CLARIFYING A CONFUSING CONSTRUCT

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ABSTRACT

Despite decades of research in emotional labor, the management and expression of prescribed emotions in customer-service settings (Hochschild, 1983), the term continues to remain shrouded in conceptual ambiguity.

With some scholars treating it as a form of internal regulation involving surface and deep acting, and others viewing it as a set of behaviors, theoretical clarification becomes necessary for a better understanding of its predictors and outcomes. The present chapter summarizes the extant research to propose a new, broader definition that considers emotional labor as both the internal regulation and the outward display of appropriate emotions at work. Following this, it challenges assumptions regarding the relationship between emotional labor and stress, and suggests an alternative placement of the constructs within their nomological network.

Specifically, it provides evidence that emotional labor might be better construed as one of several stress-based consequences that typically arises from job stressors such as organizational display rules and hostile customer exchanges. To further clarify the nature of the construct and its theoretical linkages, the stress literature is used to present a model of emotional labor that specifies its antecedents, mediators, and employee- and customer-based consequences. Implications and directions for future research are discussed.

INTRODUCTION

Over two decades have elapsed since Hochschild's (1983) book, *The Managed Heart: The Commercialization of Human Feeling* appeared in print. During this time, the famous

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construct that she coined in her book – emotional labor – has grown and matured, but continues to remain an elusive term. First described as "the management of feeling to create a publicly observable façade," (p. 7), emotional labor has been studied by scholars in a variety of disciplines including sociology, psychology, and management. As such, it has been defined from perspectives ranging from the dramaturgical to the behavioral and beyond.

However, all researchers generally agree that emotional labor broadly refers to the use of employee emotions to attract and maintain customer attention. Nonetheless, as several scholars have noted (e.g., Glomb and Tews, 2004; Grandey, 2000; Rubin, Tardino, Daus, and Munz, 2005) the construct remains an ambiguous one that is defined and treated differently depending on scholars' uniquely preferred interpretations, making construct clean-up a theoretical and empirical necessity.

This chapter has three goals. First, it attempts to reconceptualize emotional labor as a dimension of job performance that involves both regulatory efforts and the behavioral products of those efforts. Second, it presents evidence to challenge existing assumptions about its placement within a theoretical network.

Third, it draws from the stress literature to present a model on emotional labor that synthesizes the research to date on the construct. As such, emotional labor is framed within a network of linkages that contain both person and situational antecedents, and employee- and customer-based outcomes that are expected to couch the emotional labor construct. Within this model, this chapter also discusses avenues for future research and proposes recommendations for practitioners.

THEORETICAL BACKGROUND

Job performance has been defined as a multifaceted set of behaviors, duties, and responsibilities that individuals carry out as part of their work role (Campbell, 1990).

A noteworthy aspect of this definition is that it makes performance observable and easily measureable. On the other hand, the emotional labor term remains fuzzy because scholars disagree as to its essential nature. Is it emotion regulation at work (Diefendorff and Richard, 2003; Grandey, 2000; Hochschild, 1983)?

Is it a set of behaviors involving emotional performance (Ashforth and Humphrey, 1993; Glomb and Tews, 2004; Rafaeli and Sutton, 1990; Tsai, 2001)?

Or is it a family of constructs concerning what employees feel and do within the context of service-related jobs (Beal et al., 2006)? Mann (1999) noted the tendency for researchers to confuse internal emotional states with outward behavioral displays, giving rise to what some scholars have termed "theoretical disorientation" (Rubin et al., 2005, p. 189). Given the myriad ways of conceptualizing the term, it appears fitting to find some common ground before achieving construct clarity.

This chapter defines emotional labor from the outset as *the regulation and display of emotion as part of the work role.* This definition retains key elements from the main theoretical approaches that have studied the term. First, it acknowledges that emotional labor involves regulatory effort, i.e., an internal psychological process invisible to outsiders yet central to individuals (Hochschild, 1983; Mann, 1999; Morris and Feldman, 1996). Second, it

notes the behavioral manifestations of this inner effort resulting in outward displays observable to outsiders (Ashforth and Humphrey, 1993; Glomb and Tews, 2004).

Finally, it pays heed to the context within which this process occurs, i.e., at work and in compliance with explicit job requirements known as display rules (Diefendorff, Richard, and Croyle, 2006).

This reconceptualization of emotional labor has implications for where the construct falls within a nomological network, as well as how it relates to employee stress and organizationally relevant outcomes. In particular, it suggests that emotional labor is an outcome that can be evaluated by customers and supervisors alike.

THE PIONEERING APPROACH TO EMOTIONAL LABOR (1983)

Arlie Hochschild, a sociologist, is credited for pioneering research in emotional labor. In her observations of flight attendants attending to a group of irritable passengers, she noticed the amount of strain the workers were under, as well as the effort it took to calm passengers upset over long flight delays. Her observations led her to coin the term *emotional labor*, which she defined as "the management of feeling to create a publicly observable facial and bodily display" (p. 7). In elaborating upon her newly coined term, Hochschild likened the players involved in the emotional labor process to members in a dramaturgical role (Goffman, 1959). According to this perspective, workers were actors who were required to get into character so as to entertain and delight customers, in effect, their audience, within a work setting that provided the stage for these interpersonal transactions. Accordingly, a good performance was one where the workers managed their feelings in a way that created the right emotional expressions that were pleasing and satisfying to their customers. Hochschild contended that actors had two strategies at their disposal when attempting to achieve their goal of customer satisfaction. They could *surface act* – mask their true feelings with a smile, or they could *deep act* – modify their internal feelings to bring them in line with their smiling expressions.

Regardless of the strategy used, Hochschild contended that emotional labor was, at heart, an effortful undertaking that necessitated the unpleasant requirement of relinquishing control over one's own emotions in compliance with organizational demands. In writing about the term, she lamented the commoditization of private emotions, arguing that it could be psychologically debilitating for employees compelled to engage in it. This led to her overarching proposition that as a difficult and onerous aspect of one's job, emotional labor must result in *job stress and burnout*. As we shall see, stress and burnout remain one of the central themes guiding the emotional labor literature.

An Interactionist Approach

Morris and Feldman (1996) adopted an interactionist model when defining emotional labor. Arguing that it consisted of "the effort, planning, and control needed to express organizationally desired emotion during interpersonal transactions" (p. 987), they noted that individuals make sense of the emotions experienced and expressed by considering their social

context. Importantly, Morris and Feldman took the term "emotional labor" at face value contending that even when experienced and expressed emotion were congruent with each other, there was still some labor, i.e., *effort*, involved in displaying the required emotions for the job. Additionally, they contended that emotional labor consists of four dimensions – frequency of emotional display, attentiveness to emotional displays, variety of emotions, and emotional dissonance. Finally, they argued that of the four dimensions described, only the mismatch between felt and expressed emotion, i.e., emotional dissonance, should make compliance with display rules a difficult and labor intensive task. Hence, emotional dissonance was unique in consistently predicting job burnout and stress.

Implicit in the Morris and Feldman definition of emotional labor is the idea that the emotional laborer must experience some conflict, and hence expend some amount of effort, before s/he merits having engaged in it. If the desired emotion comes naturally, there is no effort, and no emotional labor involved in display rule compliance. Others (e.g., Rubin et al., 2005) also agree that "if one does not experience dissonance, there will be no motivation to act, to "put on a face", and thus, no emotional labor" (p. 195). According to this view, emotional labor must necessarily be a forced set of behaviors, an unnatural act conflicting with inner feelings, that is undertaken by the service provider in order to live up to organizational demands. Rubin et al. (2005) argue that perceived dissonance is an affective state that occurs prior to emotional labor. Much like the classic notion of cognitive dissonance, emotional dissonance is a state of discomfort that one is motivated to reduce and minimize; emotional labor, then, is the motivated act to reduce emotional dissonance.

A Behavioral Approach

Traditional notions of emotional labor stand at odds with Ashforth and Humphrey's (1993) definition of emotional labor as "the act of displaying appropriate emotion" (p. 90). This focus on observable behaviors singles it out from other definitions as it avoids addressing the presumed underlying emotion that gave rise to a particular emotional expression. As the authors note, it is the visible compliance with display rules (themselves norms regarding appropriate *behavior*), rather than an internal state, that create a particular affective experience for customers. Moreover, in disentangling emotional experiences from emotional expressions, Ashforth and Humphrey justify the idea that compliance with display rules might come naturally, i.e., without the need for emotion management. Thus, they argue that even displays of genuinely felt emotion ought to be considered acts of emotional labor because they represent a legitimate strategy of doing one's job, albeit without the "effort" that Morris and Feldman felt was a necessary ingredient.

Ashforth and Humphrey are not alone in this view. In their development of a discrete emotions emotional labor measure (DEELS), Glomb and Tews (2004) added the display of genuinely felt emotion as one of their factors, arguing that its inclusion allows for greater comprehensiveness in the emotional labor construct. Indeed, a factor analysis conducted by Diefendorff, Richard, and Gosserand (2005) on the dimensionality of emotional labor uncovered three factors, genuine emotion (along with surface and deep acting) being one of them. Furthermore, a subsequent study by Diefendorff, Richard, and Yang (2008) showed that displays of genuine emotion are the most frequently used strategy of all emotion

regulation strategies on the job. It seems reasonable to propose, then, that the concept of emotional labor ought to include the display of emotions as one of its components.

Recent Operationalizations of Emotional Labor

Each of the above approaches to emotional labor have their devotees who have tailored their emotional labor measures to conform to the guiding principles of their dominant approach. However, by far the most common way to operationalize emotional labor has been through its measurement as surface and deep acting. Recall that Hochschild (1983) considered both forms of emotional labor as internal efforts to regulate one's emotions, with surface acting focusing on regulating emotional displays and deep acting focusing on regulating feelings. Since then, Grandey (2000) has proposed that surface and deep acting be used as an integrative guide to understanding emotional labor as it is not value laden, it differentiates between different outcomes likely to result from these two strategies, and maps cleanly onto an existing theory of emotion regulation (Gross, 1998). Surface acting is measured with items such as "fake a good mood" and "put on a show or performance" while deep acting is measured with items such as "tried to actually experience the emotions I must show" and "work hard to actually feel the emotions I need to show to others." Subsequent research conducted by Grandey and colleagues (e.g., Brotheridge and Grandey, 2002; Grandey, 2003), for instance, clearly shows that whereas surface acting results in stress and burnout, deep acting serves as a buffer against these negative psychological outcomes. Numerous other scholars have also adopted these terms in their measurement of emotional labor (e.g., Judge et al., 2009).

A few scholars have bypassed the use of the surface and deep acting terms, preferring instead to directly measure emotional labor as a type of "emotional effort." Proponents of Morris and Feldman's view of emotional labor typically focus on the component of emotional dissonance as a necessary ingredient within emotional labor. Schaubroeck and Jones (2000), for example, operationalized emotional labor as the psychological experience of individuals required to express positive emotions on the job that they did not authentically feel, and to suppress negative emotions that they did feel. They found that emotional labor – the perception of demands to express positive emotion and suppress negative emotion – predicted negative symptoms of health, especially among individuals who did not identify with their organization.

Similarly, work by Rupp and Spencer (e.g., Rupp and Spencer, 2006; Spencer and Rupp, 2009) stuck to a more literal interpretation of emotional labor as essentially relating to emotional "effort." In this regard, they, too, adopted Morris and Feldman's perspective in approaching emotional labor as an effortful undertaking done to regulate one's feelings in compliance with organizational demands. Utilizing sample items such as "I tried hard to act excited" and "I tried hard to suppress my irritation and anger" they developed their own measure of emotional labor that tapped the extent to which abiding by organizational display rules constituted an effortful endeavor. In keeping with Morris and Feldman's theory of emotional dissonance, these authors reasoned that obedience to display rules becomes effortful when individuals experience a disconnect, or dissonance between their spontaneous emotions and those that are required for display. For instance, in their 2006 study, Rupp and Spencer examined participants' emotional labor as a function of the level of customer

injustice experienced in a customer service simulation. In a follow up study, Spencer and Rupp (2009) used the same measure of emotional labor to study participants' emotional labor levels experienced in response to customer injustice extended to a coworker. Their main proposition, for which they found robust support, was that unfair customers stirred dissonance and negative emotion, which in turn made the act of emotion management more laborious.

In contrast to the scholars above, followers of Ashforth and Humphrey's theory of emotional labor have, not surprisingly, focused on emotional labor as a set of observable behaviors. Using the term *affective delivery*, several researchers have examined the *outcome* of emotion regulation efforts taken to comply with organizational display rules. Affective delivery is conceptualized as a concrete set of behaviors that others can observe; hence, smiling, making eye contact, thanking customers, and greeting them, are all behavioral manifestations of an inner emotional regulation undertaking. For instance, in a study involving shoe salespersons, Tsai (2001) examined observer ratings of employee affective delivery and their relationship with customer reports of behavioral intentions, finding that customers indicated greater intentions to return to the store when their salesperson displayed positive emotions during their interactions.

A follow up study by Tsai and Huang (2002) showed that customer in-store mood explained the relationship between employee affective delivery and customer behavioral intentions. Similar findings were provided by Pugh (2001) who used a sample of bank tellers and their customers to study the link between employee positive affect and customer mood and evaluations of service quality. He found evidence for an indirect relationship between employee displays of positive emotion and customer evaluations of service quality, showing that customers "caught" the positive emotions displayed by their service providers, leading them to experience greater satisfaction with the encounter. Taken together, these findings imply that it is practically useful to study emotional labor in behavioral terms, as it affords researchers the opportunity to test its association with organizationally relevant outcomes such as customer attitudes and behaviors.

One notable study drew from both the Hochschild and Ashforth and Humphrey traditions to test the relationship between the psychological and behavioral forms of emotional labor (Grandey, 2003).

Using self reports of surface and deep acting, and coworker reports of affective delivery, Grandey found a positive relationship between deep acting and affective delivery, and a negative relationship between surface acting (but not deep acting) and affective delivery, thus showing the practical use of differentiating between the internal emotion regulation attempts.

Glomb and Tews (2004) are unique in including, in their operationalization of emotional labor, a facet for the expression of naturally felt emotion. Calling their measure the discrete emotion emotional labor scale (DEELS), they adopted a behavioral approach in measuring three primary facets: 1) the expression of positive emotions, 2) the suppression of negative emotions, and 3) the expression of genuine emotion.

Diefendorff and Richard (2008) expanded on the notion of display rules by differentiating between the more well-known idea of prescriptive display rules (Diefendorff and Richard, 2003; Grandey, 2000; Rafaeli and Sutton, 1990) and the lesser known idea of contextual display rules (Ekman and Friesman, 1975).

Prescriptive display rules are organizational norms that dictate the emotional expressions that are expected of employees, whereas contextual display rules are guides that influence emotional expressions at any given moment. The latter depend on an individual's felt emotion

as well as the target with whom they are interacting. Contextual display rules are essentially emotion regulation strategies that a person may decide to employ at any given time depending on the amount of discrepancy they perceive between an expected emotion and their felt emotion. Following Ekman and Friesman's (1975) theory, Diefendorff and Richard went beyond the simple dichotomy of express and suppress (emotions) and parsed these strategies into a) the faithful expression of felt emotion, b) amplify (the expression of felt emotion with greater intensity), c) neutralize (cover up felt emotion with a neutral appearance), d) deamplify (express felt emotion but with less intensity), e) mask (smile to cover up felt emotion), and qualify (express felt emotion, but then smile to soften the blow). In another study, Diefendorff and Gregarus (2006) found that employees tended to resort to the neutralize and deamplify strategies the most while amplify was used the least.

Commonalities

All of the above conceptualizations seem to broadly agree that emotional labor involves a family of related constructs pertaining to the manipulation of emotions at work. That is, the labor is less perhaps the "effort" that Morris and Feldman focused on, but rather, a type of work where the use of emotions are an integral component of the job. Scholars would do well, therefore, to recognize that "working with emotions" necessarily involves both an internal emotion regulation effort as well as an outward emotional display. This chapter therefore uses a two-pronged approach to defining emotional labor.

Specifically, it is *a) the regulation and b) display of emotion at work*. Accordingly, it appears reasonable that any operationalization of emotional labor ought to measure both emotional regulation as well as emotional displays, or at least to justify the use of one over the other measure.

Drawing from Hochschild's original work, as well as Ashforth and Humphrey's notion of genuinely felt emotion, it is argued that any form of emotion regulation whether it is surface or deep acting or even the process of feeling the "right" emotion for the job, maps onto the first part of the emotional labor definition.

This should be measured by self-reports as only individuals can identify the regulatory strategy they use at any given time. On the other hand, emotional displays constitute the second part of the emotional labor definition. These could be measured with both self and other reports as this form of emotional labor is observable and outwardly measurable. In sum, emotional labor should be operationalized as regulatory effort as well as a set of behaviors that can be observed by a third party. In the latter respect, we go back to Ashforth and Humphrey's idea of emotional labor as a form of affective delivery (Grandey, 2003; Tsai and Huang, 2002).

Sometimes these behaviors are performed well, and they are thus seen as sincere, authentic and genuine. While Grandey and colleagues would argue that they stem from deep acting efforts, others (e.g., Glomb and Tews, 2004) might contend that they are merely expressions of genuinely felt emotion that just happen to match the organizational display rules.

At other times, however, these behaviors represent clumsy attempts at attaining that sincerity and instead come off as fake, robotic, and stilted, arguably the product of emotional dissonance, and internal surface acting attempts. Together, internal regulatory attempts,

whether surface or deep acting, are expected to differentially predict outward behavioral displays, i.e., affective delivery.

New Interpretations of Old Evidence

In recognizing that emotional labor involves both regulatory efforts as well as behavioral products, it is first necessary to re-examine where each of these sub facets fall within a nomological network. Further, upon a review of the field, it also becomes necessary to challenge an existing assumption regarding the role of emotional labor as a predictor of organizational stress. Thus, before presenting a model of emotional labor, it is fitting to consider alternative ways of interpreting the existing research with respect to the relationship between emotional labor (broadly defined) and stress.

Reinterpreting the Surface Acting – Stress Link

A received piece of wisdom in the emotional labor literature is that organizational demands requiring employees to express emotions they do not necessarily feel trigger job-related stress. The idea is that being forced to act out of character, i.e., surface acting, produces feelings of inauthenticity and exacts a cost in terms of emotional wellbeing. Indeed, several studies find support for this notion (Bono and Vey, 2005; Brotheridge and Grandey, 2002; Grandey, 2003; Schaubroeck and Jones, 2000; Wharton, 1993). Laboratory studies also reveal that emotional suppression leads to unhealthy consequences such as burnout and job dissatisfaction, whereas cognitive change strategies that attempt to modify internal emotion, deep acting strategies, are healthier alternatives (Gross and Levenson, 1993; John and Gross, 2004).

It is conceivable that affective events prime the worker for stress and sub par performance when the going gets tough. But the venting literature reminds us that it is perhaps not the bottling up of negative feelings per se that leads to stress (after all, letting them all doesn't help either, see Bushman, 2002) so much as an environmental trigger (e.g., hostile customer exchanges) that makes these organizational rules particularly difficult to follow (Grandey and Braubarger, 2002). Arguably, it is the combination of display rules in the face of negative affective events that creates both a discomfort (stress appraisal) and a need to emotionally regulate oneself (surface acting). Thus, the ever present correlation observed between surface acting and stress is subject to the three possible interpretations of any correlation: 1) surface acting causes stress, 2) stress causes surface acting, and 3) surface acting and stress might both be outcomes of a shared antecedent. Of particular note is the third interpretation as it is guided by an understanding of the difficulty of ruling out alternative explanations when interpreting correlations. Said differently, the robust finding of a correlation between surface acting and stress does not provide irrefutable evidence that surface acting leads to stress as the emotional labor literature implicitly argues time and again, but instead calls into question the common factor(s) that might have sparked both outcomes.

A more pertinent phrasing of a question that emotional labor researchers continue to tackle is this: What are the sources of stress in emotional labor jobs that also make surface

acting (and hence poor affective delivery) a likely consequence? The present research suggests that the stressors discussed above concerning display rules, hostile customer exchanges, and other negative affective events spark a cluster of stress-related reactions, with surface acting, burnout, and poor affective delivery being the most commonly studied set of such responses.

Several studies support the assertion that the very stressors that evoke emotional labor, also give rise to a host of other negative outcomes including negative affect, burnout, and sub par affective delivery. Grandey, Dickter, and Sin (2004) used a stress-based model to explain the relationships between customer verbal aggression, emotional exhaustion, and absenteeism. They argued that verbal aggression raises employees' negative affect and physiological arousal because it sends a signal that the customer's needs are not being met. They found that employees who construed the event as stressful (i.e., those with high stress appraisals) were more likely to report emotional exhaustion and take time off from work than those who construed the event as less stressful. Although the authors speculated that emotional regulation must have been responsible for driving the relationship between customer verbal aggression and the stress-based responses of exhaustion and absenteeism, they did not directly measure emotional regulation. This finding further suggests that it is not the exercising of emotional regulation per se that leads to stress, but the perception of an affective event as stressor, i.e., a threat to one's well-being, that succeeds in bringing about strained reactions such as exhaustion and job burnout.

In another study, Grandey, Kern, and Frone (2007) found that customer verbal aggression led to emotional exhaustion in all types of jobs, not merely ones that emphasized service with a smile. The authors initially predicted that the link between customer abuse and exhaustion would be more pronounced in emotional labor versus non emotional labor jobs. In light of their null finding regarding this interaction, they explained that employees must hold a "customer sovereignty view" in all types of jobs, not just emotional labor jobs, and regulate their emotions accordingly. However, it seems clear that these results are suggestive of the stressor inherent in hostile exchanges. They imply once again that customer aggression creates negative emotions because they signal unmet needs; this creates a fight or flight response that depletes resources creating the experience of stress and other strains.

More recently, a study conducted on health care providers supported that patient mistreatment predicted job burnout, and that this effect was partially mediated by surface acting (Grandey, Foo, Groth, and Goodwin, 2012). Although the researchers found unique effects for mistreatment and surface acting on burnout, the cross-sectional nature of the survey research calls into question the directional nature of this finding. One explanation for this result comes from the conservation of resources theory (COR, Hobfoll and Freedy, 1993) which proposes that primary stressors including interpersonal mistreatment and conflict deplete psychological resources, contributing to exhaustion and fatigue. Surface acting might be considered a sub optimal coping response to the stress, which Grandey et al. (2012) argued further leads to further resource loss and depletion. However, it is possible to interpret the evidence in a way that places job burnout stemming from interpersonal mistreatment as a correlate of the ineffective coping reaction of surface acting.

Other studies reveal that circumstances triggering negative emotions tax both emotion regulation attempts (Rupp and Spencer, 2006; McCance, Nye, Wang, Jones, and Chiu, 2013) as well as behavioral responses (Beal et al., 2006). Rupp and Spencer (2006) found unfair customers alone triggered anger making it more difficult for employee victims to abide by

company display rules. And Beal et al. (2006) showed that when employees experienced negative emotions, the quality of both self and supervisor reports of their affective delivery depended on the extent to which the workers labored to cover up their negative emotions. In other words, those who labored to hide their negative emotions with surface and deep acting attempts reported and were in fact seen as doing a better job at providing friendly service.

As the above discussion makes clear, despite the strides that the emotional labor construct has made in terms of development and evaluation, scholars still debate where it fits within its nomological network. For instance, in contrast to past researchers (e.g., Rupp and Spencer, 2006; Beal et al., 2006) who examined negative emotions as antecedent to emotional labor, Judge et al. (2009) expected that emotional labor (defined as surface and deep acting) would predict (rather than be the result of) state negative affect, which in turn would create feelings of emotional exhaustion and job dissatisfaction. Data from a sample of employees provided mediational support for this notion when surface acting (but not deep acting) was the proposed predictor; however, Judge et al. did acknowledge that the causal direction of the mediational relationships was open to question. Even so, given the evidence that negative affect could at times precede emotional labor and at other times be an outcome of it, it becomes plain that the psychological nature of all these constructs under consideration render them close kin with each other, and perhaps act as the psychological offspring of a common stressor. Drawing from stress theory, it is therefore logical to suggest that these psychological reactions – whether surface acting, emotional exhaustion, or job dissatisfaction – might represent different markers of an underlying psychological stress-related reaction taking place in response to an external stressor.

As a first step toward rethinking where surface acting and emotional exhaustion fit within a nomological network, it appears fitting to return to the extant literature and acknowledge that there is perhaps more than one way to interpret the evidence. Most of the studies conducted in this field are cross sectional in nature, making the causal sequence open to debate (e.g., Brotheridge and Grandey, 2002; Grandey, 2003; Grandey et al., 2012; Schaubroeck and Jones, 2000).

For instance, Brotheridge and Grandey collected survey data from employees working in a variety of occupations and analyzed these data using bivariate correlations. Based on observations of positive relationships between surface acting and all three dimensions of burnout (emotional exhaustion, depersonalization and reduced personal accomplishment), they concluded that surface acting must have preceded these burnout dimensions. In reality, it is just as plausible that surface acting could have been an outcome of burnout as it could have been a correlate occurring in response to an unmeasured stressor.

Similarly, in a study involving a sample of administrative assistants, Grandey (2003) interpreted findings of a positive relationship between both surface and deep acting and emotional exhaustion as evidence that the acting must have preceded emotional exhaustion. But it is also possible that exhausted workers might have resorted to surface acting because they did not intrinsically feel happy to begin with and so had little energy to do anything other than plaster on a fake smile.

Even in an experience sampling study done by Judge et al. (2009), it is possible to interpret the evidence in a way that defies theory and conventional wisdom. Judge et al., for instance, revealed that surface acting led to self reports of emotional exhaustion, but acknowledged that it was just as possible that exhaustion could have led to surface acting instead of vice versa.

Employee Strains
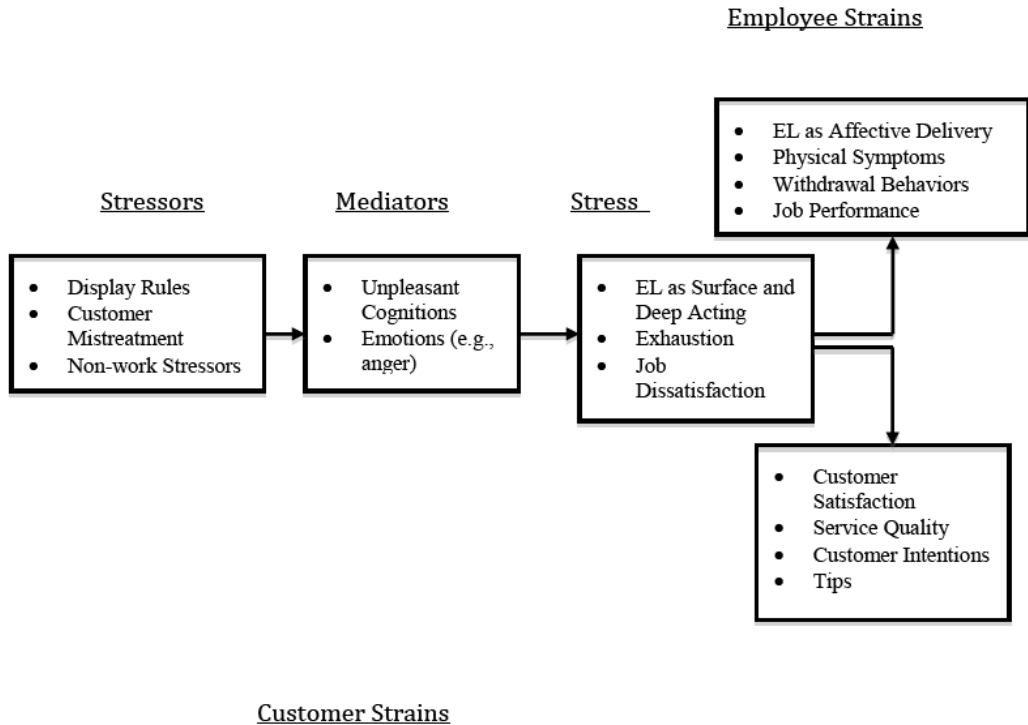
Figure 1. A Stress-Based Model of Emotional Labor.

It is certainly true that all the above interpretations stem from Hochschild's original theory of emotional labor. This classic line of reasoning has long argued that any form of emotion management that requires one to express unfelt emotions as part of one's job depletes emotional resources, and results in feelings of inauthenticity and fatigue. But given what we have learned in the time since Hochschild's original study, the progress the field has made in the intervening years both in terms of conceptual and methodological advances, and the uncovering of counterintuitive and counter-theoretical findings, it appears that the time is ripe to rethink and reorganize the linkages in a model of emotional labor. Figure 1 provides a new model of emotional labor that I describe in detail below.

A STRESS-BASED MODEL OF EMOTIONAL LABOR

The present model of emotional labor is rooted in the stress literature. Given the pervasive taxing nature of emotional labor, it is appropriate to draw upon models of stress in understanding the antecedents and consequences of emotional labor. Lazarus and Folkman (1984) define stress as a relationship between a person and his/her environment that is perceived by the individual as taxing and a threat to their well-being. This definition acknowledges that stress is more than simply a noxious trigger and a strained response. It is in fact a person's perception of the relationship between stimulus and response, and so accommodates the perceiver's unique sensitivity to this relationship.

If one were to tease out the elements within the person-environment relationship as espoused by Lazarus and Folkman, three main features would emerge: stressors – environmental threats, stress – immediate physiological and behavioral reactions, and strains – observable outcomes of stress. Lazarus and Folkman argue that a key ingredient guiding the experience of stress is an individual's cognitive appraisal of the stressor. If an individual construes the stressor as taxing, he/she will experience stress; if not, his/her reaction will be muted. In arguing for the importance of the role of cognitive appraisal, the authors recognize that individuals uniquely differ in their sensitivity to potential environmental stressors.

Selye (1975) used the term "stressors" to denote external environmental stimuli that threaten to disrupt a person's homeostasis. These stimuli can be major cataclysmic events or they may be daily hassles. Examples of cataclysmic events include the death of a loved one, experiencing a natural disaster, or even being laid off from work. Less dramatic, though far more common stressors are daily hassles. Workplace examples might include not getting along with a coworker, having too many responsibilities, or not having enough resources to do one's job. Stress theory maps well onto a model of emotional labor in which stressors, stress, and strain outcomes all play central parts. I discuss each of these elements in turn in the sections below.

Stressors: Predictors of Emotional Labor and Other Negative Consequences

As indicated above, daily hassles are low-grade organizational stressors that accumulate to result in stress. In customer service jobs, a variety of stressors have been identified that produce emotional labor and other negative outcomes. As argued earlier, emotional labor is but one of many symptoms of organizational stress that collectively result from the psychological appraisal of stressors as taxing sources of threat.

Display rules. Display rules – norms sanctioning appropriate emotional expression – have long been proposed as primary determinants of emotional labor (Ashforth and Humphrey, 1993; Diefendorff and Richard, 2003; Grandey, 2003; Gosserand and Diefendorff, 2005; Rafaeli and Sutton, 1989). Indeed, the absence of display rules assumes that any emotion management attempt is one of free will, and hence devoid of internally regulated emotional labor. Studies reveal positive relationships between display rules and most forms of emotional labor (surface acting, deep acting, and affective delivery), especially when employees perceive the existence of display rules (Diefendorff and Richard, 2003) and are committed to following them (Gosserand and Diefendorff, 2005). For instance, a recent study by Gosserand and Diefendorff on the moderating role of commitment to display rules, found that perceptions of display rules predicted surface acting, deep acting, and positive emotional displays (affective delivery) for individuals high in commitment to display rules. In another interesting study on the influence of display rules, Goldberg and Grandey (2007) found that display rules negatively impacted task performance such that individuals made more errors on a task when they were obliged to follow display rules than when they were not. Display rules were also marginally correlated with emotional exhaustion. Based on the above evidence, it appears reasonable to conclude that display rules may be construed as stressors that serve to increase both self-reported emotional regulation (surface and deep acting) as well as other negative employee consequences.

Interpersonal mistreatment. Perhaps one of the most powerful drivers of emotional labor is customer mistreatment directed toward service providers (Grandey et al., 2004; McCance et al., 2013, Rupp and Spencer, 2006; Spencer and Rupp, 2009). Given that customers are the primary target of appropriate emotional displays as well as the main source of business, it is not surprising that emotion management should be at its peak during interactions with customers, what Grandey, Kern, and Frone (2007) termed "organizational outsiders." Indeed, company slogans such as "the customer is always right" and mandates dictating how employees should meet and greet customers pressure employees to endure even difficult interactions with a smile. Early research demonstrated that customer demand – defined as the degree of complexity and duration of a customer-service encounter – increased employees' use of positive emotional displays to control the interactions (Rafaeli and Sutton, 1990). Since then, several researchers have shown that when customers become verbally abusive (Grandey et al., 2004), hostile (Goldberg and Grandey, 2007), impatient and irritable (McCance et al., 2013) or simply unfair in how they handle themselves with service providers (Rupp and Spencer, 2006; Spencer and Rupp, 2009), they tax their servers' cognitive and emotional resources increasing emotional labor and exhaustion, and lowering task performance (Goldberg and Grandey, 2007). Furthermore, one field study found that verbally abusive customers proved more emotional exhausting than more neutral customers, leading to more surface acting and absenteeism (Grandey et al., 2004). Kern and Grandey (2009) reported similar results in demonstrating that customer incivility is a social stressor that increases emotional exhaustion through the creation of stress appraisals. It stands to reason, therefore, that customer treatment may be viewed as a stressor that triggers stress appraisals and stress-related reactions, one of which is emotional labor.

Other stressors. Few other determinants of emotional labor have been uncovered in a literature primarily devoted to examining its outcomes. It is worth noting, though, that there are indeed additional sources of emotional labor, external to the work context, that remain under-studied and less examined. One study by Wharton and Erickson (1993) found that family life affected felt emotions on the job. A more recent study by Diefendorff, Richard, and Yang (2008) replicated these findings in showing that both work-related matters (e.g., work overload and underload) as well as non-work related aspects (e.g., one's personal life) influenced the experience of negative emotions at work, which, in turn, impacted the use of various emotion regulation strategies. More research is needed to investigate other work and non-work related factors that could potentially affect emotional labor at work.

Mediators in the Stressor-Stress Relationship

A logical question to ask when applying a stress model to emotional labor is one that concerns procedure. What, in other words, are the psychological mechanisms that cause stressors to lead to stress reactions such as emotional labor (i.e., surface and deep acting), emotional exhaustion, and burnout? The research shows that two contributing factors to the experience of stress involve the creation of negative cognitions and emotions.

Stress theory predicts that stressors spark stressful outcomes if the stressors are simply cognitively viewed as threats to one's system (Lazarus and Folkman, 1984). For instance, customer-service representatives who perceive customers as hostile and demanding, run a greater risk of experiencing emotional labor than those who interpret the hostility in a less

personal light (Grandey, et al., 2004; Kern and Grandey, 2009). Grandey et al. (2004) found that call center employees who perceived customer verbal abuse as acts of personal retribution were more likely to suffer emotional exhaustion and absenteeism than coworkers who did not take the abuse so personally. Another study involving minority workers revealed that amongst those who strongly identified with their race, stress appraisals mediated between customer incivility and emotional exhaustion (Kern and Grandey, 2009). On the other hand, stress theory predicts that individuals who appraise a potential stressor as harmless are likely to be buffered from a stress-based response. As Hochschild (1993) noted, flight attendants who reappraise irritable passengers as small children are unlikely to suffer from emotional labor reactions.

Stressors also impact emotional labor if they arouse unpleasant cognitions of a different nature. A justice theory involving fairness-based counterfactual thinking argues that workplace stressors are deemed unfair if they initially stimulate thoughts about what could and should have occurred but did not (Folger and Cropanzano, 2001). Unfairness judgments, in turn, are expected to contribute to heightened negative reactions such as job dissatisfaction and withdrawal. In an emotional labor application of this theory, Spencer and Rupp (2009) found that counterfactual thinking mediated in the relationship between customer injustice and emotional labor; individuals who interacted with unfair customers experienced greater counterfactual thinking (and subsequent emotional labor) than those who interacted with more fair customers.

Stressors can also contribute to stress-based emotional labor through the path of negative emotions. In her model of emotional labor, Grandey (2000) postulated that emotional labor would arise from workplace events that were affective in nature, suggesting that they would lead to emotional labor through the triggering of negative emotions. Rupp and colleagues speculated that the arousal of discrete negative emotions would mediate between customer injustice and employee emotional labor. Participants posing as customer service representatives in a set of customer service simulations reported more anger (McCance et al., 2013; Rupp and Spencer, 2006) and guilt (Spencer and Rupp, 2009) when interacting with unfair or demanding customers, which in turn led to higher levels of emotional labor. These findings were replicated in a sample of German bank tellers (Rupp, McCance, Spencer, and Sonntag, 2008). Other research also confirms that affective events stimulate annoyance and irritation, which in turn foster specific emotion regulation strategies such as cognitive change and emotion suppression (Diefendorff et al., 2008). Indeed, the very act of chronic negative emotional suppression is sufficient to induce unpleasant employee outcomes such as job dissatisfaction and turnover intentions (Côtè and Morgan, 2002). In sum, it appears evident that a large reason as to why stressors impact emotional labor is that they arouse negative emotions and provoke conflicting cognitions.

Linkages between Stress and Employee Strains

Lazarus's model of stress indicates that strains are observable outcomes that manifest from the psychological appraisal of a stressor as a threat to one's wellbeing. As argued above, emotional labor is one of the markers of stress. As such, it is expected to result in a variety of strains relevant to both the employee as well as to the employer. The discussion below lists

some of these strains that emotional labor researchers have found to result from the stress of emotional labor.

Affective Delivery. Earlier in this paper, affective delivery was described as the behavioral component of a two-part definition of emotional labor. In particular, it is the outward set of emotional acts such as smiling and providing greetings that are noticeable to the public (Grandey, 2003; Pugh, 2001; Tsai, 2001; Tsai and Huang, 2002). As such, it is a set of behaviors that may be sensed by both the eyes and ears, and is thus of particular relevance to customer-oriented organizations.

Research indicates that affective delivery is influenced by several of the psychological phenomena described in the section above. For instance, Grandey (2003) revealed that job satisfaction operated on affective delivery through the path of acting. That is, the more satisfied a person was with their job, the less they had to act, which in turn predicted higher ratings of affective delivery. Similarly, in an experience sampling study involving cheerleaders, Beal et al. (2006) looked at the role of emotional labor (which they defined as the perceived difficulty in maintaining display rules) in the relationship between negative emotions and self- and supervisor reports of affective delivery. In addition, they hypothesized that surface and deep acting would moderate between this relationship such that it would become weaker when more effort was taken to regulate emotions. The data comported with these hypotheses; perceived difficulty in maintaining display rules mediated between negative emotions and self-ratings of affective delivery. Finally, Diefendorff and Richard (2003) showed that employee perceptions of display rules positively affected coworker ratings of their emotional displays suggesting that when employees perceive demands to abide by display rules, they attempt to regulate their emotions which, in turn, influence their outward displays as well. In sum, it appears that when inner psychological processes (job satisfaction, emotional labor) are healthy, they facilitate positive emotional displays and improve affective delivery. But when psychological processes are already taxed and stretched, negative emotions likely leak to the surface giving rise to a strained form of affective delivery that is correspondingly low in quality and unlikely to lead to customer satisfaction.

Physical Symptoms. Schaubroeck and Jones (2000) found that emotional labor, defined as perceptions to express positive and suppress negative emotions, heightened negative symptoms of health in a sample of hospital employees. This effect was more pronounced for employees who were low in organizational identification. A meta analysis cumulated the results of several emotional labor studies and found evidence that emotional labor related more strongly to negative health symptoms than to any other employee or organizational outcome (Bono and Vey, 2005). It thus appears logical to consider physical symptoms as evidence of employee strains.

Withdrawal Behaviors. Employees who fall victim to the stressors of emotional labor may reconsider whether they are a good fit for their jobs (Grandey, 2000). Grandey (2000) speculated that when emotion regulation spills over into stress and burnout, employees are likely to engage in withdrawal behaviors. Two examples of withdrawal behaviors stemming from emotional labor demands are absenteeism (Grandey et al., 2004) and turnover intentions (Côté and Morgan, 2002). A study of call center workers conducted by Grandey et al. (2004) found that when customer verbal aggression was viewed through a stressful lens, it sparked stress appraisals making employee targets of such treatment more loathe to show up to work the following day, and record higher levels of absenteeism compared with coworkers who did not appraise customer aggression in such a stressful light.

If emotional labor and stress appraisals predict employee absenteeism, it is also likely that they predict other withdrawal behaviors such as work withdrawal and turnover intentions. Grandey (2000) surmised that one antecedent-focused emotional regulation method, situation selection, might involve not merely the selection of a different set of customers to serve, but the selection of an entirely different organization for which to work for employees left at the end of their rope. In support of this idea, Côté and Morgan (2002) found evidence in a longitudinal study that negative emotional suppression led to decreased job satisfaction and increased turnover intentions. Future research should also look at the relationship between emotional labor and work withdrawal. If new jobs are hard to come by, stressed out workers looking for a reprieve from customer aggression are likely to prolong breaks, show up late to work, or engage in other work withdrawal tactics to stall from interacting with the source of their stress.

Linkages between Emotional Labor and Customer Strains

Customer Attitudes. The bulk of the research on customer reactions to employee service has focused on responses to employee emotional *displays*, i.e., affective delivery. Pugh (2001) looked at the relationship between employee positive affect and customer evaluations of service quality and feelings. He found that the display of positive emotion predicted both customer in-store mood as well as evaluations of service quality, suggesting that the creation of a good mood might be an explanation for why customers were more satisfied with employees who smiled more and displayed more positive affect. Others (e.g., Barger and Grandey, 2006; Mattila and Enz, 2002) have replicated these results finding that customers evaluate their service more favorably and report stronger feelings of satisfaction when interacting with friendly versus unfriendly servers. One study investigated whether displays of positive affect influenced customer behavioral intentions among a sample of customers shopping at shoe stores (Tsai, 2001). It found that positive emotional displays predicted customer intentions to return to the store as well as pass positive comments to a friend. In a follow up study, Tsai and Huang (2002) found that the creation of customer in-store mood and perceived friendliness (of the service agent) mediated between employee affective delivery and customer behavioral intentions to return to the store and engage in positive word of mouth. Such findings have practical implications in that they suggest that customers recognize and value good customer service.

Less research has been conducted on the effects of employees' internal emotional labor strategies on customer reactions. One exception concerns a recent dyadic survey study on pairs of employee-customer interactions that tested whether customers reacted more positively to employees' regulatory attempts at deep acting versus surface acting (Groth, Hennig-Thurau, and Walsh, 2009). It found that deep acting garnered positive ratings of customer orientation and service quality, whereas surface acting resulted in no such gains. Moreover, this effect was more pronounced in situations where customers could accurately detect the emotional labor strategy employees had engaged in. Put differently, employee authenticity, i.e., deep acting signaled to customers a genuine interest in their satisfaction, resulting in more positive customer outcomes especially for those customers who recognized the genuineness behind the service delivery offered to them. Similarly, customers who could

accurately decode employees' surface acting strategy reported lower levels of customer orientation and service quality.

Tips. Do positive emotional displays reap financial gains? This is the burning question that academics have provocatively proposed to organizations salivating for better business. One early study conducted by Tidd and Lockhard (1978) suggested that smiling waitresses earned higher tips than their non-smiling coworkers. A recent study confirmed this finding in a sample of restaurant servers (Chi, Grandey, Diamond, and Krimmel, 2011). Servers who displayed deep acting rather than surface acting when interacting with customers reported earning higher tips. Sutton and Rafaeli (1988) expected that positive emotional displays would result in another tangible outcome – sales; instead, an unexpected negative correlation was observed.

In a more recent study of customers shopping at shoe stores, Tsai (2001) also speculated that customer satisfaction would lead to more sales of shoes, but the data did not support this hypothesis either. It is likely that the counterintuitive findings may be explained by store busyness. When stores are fast paced and lines are long, service providers do not have the luxury of engaging in positive and prolonged interactions with their customers, prompting a norm for more neutral displays.

This hypothesis was confirmed in an Israeli study of convenience clerks conducted by Rafaeli and Sutton (1990). They found that busy stores negatively correlated with the display of good cheer, suggesting that when stores were fast faced, employees are more able to "get away with" neutral displays and still make good sales. However, before profit-oriented organizations conclude that they can dispense with good customer service, it behooves them to note that while positive displays might not translate into more sales, they do pave the way for other beneficial outcomes (e.g., better word of mouth, customer satisfaction, and intentions to return) that build a solid reputation. This might, in turn, increase the odds for better business in the long run.

In sum, regardless of whether emotional labor is defined as an internal regulatory effort or an external behavioral display, authenticity of positive emotions remains the central ingredient driving favorable customer outcomes. As the above discussion makes clear, it might not be enough for organizations to simply impose emotional display rules, but also to encourage authenticity of positive emotion, if positive, tangible customer outcomes are to be achieved.

DISCUSSION

Emotional labor, clarified in this chapter as the regulation and display of prescribed emotions, has grown into a prominent area of research within organizational psychology. Although customer-contact organizations have long recognized that service with a smile makes good business sense, the emotional labor literature makes it clear that all smiles are not created equally, thus resulting in different levels of customer satisfaction and employee wellbeing.

Friendly displays governed by the strains of surface acting are unlikely to be viewed by customers as authentic (Grandey, Fisk, Mattila, Jansen, and Sideman, 2005), whereas those that are driven by deep acting or genuine positive emotion are more likey to result in high

customer satisfaction (Barger and Grandey, 2006; Pugh, 2001), more positive customer orientation and service quality (Groth et al., 2009), and even greater financial compensation (Chi et al., 2011). Moreover, when employees steer clear from triggers that tax and deplete their emotional resources, they become more adept at feeling the positive emotion they are expected to display in public, and reap psychological benefits in the process as well. It stands to reason, therefore, that service-providing organizations would do well from both a customer and employee perspective to implement selection and training policies that aim to maximize the occurrence of genuinely friendly emotions while minimizing those of a more artificial nature.

Practical Implications

One avenue toward the goal of increased customer and employee satisfaction is through employee selection. Workers high in traits such as extraversion or positive affect stand a better chance of tuning into positive display rules and carrying them out (Diefendorff and Richard, 2003). Additionally, because employees who utilize deep acting techniques are seen as better workers (Grandey, 2003; Totterdell and Holman, 2003), they are also likely to ensure greater levels of customer satisfaction (Groth et al., 2009). Beal et al. (2006) noted that cheerleaders who worked harder to suppress negative emotions with deep acting strategies delivered a better performance than counterparts who did not attempt to cover negative emotions with this strategy. Clearly, some individuals naturally gravitate to deep acting more readily than do others, making them better suited for jobs involving customer contact. As deep actors, they might also be high in the empathy dimension known as perspective-taking, which Rupp et al. (2008) found to serve as an especially useful safeguard against customer mistreatment, thus making individuals high in this trait ideal candidates for work in customer-service settings. Taken together, individuals who are naturally endowed with psychologically 'fit' traits are better candidates for selection into jobs that call for contact with a full spectrum of customers, than those who lack such traits.

Another way to secure both customer and employee wellbeing might be through attempts at modifying the work environment. Enhancing job autonomy (Grandey, Fisk, and Steiner, 2005), allowing social sharing of information in a safe environment following difficult service episodes (McCance et al., 2013), and giving workers respite breaks (Trougakos, Beal, Green, and Weiss, 2008), are just a sample of ways through which service might be provided with a more genuine smile, which in turn, would positively impact customer satisfaction.

Grandey et al. (2005), for instance, found that workers granted a high degree of autonomy (e.g., managers) experienced less emotional exhaustion following emotional regulation efforts than did workers without that level of job autonomy. A recent experience sampling study by Trougakos et al. (2008) also showed that respite breaks (defined as napping, relaxing, and socializing) influenced the performance of positive affective displays even after the effect of internal emotional experiences was controlled. Similarly, Totterdell and Parkinson (1999) provided evidence that employees trained in deep acting techniques experienced less burnout than those in a control group. Finally, in a recent customer-service simulation study conducted by McCance et al. (2013), participants encouraged to share their customer-service experiences with coworkers reported less anger compared to those who were not given an opportunity to make sense of these experiences through social sharing of

information. It is not a stretch of imagination to conclude that supportive work environments indirectly impact customer satisfaction through the path of employee job fulfillment.

Combining person and situational interventions, and consistent with emotion regulation theory, employees might also be trained to use antecedent-focused emotion regulation, rather than response-focused emotion regulation, in their attempts to create a more positive emotional façade (Gross, 1998). Similar to deep acting, antecedent-focused regulation encourages individuals to cognitively reappraise a situation prior to the full development of an emotion in a way that is conducive to the display an appropriate emotion that fits the prescribed display rule. More research should be done to expand the repertoire of training techniques organizations might draw upon to better prepare their workers for situations involving contact with verbally abusive customers.

Taken together, both individual differences, as well as employer-based interventions might serve as moderators in the links between organizational stressors and employee emotional labor.

CONCLUSION

Attempts to summarize emotional labor research inevitably boil down to discussions regarding its association with employee stress. Thus, stress remains a central feature in this literature. This chapter has attempted to reconceptualize the location of stress within emotional labor's nomological network. Rather than viewing stress as an outcome of emotional labor as much, if not all, emotional labor theorists have tended to do, the present chapter takes the approach that stress and emotional labor appear concurrently as mutual symptoms of the same underlying stressor (stress trigger). Additionally, this chapter has also sought to refine the emotional labor construct by discussing its two central components as an inner-directed regulation process, and an outer-directed behavioral process. Given these parameters, subsequent research should root itself in stress-related theories so as to provide a framework for discussions of control, resource depletion, motivation, and behavioral manifestations of emotional labor as a more unified construct. It is only after a common ground has been established through construct clean up and clarification, that this literature can move even further in advancing our understanding of its predictors and consequences.

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Chapter 4

JOB DESIGN AND EMOTIONAL EXHAUSTION IN HUMAN SERVICE JOBS**

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ABSTRACT

This chapter examines the relationships between work organization of hospital wards and mental workload of nurses, especially emotional exhaustion. For this purpose an observational, "objective" analysis of hospital ward organization is applied in order to avoid the limitations of self-reported questionnaires. The chapter examines by means of observation (five shifts per ward) which emotionally relevant characteristics of work organization of hospital wards (5 hospitals; 34 wards; 262 examined nurses) differ between wards. Based on six scales the wards can be classified concerning their quality of work organization (considering among other things ISO 6385 on Design of Work Systems). Objectively well designed wards and rather poorly designed ones significantly differ in nurses' perceptions of work organization, their perceived strain, and their medium-term emotional exhaustion. Scales measuring patient-centred objective organizational characteristics correspond significantly stronger with emotional exhaustion than those measuring generic characteristics which describe any kind of job. The approach is thought to assist work (re-)design because the highest levels of the applied anchored scales describe the desirable optimal quality of the respective characteristics.

INTRODUCTION

Experimental and field research concerning the relationships between job content or context and emotions have a long tradition since the outstanding contributions of Kurt Lewin

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** Professor Dr. Peter Richter dedicated on the occasion of his 70th birthday

and his co-workers (Lewin, Dembo, Festinger, & Sears, 1944). In this research the essential relations between goal achievement and emotions were stressed. In more recent research the role of goals is stressed again: "One of the most common ways of thinking about the causes and consequences of emotion is in relation to individual's goals." Extending this approach "four basic categories of causes of positive and negative emotions at work were found: Those relating … to the work task itself; one's personal situation and future; social relationships with co-workers and live-managers; and relationships with the organization as a whole" (Kiefer & Briner, 2006, pp. 196f). Accordingly, recent Philosophical Psychology stresses the relationships between emotions and the processes of action generation as well as action execution and control based on contribution of Cognitive Neuroscience (Zhu & Thagard, 2002).

In human service jobs interactions are a well-known source of emotions of service workers as well as of their clients (Grandey & Diamond, 2010; Hochschild, 1990; Nerdinger, 2011; Zapf & Holz, 2006). There are several reasons: An interaction may produce *automatically* empathic concern or even solidary behavior. Further, people attribute intentions to their partners or clients. These attributions may or may not correspond with their actual intentions. Nevertheless people evaluate the attributed intentions of clients and this evaluation may result in emotions. Moreover in interactive human service job emotions show *specific roles*: Emotions of the service workers are *working means*, if they influence emotions and behaviors of clients (sentimental work). Simultaneously the emotions of the jobholders theirselves may be one of their *objectives of work*, if they try to suppress unwanted and to produce desired emotions or emotional expression at least (emotional labor). The conventional implicite and the organizational explicite display rules of emotions or emotional expressions − for example service with a smile − determine these roles of emotions as working tools and as objectives of working activities (Hochschild, 1990; Trougakos, Jackson, & Biel, 2011).

Emotions are to be characterized by three features, (1) the experienced mental process, i. e. the feeling as emotional impression, (2) the spontaneously or deliberately produced emotional expression, and (3) the underlying physiological processes. Display rules require the presentation of societal or organizational desired emotional expression. Here the essential concept of emotional dissonance between the − by surface acting − produced emotional expression and the actually experienced emotional impression comes in. Sustained emotional dissonance may result in emotional exhaustion, a crucial factor of burnout (Kruml & Geddes, 2000; Leiter & Maslach, 2004; Zapf & Holz, 2006).

Emotional exhaustion is characterized by a couple of emotional items, mainly irritation, anxiety, hurry, aversion, disgust and the impressions of being burnt out and mentally empty (e. g., Maslach & Jackson, 1982). Emotional exhaustion corresponds with low intrinsic work motivation ($r = -.40$, $p = .001$), missing work satisfaction ($r = .52$, $p = .001$) and high aversion against clients ($r = .48$, $p = .001$) (Hacker & Reinhold, 1999).

The approach of emotion regulation in working processes and the approach of the entire mental regulation of working tasks are merely integrated up to now. The process model of emotion regulation (Gross, 1998a, b) hints at an integration: The distinction between response focused emotion regulation and antecedent focused emotion regulation by means of proactive cognitive attempts offers a possibility of an integration and, moreover, may become important for the prevention of emotional exhaustion by job design.

So far emotion management on the job seems to be limited on employee-centered attempts. These are reappraised by deep acting as antecedent-focused emotion regulation, suppression of undesired emotion expression and the faking of a required expression by surface acting as response-focused emotion regulation (Grandey, 2000; Diefendorff, Croyle, & Gosserand, 2005; Zapf, 2002). However, this limitation does not apply: "Proactive attempts to manage affective experience, such as selecting some situations rather than others, can serve as antecedent (before the response happens) form of emotion regulation …" (Isaacowitz & Blanchard-Fields, 2012, p. 4). Thus, emotion management turns to be a component of the more comprehensive self-control at work in favor of goal-oriented work behaviour (Baumeister, Vohs, & Tice, 2007; Schmidt & Neubach, 2010).

Recently, Grandey and Diamond (2010) discussed two perspectives which share the view that social interactions "are a critical job design feature" … due to the "dramatic shift from a manufacturing to a service-based economy" … "but have contradictory views about how they impact employee outcomes" (p. 338). These are the job design perspective and the emotional labor one. In order to bridge this gap, these authors discussed four dimensions of service behaviour (Grandey & Diamond, 2010; p. 339): "(1) Content and mode of communication, (2) temporal relationship, (3) interactional autonomy and (4) interactional complexity".

Following Action Regulation Theory (Hacker, 2003; Leontjew, 1979; Lewin, 1926) we propose not to interpret interaction in the narrow sense of communication only, but also to consider which features of the entire cooperation or co-production of employees with clients may have impact on employee outcomes. Thus, one may widen the approach of antecedent focused emotion regulation by means of job (re-)design and by training of coping strategies. Thereby a preventive aspect may be added to emotion management (Figure 1).

Although, in the following paragraph, we will stress the impact of job design, especially of work organization on employee outcomes, it is important to mention the antecedent-focused role of personal strategies, too, which cope with emotional stress. This applies, especially shielding by detached concern (Lampert, 2011; Lief & Fox, 1963). Figures 2 and 3 illustrate the effect of this strategy for the prevention of emotional exhaustion of teachers and clinicians (Hacker & Looks, 2007).
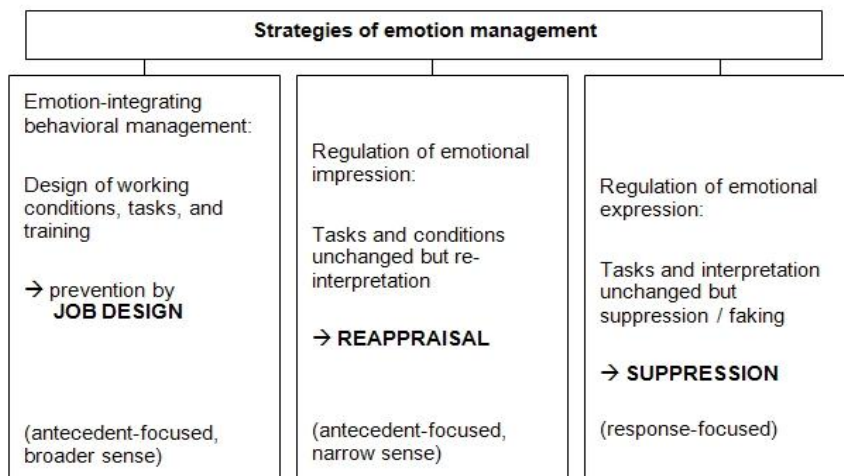
Figure 1. Enlarged strategies of emotion-integrating action regulation.
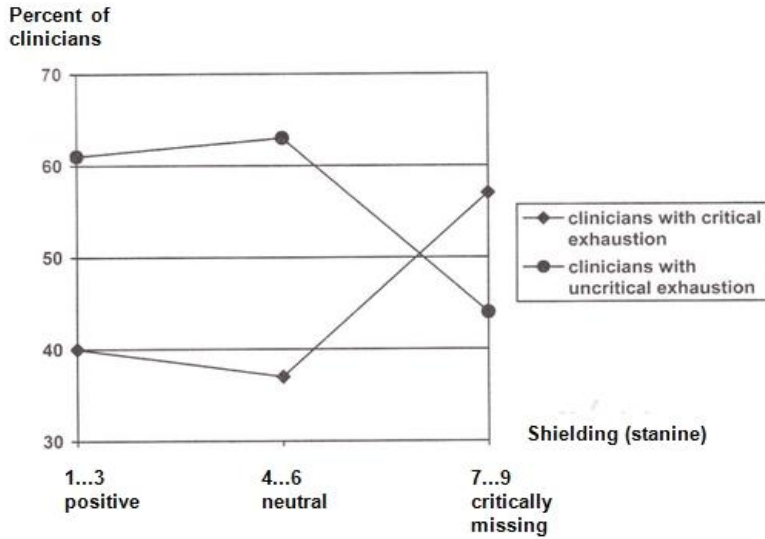
Figure 2. Effect of emotion management: relationship between emotional exhaustion and shielding by detached concern (scales of BHD-system, N = 119 clinicians; Hacker & Looks, 2007, p. 205).
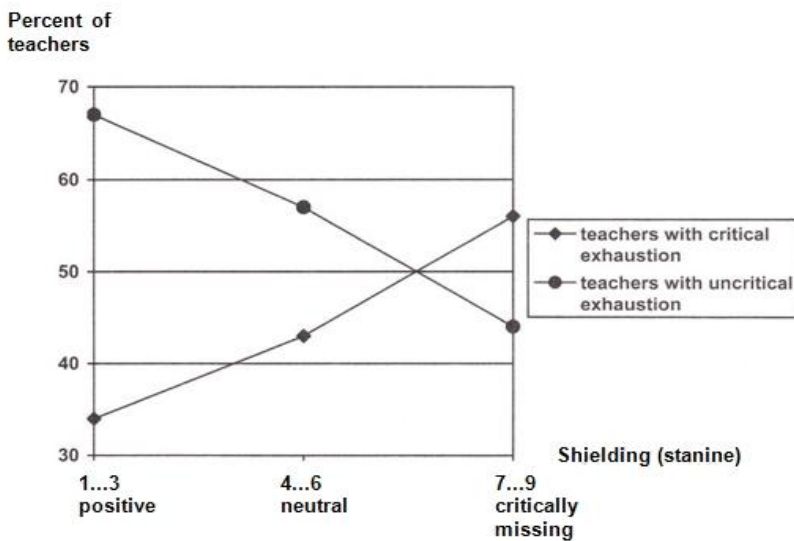
Figure 3. Effect of emotion management: relationship between emotional exhaustion and shielding by detached concern (scales of BHD-system, N = 139 teachers; Hacker & Looks, 2007, p. 208).

Obviously, besides job design the professional training of coping strategies may prevent emotional strain in human service jobs.

In the following paragraph we report on those features of work organization of hospital wards that are of interest for a preventive type of antecedent-focused emotion management by job design.

QUESTIONS

A considerable number of features which might describe organization of hospital wards is offered in international standards (DIN EN ISO 6385, 2004), in theoretical contributions (e.g., Humphrey, Nahrgang, & Morgeson, 2007), and field studies (Glaser, 2006; Glaser & Büssing, 1996). Therefore, we are first interested in into which scales these items maybe classified. Next, we are interested in whether different wards of various hospitals actually differ as to these scales. The third question is, whether the descriptions of work organization by work studies applying the analysis of documentations and the observation of task accomplishment correspond with work organization as it is perceived by the nurses. This question is important because the employee outcomes may be mediated by the subjective perceptions of the work situation (Dollard, La Montagne, Caulfield, Blewett, & Shaw, 2007; Figure 4). Our main interest is in whether there are significant differences between perceived work strain and perceived emotional exhaustion of nurses working on wards with differing observed work organization. If these differences actually exist, a further question arises: Will the differences in emotional exhaustion continue to exist if organizational covariables (type of hospitals and wards) and personal ones (e.g., age, gender) are controlled for? If so, finally, we will analyze which aspects of work organization mainly correspond with emotional exhaustion. Following our first paragraph we hypothesize that the highest correspondence will exist for features describing the immediate interactions with patients.

METHODS

We analyzed 34 wards (internal, surgical and ICU) of five hospitals with a total of 262 nurses (95% female; age: 39.0 ± 10 years).
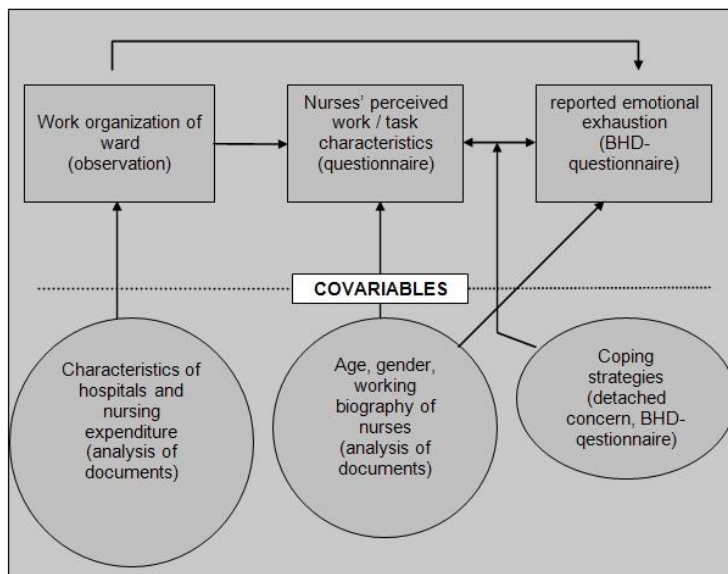
Figure 4. Job design and employee outcomes: Hypothetical relationships.

Work organization was investigated by the analysis of relevant documentations, an interview with the head nurses, and direct observations following a guideline based on the DIN EN ISO 6385. These observations took place for each of the 34 care units during the entire shifts of five working days. Thus, 35 hours of observation per care unit took place.

The features of work organization perceived by the nurses and the corresponding reported mental strain are studied with an unstandardized questionnaire (Stab, 2011). Emotional exhaustion was measured with the relevant scale of a validated instrument, the BHD-Questionnaire (Cronbach's alpha coefficient .82; Hacker & Reinhold, 1999). The correlation of this scale with the corresponding one of the German version of the Maslach Burnout Inventory (MBI-D, Büssing & Perrar, 1992) is r = .79, p = .001.

The statistical data analysis is outlined below and was carried out with SPSS 17.0. The research has been approved by the ethics committees of the hospitals.

Table 1. Factors of the work organization of care units. Diagonal: Cronbach's alpha; intercorrelation of factors and their characteristics

No Scales / Factors	1	2	3	4	5	6	Number of items	M ± SE	explained variance (%)
1. Organization of nursing	.78	.32	.27	.36*	.52**	.08	9	1.29 ± 0.09	23.5
2. Organizational conditions of patient-friendliness		.79	.51*	.52**	.20	-.12	13	1.83 ± 0.06	14.8
3. Participative work organization			.84	.43*	.22	-.03	7	1.87 ± 0.06	7.9
4. Conditions of cooperation within the team				.85	.27	.01	10	1.95 ± 0.06	7.1
5. Predictibility of tasks					.75	.22	5	1.78 ± 0.13	5.3
6. Availibility of information						.65	5	2.18 ± 0.05	4.8
M ± SE: Mean ± standard error Σ							49		63.4

0 = unfavourable organization; 3 = favourable organization.
* p = .05; ** p = .01.

RESULTS

First, the relevance of a total of 88 items was evaluated by 27 head nurses and the reliability of the relevant items was tested. For the items remaining after the selection, a factor analysis showed six factors which describe the work organization of care units (Table 1). Both, interrater-reliability (.76….92 for two trained observers) as well as retest-reliability (.72….90) were sufficient for all scales.

The scales are suitable to identify differences within the observed work organization of the analyzed wards. For reasons of simplification, we categorized the 34 wards into three groups regarding the overall design of work organization based on the six scales. Seven units

are well-designed, nine are rather well-designed and 18 mediocre-designed regarding their work organization.

The nurses' perceptions of work organization correspond with the categorization based on observation (cf. Table 3).

The essential point is: For units with rather poor work organization the percentage of nurses with critical degrees of emotional exhaustion is more than twice the percentage of the wards with well-designed work organization (Figure 5).

However, we raised the question (paragraph 2.1) whether this difference continues to exist, if organizational covariables (e.g., type of hospitals) and personal ones (e.g., age) are controlled for. Since in this sample no significant differences between the nurses coping strategy of detached concern (cf. Figure 4) were identified, this item was not considered within the personal covariables. The significant relationship between emotional exhaustion on care units with differing observed working organization continues to exist even after the exclusion of possible organizational (characteristics of hospitals and wards) and personal (characteristics of personnel, e.g., age and gender) covariables by a regression analysis (backward). This is shown in detail in Table 2.

Furthermore, the relationship between observed work organization and emotional exhaustion is only partially mediated by the nurses' perceptions of job characteristics. Without considering a mediation the relationship between work organization on the wards and emotional exhaustion is $R^2 = .05$ (Beta = -.22 with F = 12.0, p < .001). Considering perceived job characteristics as mediating link results in $R^2 = .23$ (F = 29.8, p < .000) with Beta = -.44 (p < .000) for the perceived job characteristics and Beta = -.15 (p < .05) for the observed work organization of the wards as predictors of emotional exhaustion. Sobel's z-test indicated a significant partial mediation, z = 2.46, p < .05, but the bootstrapped 95% confidence interval of the indirect effect (.15) did not quite exclude zero [.04-.28].
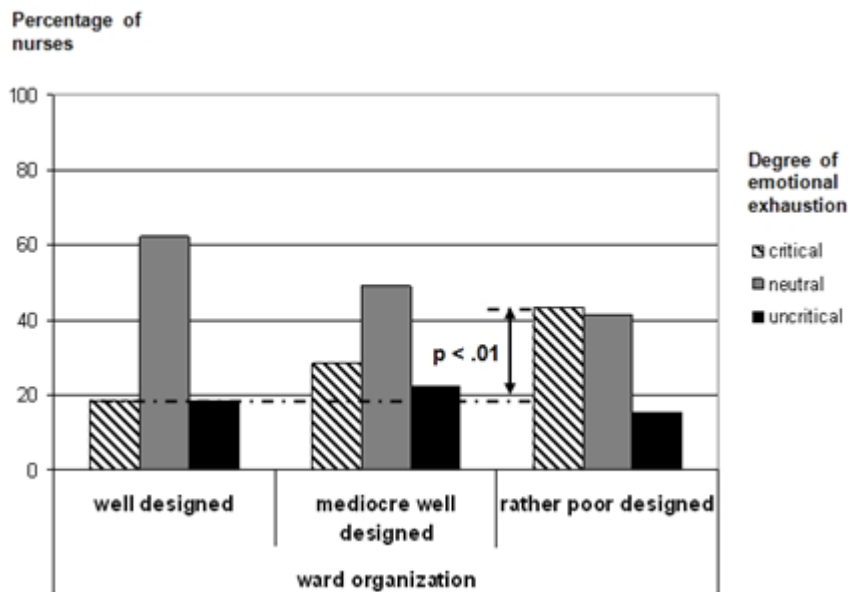
Figure 5. Percentages of nurses with different degrees of emotional exhaustion for three categories of work organization.

Table 2. Prediction of emotional exhaustion by documented and observed work organization (hierarchical regression analysis / backward

Variables	Step								
	1	2	3	4	5	6	7	8	
Type of hospital	-.06	-.03	-	-	-		-	-	Characteristics of hospitals (covariables)
Specialization	-.03	-.03	-.03	-	-		-	-	
Size	-.03	-	-	-	-		-	-	
Gender	.12	.12	.12	.12	.12	.12	-	-	Characteristics of personnel (covariables)
Age	-.02	-.02	-.01	-.01	-	-	-	-	
Tenure	.22	.22	.19	.19	.19	.13	.11	-	
Years on ward	-.10	-.10	-.09	-.09	-.09	-	-	-	
Observed work organization	-.25	-.24*	-.24*	-.24*	-.24*	-.24*	-.23*	-.25*	observed work organization (independent variable)
R^2	.10	.10	.10	.10	.10	.09	.08	.06	
R^2corr	.01	.02	.03	.02	.05	.05	.05	.05	

* $p<.05$.
- Excluded variables.

We thus take this as evidence for a weak mediation. That means the direct effect of observed ward organization on emotional exhaustion is an essential one. This is illustrated by Table 3 and Figure 6.
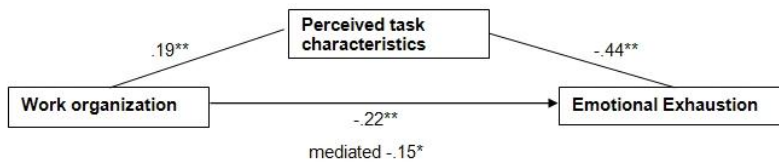
Figure 6. Comparison of direct vs. mediated prediction of emotional exhaustion.

Table 3. Prediction of emotional exhaustion by observed work organization and task characteristics perceived by nurses

Regression models	Beta	corr. R^2
Simple Regression		
Observed ward organization – Emotional Exhaustion	-.22**	.05
Observed ward organization – Perceived task characteristics	.19**	.03
Mediated Regression		
Observed ward organization – Emotional Exhaustion	-.15*	.05
Perceived task characteristics – Emotional Exhaustion	-.44**	.23

* $p<.05$; ** $p<.01$; *** $p<.001$.

Thus, the crucial question remains to be answered, which of the individual factors of observed work organization of the care units decisively correspond with emotional exhaustion.

Again neither the organizational nor the personal covariables significantly predict emotional exhaustion. A significant prediction is actually offered – as was hypothesized in paragraph 1 – only by those organizational variables which determine the conditions of immediate interactions with the patients. These are scale 1 "Organization of nursing" and scale 2 "Organizational conditions of patient-friendliness". Examples of relevant items for scale 1 are the division of labor (task identity) as to the patient-centered interactive tasks or the number of patients per nurse. Relevant items for scale 2 for example are the allocation of patients to their rooms, the introduction of patients, the nurses' advice to the doctor during rounds, the consultation of experts in the case of patients' crises and the possibility of giving psychosocial care to the patients. This is demonstrated in Table 4.

DISCUSSION

Bridging the gap between the "contradictory views" of job design and of emotional labor (Grandey & Diamond, 2010, p. 338) indeed offers promising approaches. There are features of job design, in our case especially of work organization, which significantly correspond with negative emotionality, emotion work and emotional exhaustion of employees. Thus, job design maybe an antecedent-focused preventive strategy of emotion management.

For this reason it is important to realize: The task features differ regarding their relationships with emotional responses, including emotional exhaustion. At least in interactive human service jobs the essential impact of directly client-centered task features seems to be more important than generic task characteristics (e. g., variety or autonomy) which describe object-centred tasks, too.

Table 4. Prediction of emotional exhaustion by individual factors (scales) of observed work organization (hierarchical regression analysis / backward

Variables	Step 1	2	... 4	... 8	... 10	11	12	
Type of hospital	.34	.33	-	-	-	-	-	Characteristics of hospitals (covariables)
Specialization	-.10	-.09	-	-	-	-	-	
Size	-.04	-	-	-	-	-	-	
Gender	.08	.08	.07	-	-	-	-	Characteristics of personnel (covariables)
Age	-.06	.08	-.04	-	-	-	-	
Tenure	.25	.27	.26	-	-	-	-	
Years on ward	-.05	-.05	-.04	-	-	-	-	
Scale 1	-.12	-.12	-.26	-.23	-.23*	-.23*	-.22*	factors of observed work organization (independent variables)
Scale 2	-.33	-.32	-.28	-.29	-.26*	-.25*	-.25*	
Scale 3	-.08	-.06	-.04	-.04	-	-	-	
Scale 4	-.19	-.16	-.09	-.06	-.03	-	-	
Scale 5	.00	.00	.05	-.02	-	-	-	
Scale 6	.40	.39	.15	-.06	-.04	-.04	-	
R^2	.19	.19	.16	.13	.13	.13	.13	
R^2corr	.02	.04	.04	.06	.08	.09	.10	

* $p < .05$.
- Excluded variables.

Since, however, the possibilities to re-design tasks in human service jobs with emotionally stressing requirements are limited – especially in nursing – the professional training of preventive coping strategies is indispensable. "The Revised Empathic Communication Model of Burnout" (Miller, Birkholt, Scott, & Stage, 1995) describes the necessary content of this training: Emotional contagion corresponds with the risk of depersonalization and emotional exhaustion, whereas for detached empathic concern this risk is low.

Thus, emotion management in a service-based economy should not be reduced on reappraisal of feelings or suppression and faking of emotional expressions. Rather, job design and professional training should be essential measures to reduce mental including emotional work load in human service jobs, too.

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Chapter 5

Draining for Some but Not for All – Person - Job Fit as a Moderator to the Effects of Emotional Labor on Strain

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Introduction

It pays to be nice. Employees displaying positive emotions are said to have better relationships with colleagues and supervisors, be more persistent and productive, receive more support, get better performance evaluations and have overall better workplace outcomes (Staw, Sutton, and Pelled, 1994). Not surprisingly, organizations foster the expression of positive emotions and suppression of negative feelings in customer interactions. Job incumbents in service are expected to manage their emotions and display certain emotions to affect clients' behavior in a beneficial way (Brotheridge and Grandey, 2002; Rafaeli and Sutton, 1987).

These more or less explicit display rules may differ with regard to the emotions they prescribe. However, the slogan "Service with a smile" captures what most of them prescribe.[1] These emotional display rules make service workers engage in emotional labor: the regulation of their own feelings for displaying organizationally desirable emotions (Grandey, 2000). To this end, workers may revert to two broad emotion regulation strategies denoted as *surface acting* and *deep acting*.

When engaging in surface acting, people suppress their true feelings and display emotions they do not genuinely feel (Hochschild, 2012; Brotheridge and Lee, 2002). Past research has collected ample evidence that surface acting in particular may negatively affect

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[1] Exceptions are, for example, bill collectors, morticians, or psychotherapists, who are also required to show negative emotions like sadness and concern (Schaubroeck and Jones, 2000).

individuals' well-being (e.g. Ashforth and Humphrey, 1993; Bono and Vey, 2005; Brotheridge and Grandey, 2002). To minimize negative effects of emotional labor, it has been suggested that instead of merely regulating emotional expressions (i.e. surface acting), workers should apply deep acting. When deep acting, people attempt to align their true feelings with their emotional expressions. Given this, deep acting results in the display of more authentic emotions and relates to less psychosomatic impairments than surface acting (see Brotheridge and Lee, 2002; Grandey, 2000).

However, by invoking the concept of person-job fit (Kristof-Brown, Zimmerman, and Johnson, 2005), we will demonstrate that effects of emotional labor on people's well-being hinge upon their emotional abilities. Broadly speaking, person-job fit denotes the congruence between individuals' personal characteristics and their job demands. The higher the match between individuals' knowledge, skills, or abilities (KSA) and those KSA necessary for a given job, the more likely individuals will perform well and feel positive about their work.

Service jobs requiring emotional labor call for people who are good at dealing with others' and their own emotions—but it is only recently that research started to focus on the role of emotional abilities in the emotional labor process (e.g. Bechtoldt, Rohrmann, De Pater, and Beersma, 2011; Giardini and Frese, 2006, 2008; Rohrmann, Bechtoldt, Hopp, Hodapp, and Zapf, 2011).

We will present empirical evidence that individuals' emotional intelligence (EI; Salovey and Mayer, 1990), is crucial for how they cope with emotional labor. Emotional intelligence "involves the ability to monitor one's own and others' emotions, to discriminate among them, and to use this information to guide one's own thinking and actions" (Salovey and Mayer, 1990, p. 189). We will show that EI may guard against negative effects of emotional labor, whereas lacking EI exacerbates them. Furthermore, we will show that not only do these effects pertain to subjective measures of well-being but also to physiological indicators of strain.

Emotion Regulation

People do not only regulate their emotions in service transactions. From early childhood on, people learn to control their emotions in line with cultural norms (Eisenberg, 2000; Hochschild, 2012): They learn to "influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998, p. 275). Though focused on emotions, this ability for self-control shares some core characteristics with cognitive abilities: It grows with age, suggesting that it is dependent on individual maturation, it can be measured with tasks of varying difficulty and people's performance can be judged as high or low (Mayer, Caruso, and Salovey, 1997)[2]. In general, individuals benefit from gaining control over their impulses and emotions: Self-control predicts more rewarding social relationships, higher academic performance and mental health (Tangney, Baumeister, and Boone, 2004). Controlling one's emotions in order to adhere to professional display rules, however, is related to negative effects on individuals' well-being because in this case emotion regulation

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[2] There is also a discussion that the ability for self-regulation represents a pool of energy or a "muscle" that can be exhausted (e.g. Muraven, Tice, and Baumeister, 1998). This strength model of self-regulation, however, is not incompatible with conceptualizing self-regulation as an ability, given that a muscle or a pool of energy represent potential ability.

becomes obligatory and is no longer at people's discretion. Losing the freedom to express one's emotions in the way one prefers to, however, implies some kind of self-denial, which in the long run, might result in self-alienation (Hochschild, 2012).

There are a number of strategies to regulate one's emotions which can be categorized based on the cognitive model of emotion development (e.g. Frijda, 1986; Levenson, 1994; Weiss and Cropanzano, 1996). Within this rationale, (1) emotions result from the appraisal of situational cues and (2) result in certain experiential, physiological, behavioral and cognitive reactions so that "responses to challenges and opportunities are optimized" (Côté and Morgan, 2002, p. 948). The appraisal of situational cues represents a demarcation line distinguishing between *antecedent-focused* and *response-focused* strategies (Gross, 1998). Antecedent-focused strategies apply to the early stage of emotion development by manipulating the appraisal of situational cues. For example, service providers might take their customers' perspective, thereby increasing their understanding and preventing themselves from feeling annoyed by customers' behaviors. Response-focused strategies apply to the late phase in the emotional process. Instead of affecting the emotion itself, they manipulate the behavioral, cognitive, or physiological reaction emanating from a certain emotion. For example, service providers might try to suppress their resentment provoked by their customers.

Clearly, deep acting and surface acting bear a close resemblance to these two categories (Grandey, 2000): Whereas deep acting represents antecedent-focused emotion regulation, surface acting is response-focused. In contrast to mere emotion suppression, however, surface acting is more demanding in that it requires the display of non-felt emotions while suppressing one's true emotions. Therefore, surface acting exposes individuals to emotional dissonance, a state of self-perceived incongruence between felt and displayed emotions. Emotional dissonance plays a significant role in explaining why surface acting relates to dissatisfaction, exhaustion, and disengagement because people are averse to emotional dissonance and strive to act in congruence with their emotions (Brotheridge and Grandey, 2002; Hochschild, 2012). Additionally, people's preference for authenticity also applies to customers, as they expect service providers to be authentically friendly (Côté, 2005). Realizing that service providers just pretend positive emotions should decrease customer satisfaction and interaction quality, thereby increasing service providers' strain (Côté, 2005).

Thus, from the perspective of both service providers and customers, deep acting appears preferable to surface acting because of the emotional authenticity involved. Empirical results, however, blur the picture: For example, deep acting was not superior to surface acting in terms of rewarding relationships (Brotheridge and Lee, 2002), whereas surface acting was not related to customer dissatisfaction (Groth, Hennig-Thurau, and Walsh, 2009). Therefore, we argued that besides the emotional labor strategies service workers choose, their motivation and well-being is also affected by their emotional abilities. Specifically, we hypothesized that the ability to recognize others' emotions should increase person-job fit (Bechtoldt et al., 2011): A psychotherapist, for example, should be receptive to nonverbal or paraverbal emotional signals like facial expressions, body postures, and tone of voice when talking to a patient because these nonverbal channels transport diagnostic information which is less prone to conscious distortion than verbal communication. For some patients, it may be adequate to show compassion, for others it may be more adequate to react with humor. Ideally, the therapist is able to tailor his emotional display to the needs of the patient – and appears authentic in doing so. Before showing a reaction, however, the therapist needs to identify the

patient's emotional state. Does the patient signal anger, anxiety, or sadness? The better the therapist's ability to recognize emotions, the higher his likelihood for choosing an adequate emotional reaction. A smooth course of the interaction and better rapport between therapist and patient, in turn, should affect the therapist's well-being. Therefore, the ability to recognize others' emotions should increase person-job fit for service workers. Recognition of emotions is part of the definition of emotional intelligence (Salovey and Mayer, 1990). Given the controversy about emotional intelligence in psychology, we will give a more detailed overview of the construct below before we return to its implications for emotional labor.

Emotional Intelligence (EI)

In 1995, Daniel Goleman, a former editor of Psychology Today and at that time working for the New York Times, published *Emotional Intelligence: Why it can matter more than IQ*. In this book he asserted that people's life success would be more dependent on their emotional quotient (EQ) than on their intelligence quotient (IQ). The public reaction was tremendous: Goleman's book became a bestseller. Combining findings from neuroscience and cognitive psychology, he derogated the primacy of general intelligence in favor of EI. He defined EI as "abilities such as being able to motivate oneself and persist in the face of frustrations; to control impulse and delay gratification; to regulate one's moods and keep distress from swamping the ability to think; to empathize and to hope" (Goleman 1995, p. 34).

Two aspects seemed interesting about this definition: First, Goleman equated cognitive abilities—intelligence—with personality variables that are not typically considered indicators of intelligence. An individual's persistence or mood hardly enable logical reasoning or verbal comprehension—two mental capacities which psychologists since Spearman and laypeople alike consider prototypical indicators of intelligence (Sternberg, Conway, Ketron, and Bernstein, 1981). Goleman himself seemed to be aware of the inconsistencies in his definition, when he summarized the essentials of EI as follows: "There is an old-fashioned word for the body of skills that emotional intelligence represents: character" (Goleman 1995, p. 34). Second, the series of personality variables he subsumed under the heading of EI created a picture of committed, considerate, sociable, and emotionally stable individuals who are able to pursue their goals against all odds. Thus, Goleman's emotionally intelligent individuals possessed a series of traits that define a psychologically healthy, socially valuable member of society.

Goleman's definition of EI was heavily criticized by intelligence researchers from the very beginning. Psychological definitions of intelligence all agree on the fact that intelligence enables individuals to learn from experience and thereby to adapt to their environment. Personality, by definition, refers to an individual's habitual style of acting towards and reacting to his or her environment (John, Robins, and Pervin, 2011). These styles are neither clearly adaptive nor maladaptive—it is the situational context that determines their usefulness. Neuroticism, for example, an individual's tendency to react anxiously, to experience depression, and to ruminate, conflicts with the variables in Goleman's catalogue of EI. It may be adaptive for a child to develop neurotic tendencies, like anxiety and hypervigilance, if these make him or her alert to sudden mood changes in an alcohol-addicted and abusive father. Neurotic tendencies in this case might help the child to avoid the father in

these moments. As a grown-up, however, the same reactive patterns might be rather dysfunctional if displayed towards colleagues or supervisors because now individuals should have more assertive conflict management strategies at their disposal. Therefore, selecting a series of personality variables and calling them "intelligent" without taking into consideration the situational context appears to be a questionable approach. However, one may argue that Goleman was right in defining emotional self-control as a component of EI, given that self-control has characteristics in common with cognitive abilities rather than habits (Mayer et al., 1997).

While there are complications involved in using a personality-based model of EI like Goleman's, the intuitive appeal is clear. Given that general intelligence is crucial to success in life, as suggested by many findings (e.g. Atwater, Dionne, Avolio, Camobreco and Lau, 1999; Atwater and Yammarino, 1993; Goldstein, Zedeck and Goldstein, 2002; Hunter and Hunter, 1984; Lord, De Vader and Alliger, 1986; Judge, Colbert and Ilies, 2004), it is highly desirable to be intelligent. Goleman (1995) suggested that everyone who wished to be (emotionally) intelligent could be. One had only to work on self-discipline, confidence, and optimism. This made EI an appealing concept to the public.

Measuring EI

If EI is supposed to have a considerable impact on people's success in life, the question arises of how to assess an individual's EI. Service organizations, for example, might be interested in including the measurement of job applicants' EI in their personnel selection procedures. A series of EI-tests have been developed in psychology since the mid-nineties (e.g. Bar-On, 2004; Mayer, Salovey, Caruso, and Sitarenios, 2003; MacCann and Roberts, 2008; Nowicki, 2010; Nowicki and Duke, 1994; Petrides, 2009). These tests can be grouped into two categories: self-report questionnaires and performance tests. Self-report measures either follow the understanding of EI as a collection of personality traits (mixed models of EI) or as a cognitive ability (ability-based models). They consist of questionnaires asking people for their emotion-related abilities, habits, and attitudes (e.g. Bar-On, 2004). Performance tests of EI (e.g. Mayer et al., 2003) exclusively follow the ability-based model of EI and exclude non-cognitive traits from the assessment. Test takers are presented with tasks akin to general intelligence tests implying that their answers can be judged as either right or wrong.

Meta-analytical results refuted the construct validity of self-report measures (Joseph and Newman, 2010): They seem to measure known dispositional traits rather than to add substantially to the diagnostics of human abilities. Moreover, they are prone to "self-deceptive enhancement and deliberate faking" (Lopes, Côté, and Salovey, 2006, p. 58), which is true for personality tests in general. Therefore, if EI is supposed to indicate an ability, self-report instruments are not an appropriate diagnostic tool (Côté, 2010). This argument is further strengthened by the failure of people to accurately judge their own abilities; correlations between self-estimated intelligence and intelligence test scores do not exceed $r = .30$, i.e. they are of moderate size only (e.g. Paulhus, Lysy, and Yik 1998). Thus, the assessment of (cognitive or emotional) abilities requires performance tests which confront people with problem solving tasks. However, there are substantial problems involved when it comes to measuring the self-related components of EI like monitoring and regulating one's emotions because of the difficulty to define a correct response. Therefore, dispositional

measures of emotion regulation might be more appropriate to assess emotional self-regulation, which we will discuss below. Still, empirical findings regarding the construct validity of EI performance tests are positive (Joseph and Newman, 2010): Their correlations with dispositional measures like the Big Five (Costa and McCrae, 1992) are significantly lower (discriminant validity). Moreover, in contrast to the self-report measures of EI, they covary with measures of general intelligence (convergent validity).

Mayer and Salovey were among those who chose to design performance tests for EI. They first published the Multifactor Emotional Intelligence Scale (MEIS; Mayer, Caruso, and Salovey, 1999), which was later succeeded by the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT V2.0; Mayer et al., 2003). It consists of items measuring four components: 1) *emotion perception* (the ability to recognize emotions in faces, abstract designs, or landscapes), 2) *emotion facilitation* (the ability to "translate" emotions into cognitions; for example, test takers are asked to evoke a certain emotion like envy in themselves and must rate how hot or cold it is), 3) *emotion understanding* (the ability to identify emotions that can be combined to form other emotions, e.g. envy and aggression form malice), and 4) *emotion management* (the ability to regulate one's own or others' emotions, e.g. knowing what could be done to reduce anger or to prolong joy). Except for emotion facilitation, factorial validity of the MSCEIT has been supported (Gignac, 2005; Palmer, Gignac, Manocha, and Stough, 2005; Rossen, Kranzler, and Algina, 2008). The intercorrelations between the EI components are positive, yet suggest factorial uniqueness ($r = .13\text{-}.63$; Matthews et al., 2006). In their meta-analysis, Joseph and Newman (2010) combined the components in a process model with emotion perception representing the prerequisite for the development of emotion understanding, which, in turn, can develop into emotion management skills. The model fit the data well. Accordingly, emotion perception can be considered the core component of EI: Without recognizing emotions, there will neither be emotion understanding nor successful emotion management.

The Moderating Role of EI in the Emotional Labor Process

Do service workers benefit from EI? Research findings in this field are still new and rather tentative but point in the directions hypothesized: In a 4-week longitudinal study (Bechtoldt et al., 2011) with nurses and police officers, we measured participants' emotion recognition ability, the core component of EI (Joseph and Newman, 2010). As expected, emotion recognition buffered against negative effects of emotional labor: Participants' motivation and well-being at work remained unaffected by surface acting, provided that they were good at recognizing others' emotions. The same was true for deep acting. Apparently emotion recognition assisted in choosing adequate emotional reactions in social interactions. This applied to nurses and police officers alike, although both professional groups face different challenges as to the valence of emotions they need to display in their social interactions at work. Emotion recognition also moderated the effects of deep acting: Work motivation and well-being of participants with low emotion recognition ability decreased even if they applied deep acting. There were no impairments among participants with high emotion recognition ability. Thus, deep acting is not necessarily preferable to surface acting; it may even do harm to those service providers lacking in emotion recognition ability. Obviously, authenticity in social interactions is not sufficient to decrease workers' strain; it is

also essential that service providers display emotions adequate to the interaction partner's needs or expectations. In this case, interactions will run more smoothly and drain service providers' emotional resources significantly less (Hobfoll, 1989). These results significantly add to previous knowledge about the effects of emotional labor: It may inflict strain on workers but less so the better they are at recognizing others' emotions.

Besides recognizing others' emotions, the ability to regulate one's own emotions appears essential in service jobs. For example, a psychotherapist deciding that a humorous reaction to the patient would be effective needs to display cheerfulness. Doing so should be easier the better he is at evoking positive emotions in himself. Vice versa, the sales clerk good at emotional self-regulation will more easily stay calm and friendly when being criticized by a dissatisfied customer. Performance tests of EI like the MSCEIT (Mayer et al., 2003) include scales for measuring people's emotional self-regulation. They measure people's maximum performance, that is, people's knowledge about what strategies would work best to overcome negative emotions or prolong positive ones. While knowing the effectiveness of emotion regulation strategies is a prerequisite for successful emotion regulation, it is not sufficient to guarantee the usage of these strategies: People may be well informed that acting out their anger is likely to intensify rather than resolve it. Still, in conflicts they may find themselves reacting hotheadedly, shouting and smashing dishes. Therefore, it may be more informative to assess people's typical performance in emotional self-regulation by assessing their emotional stability. Individuals with high trait anger, for example, struggle with emotional self-regulation because they more often experience negative emotions as compared to people scoring low in trait anger. Conforming to display rules that prescribe friendliness makes them engage in trait-incongruent behavior (Bono and Vey, 2007), which people feel averse to. Accordingly, their person-job fit as service providers should be low. Service providers with high trait anger, exposed to impolite customers but friendly display rules, should experience higher strain and perform worse. In an experimental study, we found evidence supporting this assumption (Rohrmann et al., 2011): Participants took the roles of call center agents talking to an angry customer on the phone. Experimental conditions differed with regard to display rules: In one condition, participants had to adhere to the motto "Service with a smile", whereas in the other condition, participants were allowed to be authentic and react naturally. Before the experiment, participants' filled out a questionnaire on trait anger (Spielberger and Sydeman, 1992). Because individuals with high trait anger more easily "detect aggression, threats, and dangers in the world around them" (Berkowitz, 1993, pp. 133-134), talking to an aggressive customer should be much stronger a provocation for them than for individuals with low trait anger. Adhering to "Service with a smile" should require more intense emotional labor from them, both deep acting (e.g. reappraising the verbal messages of the customer) and surface acting (suppressing anger). To measure strain, we did not rely on self-report measures but assessed cardiovascular reactivity, including blood pressure; to assess performance, observers rated overall competence of participants on the phone.

The results were in the hypothesized direction, as participants' trait anger interacted with experimental condition. In the condition "Service with a smile", participants with high trait anger showed a significant increase in diastolic blood pressure, which was not true for participants with low trait anger. When participants were allowed to react naturally, diastolic blood pressure increased neither for participants with high nor low trait anger. Likewise, in the "Smile" condition, participants with low trait anger received significantly better competence ratings as compared to the "Be authentic" condition, whereas the picture was vice

versa for participants with high trait anger: They tended to leave less a competent impression on observers in the "Smile" condition as compared to the "Be authentic" condition. Increases in diastolic blood pressure are specific to anger reactions (Stemmler, 2004). Thus, the study shows that individuals with low person-job fit in service jobs will experience more physiological strain, which, in the long run, may cause severe states of exhaustion like burnout (Maslach, Jackson, and Leiter, 1996). Moreover, because these service providers come across as less competent, they are less likely to meet customers' expectations and will have less rewarding service interactions. Less rewarding interactions, in turn, will increase workers' strain and negative mood, thereby enforcing a negative spiral effect draining their emotional resources.

This reasoning is in line with other findings like service workers high in "emotional competence" experienced less strain in customer interactions (Giardini and Frese, 2006). While avoiding the controversial term emotional intelligence, the authors' definition of emotional competence included emotion recognition and emotion management, which they measured by peer ratings: Colleagues of the participants estimated their ability to deal with customers and manage their own emotions. Service providers with higher ratings in emotional competence were better at managing customer interactions. Consequently, their general well-being and job satisfaction exceeded that of lower ranking co-workers (Giardini and Frese, 2006).

Moreover, there is evidence that emotional abilities may be relevant in all kinds of jobs when workers interact with colleagues, supervisors or employees: Employees with high emotion recognition ability received better performance ratings (e.g. Elfenbein and Ambady, 2002; Rubin, Munz, and Bommer, 2005).

In another study, the influence of EI (including emotion recognition ability) on job performance became stronger with lower individual scores on general intelligence scales (Côté and Miners, 2006). This suggests a compensatory model of intelligences: If employees are rather low in traditional intelligence, they can compensate for this disadvantage with high EI. Because there is ample room for performance improvement in people with low traditional intelligence, the ability to decode co-workers' and supervisors' emotions may facilitate coordination and interpersonal relationships. Additionally, EI will help to establish good interpersonal relationships with colleagues, thereby increasing the chance of receiving social support with difficult tasks. These findings also suggest that abstract and emotional abilities can indeed be separated.

CONCLUSION

Emotional labor causes subjective and physiological strain – however, not for everyone. Effects of emotional labor are moderated by workers' ability to recognize others' emotions and regulate their own emotions. Service organizations should consider these results in personnel selection. Furthermore, they should provide trainings to increase workers' emotional abilities because they are amenable to change (Ekman and Friesen, 2003; Kotsou, Nelis, Grégoire, and Mikolajczak, 2011).

In general, the results reviewed in this chapter suggest that organizations should not only pay attention to people's cognitive abilities but also their emotional intelligence to ensure

person-job fit. Goleman claimed that people's IQ would get them hired and their EQ would get them promoted. Based on our findings, we refine this statement as follows: In service work, people's EQ keeps them healthy.

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Chapter 6

WHEN A GROUP JUST ISN'T IN THE MOOD: TWO APPROACHES FOR LEVERAGING AFFECT TO INCREASE GROUP PERFORMANCE

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ABSTRACT

Past research has documented the beneficial and detrimental effects of both positive and negative moods on group dynamics and performance. Given that positive and negative moods can both be a double-edged sword in groups, this chapter explores the options that group leaders have for leveraging affect in their groups. On the one hand, a group leader can alter a group's mood to achieve the desired group dynamics and performance. On the other hand, a group leader may choose to alter the work environment in order to take advantage of a group's current mood. The costs and practical limitations of both approaches are discussed. Furthermore, this chapter highlights areas for future research that investigates the effects of moods and emotions in groups.

Keywords: Groups; mood; emotions; leadership; performance

INTRODUCTION

Imagine a group consisting of members in a negative mood and assigned to complete a creative task. Now visualize a group in a positive mood that is tasked with making an important decision, one with life and death consequences. Are these groups in the proper

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mood to maximize task performance, or should the leaders regulate the moods of their group members to achieve a more optimal tone? Research on naive theories of mood shows that people have intuitions about the ideal affective valence for different types of tasks. People believe that positive moods facilitate performance on creative tasks, whereas they think that less cheerful moods help on decision-making tasks (Kelly and Spoor, 2007). However, is there just one ideal mood for a given task, or does the context matter too? What are the costs of changing a group's mood to match the presumed ideal mood for a task? This chapter focuses on these questions. First, presuming that a particular mood enhances performance on a given task, what are the costs and limitations of having group members regulate their moods closer to the assumed ideal? Second, are there contextual factors that can be manipulated to maximize the performances of groups, no matter what mood they are currently experiencing? What are the costs and limitations of this approach?

NAÏVE THEORIES OF MOOD

Kelly and Spoor (2007) conducted two studies investigating people's naïve theories about what mood is ideal for a given task. They found that their participants believed that positive moods would spark creativity. Likewise, participants more easily generated beneficial consequences of positive moods and harmful consequences of negative moods than the reverse. Additionally, participants expected more constructive processes in groups that were experiencing positive moods. Indeed, research supports these naïve theories and justifies being guided by them. Supporting the superiority of positive moods, broaden-and-build theory (Fredrickson, 1998; Fredrickson, 2001) states that positive affect increases people's scope of attention and action tendencies (broaden hypothesis), thus allowing people to build a variety of skills and resources (build hypothesis). According to this theory, creativity is an example of a psychological resource developed as a result of positive affect. In fact, at the individual level, as evidenced by a recent meta-analysis (Davis, 2009), much research shows that people in a positive mood experience cognitive flexibility, or an enhanced ability to see objects or ideas in new ways or to envision connections between seemingly unrelated ideas. For example, Isen, Daubman, and Nowicki (1987) found that participants in positive moods were more likely to experience an insight needed to solve a problem. Likewise, Murray, Sujan, Hirt, and Sujan (1990, Experiment 2) showed that positive moods led participants to identify more similarities and differences between the characters of two distinct TV shows. Research at the group level also supports the influential role of positive emotions on creativity (Grawitch, Munz, Elliott, and Mathis, 2003; Grawitch, Munz, and Kramer, 2003; Klep, Wisse, and Van Der Flier, 2011) and problem-solving (Bramesfeld and Gasper, 2008).

In addition to being more creative, people expect groups in positive moods to experience more beneficial group processes (Kelly and Spoor, 2007). Indeed, according to broaden-and-build theory (Fredrickson and Branigan, 2005), positive affect leads people to develop friendships and to feel increased optimism. Consequently, one might expect groups in positive moods to experience more functional group dynamics. For instance, positive emotional contagion in groups is related to increased cooperativeness, decreased conflict, and better individual performance, as rated by a third party (Barsade, 2002). Similarly, groups with a leader in a positive mood experience higher levels of coordination and efficiency (Sy,

Côté, and Saavedra, 2005). Positive affect in groups appears to leave an impression on outside observers too. For example, supervisors perceive work groups more favorably when led by someone in a positive mood (George, 1995), and customers provide more positive feedback after interacting with smiling employees (Gabriel, 2012).

Although people believe that positive moods are ideal for creative tasks and promote functional group dynamics, they perceive a benefit in decision-making groups who are characterized by less positive affect (Kelly and Spoor, 2007). Some participants expected decision-making groups in negative moods to be more serious about the task at hand. Consistent with participants' beliefs, Schwarz (1990) theorized that negative mood signals a threat in the environment, leading people to process information in a more systematic manner. For groups in negative moods, their affect might lead them to evaluate procedures and options more critically, thus improving decision making. Research does support the benefits of negative mood for decision-making. Compared to individuals in positive moods, people in negative moods process information more systematically and deeply (Schwarz, Bless, and Bohner, 1991). This style of information processing as a result of negative mood has been replicated at the group level too (Forgas, 1990). In groups, this tendency to examine information more critically leads to additional discussion of critical information, decisions of higher quality, and better analytical performance (Klep et al., 2011; Kooij-de Bode, van Knippenberg, and van Ginkel, 2010). Conversely, Hertel, Neuhof, Theuer, and Kerr (2000) found that group members in positive moods exhibited heuristic thinking by simply following the social norms set forth by other members.

CHANGING GROUP MOOD TO MATCH
THE IDEAL FOR THE TASK

People intuitively feel that positive mood is ideal for creative tasks and a less cheerful mood is ideal for decision-making tasks, and these beliefs are supported by research. What options then do group leaders have if their followers are not in the ideal mood? Should leaders ask group members to actively regulate their feelings, or should leaders try to subtly change their groups' moods? What are the costs and limitations of each approach?

Passive Strategies for Altering the Mood of Groups

In order to influence the affective responses of their groups, leaders have the option of modeling the desired affect and hoping it spreads in the group. Indeed, through the observation of different groups, Pescosolido (2002) found that some leaders modeled the desired emotional expressions for the present circumstances of the group. Fortunately, people show a propensity to mimic the behaviors of others, oftentimes automatically (Chartrand and Bargh, 1999). Similar processes appear to occur with affect in groups. Kelly and Spoor (2012) identified emotional contagion, or the spreading of affect from person to person, as the primary form of passive affect regulation (see also Kelly and Barsade, 2001). Research has documented the contagiousness of affect in actual groups. Totterdell (2000) found evidence of emotional contagion in teams of professional cricketers. Similarly, Totterdell, Kellett,

Teuchmann, and Briner (1998) discovered a link between the moods of individual members and the general mood of their teams, both in nurses and accountants. Also of importance, the link between one's own mood and the mood of team members tends to be stronger for members who score higher on susceptibility to emotional contagion and collectivism (Ilies, Wagner, and Morgeson, 2007). Evidence of emotional contagion has also been demonstrated in laboratory groups. In research by Barsade (2002), a confederate displayed either positive or negative affect through verbal and nonverbal means during a leaderless group discussion. After the discussion, the actual participants in the group showed moods consistent with the affect of the confederate.

The message from this research is that a group leader could alter the mood of his or her followers by demonstrating positive or negative affect. That is, a group leader who is about to engage his or her followers in a creative task might choose to display positive affect as a method of altering their mood. Similarly, a group leader might exhibit negative affect prior to leading a group through the decision-making process. In fact, research shows that a leader's mood can impact the moods of followers. Sy et al. (2005) asked group leaders to partake in a positive or negative mood induction and then to lead their groups in erecting a tent while blindfolded. Both during the planning phase and the actual building of the tent, groups with a leader who had undergone the positive mood induction experienced more pleasant feelings than groups with a leader who had undergone the negative mood induction. Likewise, groups with downbeat leaders experienced more negative affect than groups with leaders in a positive mood.

Active Strategies for Altering the Mood of Groups

In contrast to a group leader relying on emotional contagion to subtly shape a group's mood, a leader might be more explicit in his or her demands. That is, instead of a leader modeling the desired affect and allowing it to spread through the group naturally, a leader might tell the group that a lighter or more serious tone is needed for the task at hand. Such a request would be similar to the demands of emotional labor, or the regulation of affect to meet emotional display rules laid out by an organization (Gabriel, 2012; Hochschild, 1979; Hochschild, 1983). The emotional labor literature addresses two main types of emotion regulation: surface acting and deep acting (Grandey, 2003). When a person engages in surface acting, she displays verbal and nonverbal expressions incongruent with felt feelings. Conversely, when a person employs deep acting, he changes how he actually feels, which then alters displayed expressions. Consequently, a group leader might call for group members to put on a happy face or to actually feel positive emotions. In the same way, a leader might ask a group to tone down the silliness before making a decision or to actually feel the seriousness of a situation.

Costs and Limitations of Altering a Group's Mood

Although a positive mood might be useful for creative tasks and a negative mood for thinking systematically about decisions, a group leader who chooses to put a group through some form of mood induction also needs to be aware of unintended consequences. For

example, even though negative mood leads people to think more critically about decisions, several studies show that negative moods also produce less functional dynamics within groups, such as decreased coordination and cooperation (Barsade, 2002; Sy et al., 2005). George (1990) found that a group's negative affect was inversely related to prosocial behaviors in the group. Similarly, negative affect experienced by a group of teachers related to less engagement in organizational citizenship behaviors (Johnson, 2008). Negative emotions, such as envy, have also been shown to negatively impact group dynamics by increasing social loafing, reducing cohesiveness, and harming overall performance (Duffy and Shaw, 2000). Moreover, attempts to influence a group's mood might backfire, leading a group to experience affect of the opposite valence (Kelly and Barsade, 2001).

Apart from the unintended consequences associated with different moods, affect regulation requires effort and could have psychological and behavioral consequences. Currently, research at the individual level provides the strongest support for this assertion. When Richards and Gross (2000) asked participants to suppress emotional expressions while viewing images and movie clips that evoked negative feelings, they found that their participants experienced worse memory for these stimuli. In a similar vein, Goldberg and Grandey (2007) investigated forced expression of positive emotions in a mock customer service setting. When participants displayed positive emotions in the face of frustration, they experienced increased exhaustion and committed more errors. Evidence for the effects of affect regulation on group performance is less established. Nevertheless, initial research has shown that dyads asked to suppress rather than express negative mood while working on an emotionally-evocative task performed worse (Jones and Kelly, 2008). However, not all affect regulation causes harm. Richards and Gross (2000) found that participants who controlled facial expressions by reappraising the emotionally-evocative images did not experience deficits in their memory. Research also shows that deep acting is less strongly related to emotional exhaustion than is surface acting (Grandey, 2003). Consequently, groups asked to change their affect via deep acting or reappraisal might not experience the same negative consequences as those groups instructed to engage in surface acting.

Although research on emotional labor is well-established at the individual level (Bono and Vey, 2005), more investigation is needed at the group level. For example, affect regulation is effortful, leading to a variety of negative outcomes (Bono and Vey, 2005; Richards and Gross, 2000), but how does emotional labor or affect regulation operate in groups of people? On the one hand, emotional contagion might make affect regulation more difficult if one person has to maintain a mood that is different from other members. On the other hand, emotional contagion might make the desired emotion easier to "catch," feel, and express. More research is also needed on the impact of emotional labor and affect regulation on group-level constructs such as cooperation and coordination.

If instead of asking their groups to regulate their affect, leaders rely on their own mood to spread across the group, this might alleviate the concerns of effortful regulation by group members. However, this approach is not without its drawbacks. First, leaders who regulate their moods might suffer the same consequences as groups who consciously alter their affect. Second, a leader's emotional displays have consequences for how both the leader and the group are perceived. Research shows that supervisors rate groups led by leaders in positive moods as more effective (George, 1995). Similarly, in a study using interacting groups, members perceived leaders (actually confederates) who displayed negative emotions as less effective (Gaddis, Connelly, and Mumford, 2004). Those groups actually performed worse

too. Other research has shown a link between a leader's positive mood and better group performance (Chi, Chung, and Tsai, 2011). On a similar note, Gardner, Fischer, and Hunt (2009) argued that leaders who engage in surface acting are perceived less favorably and are likely to be viewed as inauthentic and manipulative. Surface acting also negatively affected workplace pro-social behaviors when leader-member exchange quality was good (Fisk and Friesen, 2012). Moreover, emotional displays of leaders might influence perceptions of people thinking about joining the group. In research by Lewis (2000), she asked participants to watch portrayals of leaders in videos and rate their leadership effectiveness. Compared to a neutral tone, leaders who showed sadness or anger were rated as less effective by participants. The type of negative emotion and the context of the emotion might also matter. When asked to assess a leader responding to a failed product, participants evaluated the leader more negatively when he expressed anger only versus sadness only or both sadness and anger (Madera and Smith, 2009). However, the emotional expression of the leader did not matter when he accepted responsibility for the product failure.

The emotional expressions of group members also have consequences for how others perceive the group as a whole and for how group members perceive their leaders. For instance, compared to group members who displayed sadness, group members who communicated happiness were perceived as more cohesive (Magee and Tiedens, 2006). Likewise, groups who exhibited negative moods received lower performance ratings by observers (Jordan, Lawrence, and Troth, 2006). In a similar vein, followers in positive moods rated leaders as more charismatic and performed better than did followers in negative moods (Johnson, 2009).

On a practical level, influencing a group's mood towards negative affect one day and positive affect another day might be difficult. George (1990) argued that some groups develop a characteristic level of affect called group affective tone. A group's affective tone can be thought of as "consistent or homogeneous affective reactions within a group" (p. 108) and it develops through attraction, selection, attrition, and socialization processes. To the extent that a group generally experiences certain emotions, it may be unnatural for the group to exhibit emotions of the opposite valence.

Lastly, the context in which a group develops a positive or negative tone also matters (Kelly and Jones, 2012). Research by Klep et al. (2011) has shown the importance of interactive affective sharing, or bottom-up affective transfer processes (Barsade and Gibson, 1998; Barsade and Gibson, 2012; Kelly and Barsade, 2001). When group members experienced a mood induction collectively (i.e., watched emotionally-evocative film clips together), groups realized the benefits of positive moods on a creative task and of negative moods on an analytical task. However, groups that experienced mood induction individually (i.e., viewed emotionally-evocative film clips at separate computers with headphones) did not profit from these different moods.

CHANGING THE CONTEXT TO LEVERAGE THE BENEFITS OF A GROUP'S CURRENT MOOD

Influencing a group's mood is just one option for realizing the benefits of a given mood. According to George (2000), "Both positive and negative moods and emotions serve

numerous functions in people's lives. Likewise, both positive and negative moods and emotions can sometimes be the cause of human dysfunctions" (p. 1032). As a result, instead of manipulating a group towards an "ideal" mood, a leader might choose to change the context in which a group interacts to take advantage of and minimize the drawbacks of a group's current mood. Research demonstrates that the same mood can have both positive and negative consequences, depending on how a task is framed (Martin and Stoner, 1996). Stop rules, group composition, and other contextual factors all play a role in determining whether a positive or negative mood will have a beneficial or harmful effect on performance.

Stop Rules

Like Schwarz and Clore (1983), Martin and Stoner (1996) argued that mood provides information to people. Consequently, they asserted that either positive or negative moods could lead to better performance, depending on the criterion (i.e., stop-rule) a person used to decide when to stop completing a task. Research at the individual level has supported their assertion. On the one hand, positive moods tend to enhance performance when the stop-rule emphasizes enjoyment of the task or confidence in coming up with a better response. On the other hand, negative moods improve performance by leaving people dissatisfied with their current performance, leading them to persist on the task.

In one study (Martin and Stoner, 1994, as cited by Martin and Stoner, 1996), the experimenter told participants to determine when to stop on a word-association task by asking themselves, "Can I come up with a better response?" Compared to individuals in negative moods, participants in positive moods implicitly used their feelings to infer confidence. Subsequently, they continued with the task, confident that they could improve upon their initial response, and outperformed negative mood participants by generating a more unusual association with the provided word. In this same study, other participants were told to ask themselves, "Is my initial idea a good one?" This instruction reversed the mood effect. Individuals in positive moods used their feelings to infer satisfaction with their initial idea, and therefore they stayed with their initial response. In contrast, participants in negative moods assumed dissatisfaction from their feelings and decided to generate a second response, which turned out to be more creative. Other research has shown that individuals in a negative mood generate more ideas on a creative task than participants in a positive mood when instructed to ask themselves, "Have I generated as many uses as I can?" (Sanna, Turley, and Mark, 1996).

For groups, the implication is clear. If a leader asks, "Are we satisfied with our current ideas?," or "Are we comfortable with our decision?," groups in positive moods will infer satisfaction from their feelings and conclude that the meeting is over. As a result, better ideas or decisions might not be discussed. Conversely, these questions would be more beneficial for groups in negative moods, because their less cheerful affect would imply dissatisfaction, leading them to explore alternative ideas and decisions. The reverse would be true if the leader asked the group questions such as "Can we come up with a better idea?" or "Can we improve the current decision?" Jones and Kelly (2009) showed that negative mood groups performed better than their individual counterparts, because those groups persisted longer and better ideas came later in the session.

Stop-rules have implications for information gathering and decision-making tasks too. Martin, Ward, Achee, and Wyer (1993) demonstrated that either positive or negative moods could be preferred, depending on the instructions provided to participants during an impression formation task. Participants were charged with the task of developing an impression about a target person. The experimenter gave participants a stack of cards, each with a piece of information about the target individual. Half of the participants received instructions to continue flipping over the cards and reading the information for as long as they enjoyed doing so. The other half of participants followed the directions of turning the cards over and reading the information until they had enough information. With the enjoyment stop-rule, participants in positive moods spent more time reading and reviewed more information than did participants in negative moods. In contrast, negative mood participants used more time reading the information than did positive mood participants when deciding how much information was enough. Similarly, when asked to make a list of birds, individuals in negative moods performed better than positive mood individuals with the stop-rule of "Is this a good time to stop?" Again, this research has practical implications for groups. Leaders should provide instructions to groups that will maximize their task performance. Stop-rules emphasizing enjoyment work best for positive mood groups, whereas stop-rules focusing on satisfaction with their information search or progress are ideal for negative mood groups.

Group Composition

As previously stated, group leaders could display positive or negative emotions to induce those feelings in their followers and to produce the desired performance. Research has demonstrated that negative feelings lead to better decision-making outcomes as a result of systematic processing, whereas positive moods produce worse outcomes because of heuristic processing (Forgas, 1990; Schwarz, 1990). Nevertheless, other research has shown the importance of group composition in determining whether negative or positive moods result in better decision-making outcomes. Van Kleef et al. (2009) demonstrated that a group's epistemic motivation (i.e., desire to have a complete and accurate knowledge of a situation) interacted with the leader's emotional displays in determining group performance. Groups with higher levels of epistemic motivation performed better with a leader who demonstrated anger rather than happiness, whereas the reverse was true for groups low in epistemic motivation. Similarly, Van Kleef, Anastasopoulou, and Nijstad (2010) found that participants high in epistemic motivation were more creative after receiving angry feedback from a phantom partner, but those with low epistemic motivation were less original in their responses.

The utility of a leader expressing negative affect also depends on the overall level of group members' agreeableness. In research by Van Kleef, Homan, Beersma, and van Knippenberg (2010), teams consisting of members low in agreeableness performed better when their leader expressed anger rather than happiness. The reverse was true for groups with highly agreeable members. Further illustrating the limitations of negative mood on decision making, van Knippenberg, Kooij-de Bode, and van Ginkel (2010) found that decision-making groups with high levels of negative trait affect did not benefit from negative mood inductions. Even so, groups with high levels of negative trait affect generally made better decisions than did groups with low levels of negative trait affect, regardless of their induced mood.

Context

Recently, researchers have acknowledged the benefits of both positive and negative affect (De Dreu, Baas, and Nijstad, 2008; George, 2011; George and Zhou, 2007). Whereas positive affect tends to improve cognitive flexibility and originality, negative affect increases motivation and persistence. Consequently, when groups are in positive moods, a leader might engage the group in generating new ideas and integrating information. In contrast, when groups are experiencing negative moods, leaders should have the group focus on critically evaluating their ideas and plans. Consistent with this notion that experiencing both positive and negative moods are important in the right context, George and Zhou (2007) found that negative affect most related to creativity when positive affect was also high and the organizational context was supportive. In fact, creativity was highest under these conditions. Specifically, they showed that the contextual variables of developmental feedback, interactional justice, and trust each helped leverage the benefits of both positive and negative affect in employee creativity. In other research, George and Zhou (2002) found that negative affect related to more creative performance to the extent that employees experienced clear feelings and when the organizational context rewarded creative behavior.

Costs and Limitations of Relying on a Group's Current Mood

Compared to asking group members to actively engage in affect regulation, the strategies mentioned in this section have the benefit of not being cognitively and emotionally demanding. However, most of the suggestions for changing the context to take advantage of a group's mood rely on members implicitly using their mood to guide their behavior. To the extent that mood provides information to people (Martin and Stoner, 1996; Schwarz, 1990), it is important that they misattribute their affect for how they feel about the task at hand. In other words, it is important that followers do not attribute their affect to particular causes. For example, when called on sunny days, people reported greater life satisfaction, presumably because they misattributed their pleasant feelings from the sun as information about how they felt (Schwarz and Clore, 1983). Likewise, people phoned on rainy days reported feeling less satisfaction. Nevertheless, when the experimenter asked people about the weather before inquiring about their life satisfaction, the relationship between the weather/affect and life satisfaction no longer held.

Furthermore, the aforementioned research focused on situations where group members were all in a similar mood. However, situations can occur where group members are in different moods (Kelly and Barsade, 2001). For example, individual group members may enter into a group experience with a variety of affective valences such that the group is initially characterized by affective diversity rather than affective homogeneity. To date, there is little information concerning the consequences of affective diversity. There is some speculation that affective diversity may promote creativity in groups (Tiedens, Sutton, and Fong, 2004). In fact, George and King (2007) argued that affective convergence in the form of group affective tone may be dysfunctional when groups are faced with complex and changing tasks and environments. The shared task perspectives that develop along with group affective tone may prevent groups from achieving optimal outcomes, whereas the multiple perspectives that can result from a more affectively diverse group may help groups to achieve

higher quality outcomes. Nevertheless, other research has shown negative consequences of affective diversity. Barsade, Ward, Turner, and Sonnenfeld (2000) demonstrated that top management teams characterized by both low overall levels of positive affect and high levels of affective diversity experienced less cooperation and more conflict. Affective diversity also marginally predicted worse financial performance. Barsade and Gibson (1998) have also made a case for the potential benefits and drawbacks of affective diversity. Overall, more development of theory on affective diversity is needed. For instance, it is unclear how the aforementioned stop-rules would operate in groups characterized by affective diversity. In addition, although emotional contagion processes presumably homogenize group affect, there must be limits to this process, especially for negative affect, such that dysfunctional negative spirals of mood do not occur (Dasborough, Ashkanasy, Tee, and Tse, 2009; Kelly and Spoor, 2012).

Moreover, the research that we discussed also tends to focus on either performance outcomes of groups or group processes related to performance, such as coordination and cooperation. However, groups characterized by positive and negative affect also presumably confer emotional outcomes for members as well, in terms of satisfaction and bonding with the group (Kelly and Spoor, 2012; Rhee, 2007; Spoor and Kelly, 2004). Therefore, while a given mood may be leveraged to achieve gains in performance, that same mood might harm other aspects of the group. Interacting in groups typically leads to more positive affect and less negative affect (Hinsz and Nickell, 2004; Hinsz, Park, and Sjomeling, 2004), and it is likely more fun to interact in a group characterized by positive affect than one characterized by negative affect. In fact, experiencing positive affect at work has been shown to be related to less absenteeism (George, 1989).

Finally, as previously discussed, how a group develops its positive or negative affect might also matter (Kelly and Jones, 2012; Klep et al., 2011). Group members who come together already experiencing positive or negative affect may not realize the benefits of these moods. It may be necessary for groups to have developed these affective reactions through interactions with each other.

CONCLUSION

Kelly and Spoor (2007) found that people's naïve theories about how positive and negative moods operate in groups were rich and differentiated. Specifically, both positive and negative moods were thought to derive potential benefits, although in different types of situations.

Ideally, it would be optimal to match a group's affective state to the situation that maximizes those potentially beneficial processes. However, such matching may not be possible either on a practical level or because of potential pitfalls of affect regulation in groups.

This chapter also explored ways of potentially leveraging existing affective states in order to maximize group outcomes in situations where affect regulation might be problematic. The chapter calls for a closer examination of stop rules, group composition, and context when attempting to understand how positive and negative affect might influence group performance.

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Chapter 7

THE THRILL OF VICTORY, THE AGONY OF DEFEAT: PERSONALITY, PERCEPTIONS OF PRICE (UN)FAIRNESS, EMOTIONS, AND PRICE SATISFACTION

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ABSTRACT

Although shopping and bargaining are known to have important emotional implications, the literatures on perceptions of price (un)fairness and price satisfaction emphasize their *cognitive* antecedents, content, and consequences and largely disregard the roles of emotions. Some limited research has considered negative emotions' relationships to price unfairness. On the other hand, research has shown that both positive and negative consumption-related emotions predict global customer satisfaction, and enduring personality traits have been shown to influence those consumption-related emotions. We propose and test a model in which perceptions of price (un)fairness and personality traits influence emotional responses to price which, in turn, influence price satisfaction. These findings integrate robust individual differences and positive as well as negative emotions into understandings of perceptions of price (un)fairness and price satisfaction, and demonstrate that emotions play a central role in consumers' responses to price.

Keywords: Personality traits, price fairness, emotions, price satisfaction

1. INTRODUCTION

As the familiar prologue to *ABC's Wide World of Sports* quoted in the title of this article affirms, victory commonly evokes positive emotions and defeat is associated with negative emotions. The idea that marketplace exchanges, like sports, hold the possibility of winning or

losing accompanied by the emotional correlates of winning or losing certainly emerges in the popular press; *EBay for Dummies*, for example, cautions shoppers "Don't get caught up in the emotional thrill of bidding" (Collier, 2009, p. 80; also see Guiles, 1987). Price may be construed as the "give" in the give-and-take of market exchanges (e.g., Zeithaml, 1988), and perceptions of price fairness – perceptions of the equitability of the "give" relative to the "get" – are important aspects of nearly all marketplace transactions (e.g., Bolton, Warlop, and Alba, 2003; Campbell, 1999; Xia and Monroe, 2010; Maxwell, 2002; Huang, et al., 2005). Achieving a "bargain" can lead to positive emotions while paying too much or "being taken" can lead to negative emotions. Nevertheless, the emotions associated with perceptions of price and of price fairness (or unfairness) and the role of emotions in shaping price satisfaction have been largely overlooked in the extant literature.

At the same time, the importance of understanding individual influences in economic-psychological research in general (e.g. Brandsätter, 1993) and on consumer behaviors in particular has been well recognized (e.g., Howard and Sheth, 1969), and research and theory on personality in both psychology and consumer research has undergone a strong resurgence over the past quarter century (e.g., Bosnjaka, Bratkob, Galesicc, and Tuten, 2007; John, Naumann, and Soto, 2008). Personality traits have been linked to consumers' cognitive and affective responses to a variety of other marketing stimuli such as advertisements and product/consumption experiences (e.g., Haugtvedt, Petty, and Cacioppo, 1992; Mooradian and Olver, 1997). Nevertheless, personality traits have not, heretofore, been related to reactions to *price* such as, in particular, perceptions of price (un)fairness, price satisfaction, or price-related emotions.

The objective of the current research is to examine the role of positive as well as negative basic emotions in responses to price, specifically in response to perceptions of price (un)fairness, and to examine the roles of those distinct emotions in shaping price satisfaction.

The brief reviews that follow summarize the literatures on: perceptions of price fairness (or unfairness); consumer emotions; price satisfaction; and personality to develop a model linking perceptions of price (un)fairness; enduring personality traits; and price satisfaction.

Hypotheses are developed within each concise review relating the constructs and an empirical study is then reported testing the deductive model, shown as Figure 1, linking personality traits and perceptions of price (un)fairness to both positive and negative basic emotions and to consequent price satisfaction.

2. LITERATURE REVIEW AND HYPOTHESES

2.1. Perceptions of Price (Un)Fairness

Perceptions of price (un)fairness (henceforth PPU) have been defined as "a consumer's subjective sense of a price as right, just, or legitimate versus wrong, unjust, or illegitimate" (Campbell, 2007, p. 261) and, elsewhere, as "...consumer's assessment and associated emotions of whether the difference (or lack of difference) between a seller's price and the price of a comparative other party is reasonable, acceptable, or justifiable" (Xia, Monroe, and Cox, 2004; also see Martins and Monroe, 1994).
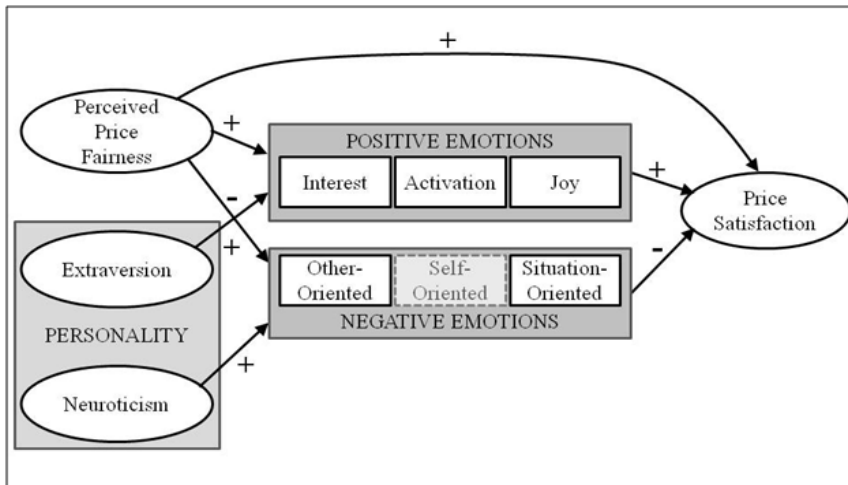
Figure 1. Proposed Model.

PPU themselves are a function of a consumer's appraisals of "the extent to which sacrifice and benefit are commensurate for each party involved" (Bolton, Warlop, and Alba, 2003, pp. 474-475). Xia, Monroe, and Cox (2004) identify four factors or standards that can influence PPU: comparative transactions that involve different parties; perceptions of the motives for a price change; previous experience; and general knowledge regarding sellers' practices. All of those factors rely on effortful cognitive processes. PPU, in turn, influence evaluations of price satisfaction (Oliver and Swan, 1989; supporting H1 below), intention to recommend and customer loyalty (Martin-Ruiz and Rondán- Cataluña, 2008), and future shopping and purchase intentions (Campbell, 1999).

H1: PPU directly influences price satisfaction.

2.2. Consumer Emotions

"Shopping is emotional… Anyone who thinks shopping is rational has spent too long in the office" (Roberts, 2005, p.156).

The structure of emotions forms a hierarchy that can be summarized by its principal dimensions, which can be alternatively rotated to positive affect and negative affect or pleasure and arousal (cf., Russell, 1980; Tellegen, Watson, and Clark, 1999) or can be described more granularly as 'basic' emotions (e.g., Ekman, 1999).

Consumption-related emotions have also been shown to be hierarchical in structure and, although most consumer-emotions research has operationalized emotions as broad summary dimensions, there have been calls for greater attention to the roles of narrower basic emotions. Richins (1997) distinguished 16 distinct consumption-related emotions in her broad review and synthesis, and she called for research on the roles of specific emotions in consumption: "of interest would be research that examines, in depth, the character of individual consumption-related emotions and that identifies their antecedent states." (p. 144). Laros and Steenkamp (2005) also considered the structure of consumption-related emotions and proposed a *three*-level structure in which two higher-order factors, positive and negative

emotions, subsume eight basic emotions which themselves span 42 more specific emotions. They concluded that, although positive and negative dimensions are commonly utilized, "Important nuances, however, are lost if emotions of the same valence are collapsed together" (p. 1444).

Consumption-related emotions have been shown to influence consumer satisfaction and the behavioral outcomes of consumption. Westbrook (1987) augmented earlier, predominantly cognitive understandings of satisfaction formation (which focus on attribute performance and the confirmation or disconfirmation of expectations) with "product/consumption-based affective responses" and showed that emotions contribute significantly to the explanation of customer satisfaction beyond the variance explained by cognitions. Subsequent, wide-ranging research has confirmed the direct influence emotions on customer satisfaction (for a review see Ladhari, 2007). Although, as mentioned, most consumer research has operationalized consumption-related emotions as summary dimensions, some research has examined the role of discrete basic emotions. For example, disappointment, anger, and regret have been shown to have distinctive influences on post-purchase behaviors such as complaining, switching, and negative word-of-mouth (e.g., Bougie, Pieters, and Zeelenberg, 2003; Wetzler, Zeelenberg, and Pieters, 2007).

Xia, Monroe, and Cox (2004), in their review and in their definition of PPU (above), assert that affective processes are an important aspect of PPU and emphasize the lack of adequate research on emotional consequences of fairness appraisals (cf., Austin, McGinn, and Susmilch, 1980). Important recent research has, nevertheless, begun to explore the role of emotions in responses to PPU. Peine, Heitmann, and Herrmann (2009) showed that PPU and perceived value predict positive and negative emotions which, in turn, predict positive word-of-mouth and purchase intention. Bolton, Keh, and Alba (2010) found that consumers in collectivist cultures are more likely to experience shame, a self-focused emotion, in response to percieved price unfairness while individulistic cultures are more likely to experience anger, an externally-focused or other-oriented emotion.

Several taxonomies of basic emotions have been offered in the literature. Egloff, Schmukle, Kohlmann, Burns, and Hock (2003), for example, differentiated three factors of positive emotions: joy, interest, and activation . With regard to negative basic emotions, Wong and Weiner observed that "either the cause resides in you, in some other people, or in the situation" (1981, p. 655). These categories of positive and negative basic emotions serve to organize the following hypotheses regarding the effects of PPU on emotions:

H2a: PPU influence price-related interest.
H2b: PPU influence price-related activation.
H2c: PPU influence price-related joy.
H3a: PPU influence others-oriented negative price-related emotions.
H3b: PPU influence situation-oriented negative price-related emotions.

(Note that PPU are not expected to influence self-oriented negative emotions in our American sample; see Bolton, Keh, and Alba, 2010)

2.3. Price Satisfaction

Price satisfaction has been defined as the customer's overall evaluation of a product's or service's price or a company's pricing policy (Matzler, Renzl, and Faullant, 2007). Price satisfaction differs from price image (2008) or price attitude (Nyström, 1970) as it is the result of a specific buying situation. Price satisfaction has been shown to influence post-purchase behaviors and attitudes like shopping intentions (Zielke, 2008), perceived value (Baker, Parasuraman, Grewal, and Voss, 2002), customer switching intentions (Keaveney, 1995), or word-of-mouth (Matzler, Renzl, and Rothenberger, 2006; Varki and Colgate, 2001).

Studies that investigate the formation of price satisfaction have identified several antecedents (Matzler, Renzl, and Faullant, 2007; Zielke, 2008). Price fairness is one of the antecedents that have been found to influence price satisfaction across studies (Matzler, Renzl, and Faullant, 2007; Matzler, Renzl, and Rothenberger, 2006; Zielke, 2008). Price fairness evaluations have been related to emotions conceptually (Xia, Monroe, and Cox, 2004) and empirically (Bolton, Keh, and Alba, 2010).

However, emotions have not been studied as antecedents of *price* satisfaction.

As discussed above, Westbrook (1987) and others have demonstrated that consumption-related emotions complement cognitive processes in predicting global customer product satisfaction (see Ladhari, 2007) but no research has connected emotions to price satisfaction in specific.

Additionally, most of that research linking emotions to global satisfaction has operationalized consumption-related emotions at the level of summary dimensions, either as positive and negative emotions or as pleasure and arousal. Some limited research has examined the role of certain basic emotions but none has considered a comprehensive set of basic emotions.

Thus, based on the findings that summary dimensions of consumption-related emotions influence consumers' global product satisfaction, corresponding relationships can be deduced for basic emotions and price satisfaction:

H4a:	Interest will directly influence judgments of price satisfaction.
H4b:	Activation will directly influence judgments of price satisfaction.
H4c:	Joy will directly influence judgments of price satisfaction.
H5a:	Other-oriented negative price-related emotions will directly influence judgments of price satisfaction.
H5b:	Situation-oriented negative price-related emotions will directly influence judgments of price satisfaction.

(Note that self-oriented negative emotions are *not* expected to affect price satisfaction; there is no reason to hypothesize that having negative feelings about oneself would lead to lower (or higher) price satisfaction with regard to a transaction.)

2.4. Personality

Personality is defined as "the distinctive patterns of behavior, including thoughts, and emotions, that characterize each individual's adaptation to the situations of his or her life."

(Mischel, 1986, p. 4). Personality psychology has made dramatic theoretical and empirical progress over the past quarter (e.g. Matzler et al., 2008) century due, in large part, to: an understanding that, methodologically, traits and behaviors should be measured at compatible levels (Ajzen, 2005, Chapter 4); a recognition that specific behaviors result from the interaction of the individual (personality) and the situation (e.g, Funder, 2008); advances in methodological and analytic techniques and capabilities such as data collection capacities and advances in statistical approaches (e.g., Reis and Judd, 2000); and, a growing consensus that five broad traits or "domains" (Neuroticism, Extraversion, Agreeableness, Openness, and Consciousness) summarize most of the meaningful variance in personality traits (John, Naumann, and Soto, 2008). Despite earlier unenthusiastic assessments of personality traits' capacity to explain or predict important consumer behaviors (e.g., Kassarjian, 1971), that fairly recent progress in personality psychology has also begun to also influence consumer research and theory (e.g., Bosnjaka, Bratkob, Galesicc, and Tuten, 2007).

Two of the high-level personality traits in the five-factor structure, Extraversion and Neuroticism, are closely related to positive and negative emotional experiences, respectively (Larsen and Katelaar, 1991; Rusting and Larsen, 1997; Watson, Wiese, Vaidya, and Tellegen, 1999). Mooradian and Olver (1997) related the extraversion and neuroticism to levels of positive and negative emotions experienced with automobiles, respectively, and linked those emotions to satisfaction and resulting intentions to complain, recommend, and repurchase. Subsequent research has related extraversion and Neuroticism to positive and negative emotions across product categories and across cultures (Matzler, Faullant, Renzl, and Leiter, 2005). No research that we are aware of has related personality to *price-related* emotions.

Only limited research has related personality traits to basic (narrow, specific) emotions. In general, while traits do appear to predict basic emotions (Extraversion predicts basic emotions that have positive valence, Neuroticism predicts basic emotions that have negative valence), although emotional states can be well differentiated into discrete basic emotions, dispositional affect appears to reduce to a few traits (Zelenski and Larsen, 2000). Thus, we hypothesized that:

H6: Neuroticism will be directly related to self-, others-, and situation-oriented negative price-related emotions.

H7: Extraversion will be directly related to the positive price-related emotions interest, activation and joy.

3. STUDY

3.1. Sample and Design

Figure summarizes the proposed model reflecting the several hypotheses, H1 to H7, developed above. Subjects were 234 students at a major Austrian university who received course credit for participation in the study. Each student completed two questionnaires. To create a situation in which high and low price fairness was perceived, students were provided with a description (half a page each) of two realistic incidents within a bank setting. In the

first incident, a student had a bank account. After a car accident she was in need of money and had to overdraw her account.

After a while she realized that the bank not only charged the interests – as agreed – but also charged a commission that has not been mentioned by the clerk. Furthermore, the type of account has automatically been changed into a less favorable one with less favorable terms, without any notice to the student. In the second incident (second questionnaire), a situation is described where high price fairness should occur.

A student reads a newspaper article that claims that banks in general charge excessive interest rates for loans. Later that day, a good friend tells him about his hard interest negotiations with his banks. The same day the student receives a letter from his bank that informs her that due to low interests rates in the market, the interest for her bank loan have been lowered automatically, which means a reduction of total interest paid of approximately EUR 500. After reading carefully each incident the students answered a questionnaire on how they judge price fairness and the emotions they would experience in these situations. Furthermore, the questionnaires contained questions to measure personality traits. The resulting sample size was 468.

3.2. Measures

Extraversion and Neuroticism were measured with the associated subscales from the German version of the NEO-FFI and five-point "strongly disagree" to "strongly agree" response scales (Borkenau and Ostendorf, 1993; Costa and McCrae, 1992). Positive and negative emotions were measured with the German PANAS (Krohne, Egloff, Kohlmann, and Tausch, 1996; Watson, Clark, and Tellegen, 1988) with five-point response scales anchored by "very slightly" to "extremely." The original PANAS consists of 10 items each for positive and negative emotions; Egloff, Schmukle, Kohlmann, Burns, and Hock (2003), however, demonstrated that the PANAS can be decomposed into three positive factors: joy (excited, proud, enthusiastic), interest (interested, strong determined), and activation (attentive, inspired, alert, active); and three negative factors: situation-oriented (distressed, nervous, jittery, afraid, scared), other-oriented (upset, hostile, irritable), and self-oriented (ashamed and guilty). PPU were assessed on five items: "Price and quality are fair," "The offer meets my needs considering benefits and cost," "The price policy of this bank is fair," "The bank does not take advantage of its customers," and "Price changes are communicated properly." Price satisfaction was measured with two items: "I am satisfied with the terms and conditions of this bank account;" and, "I am satisfied with the pricing policy of this bank."

PPU and Price Satisfaction items were rated on five-point scales from "strongly agree" to "strongly disagree."

3.3. Analysis

The causal relationships between the constructs were analyzed through structural equation modeling using the Partial Least Squares (PLS) approach. A two-stage analytic approach (Hulland, (1999) was employed: the validity and reliability of the measurement model were tested first and then the structural model was tested by estimating the paths

between the constructs. Reliability and validity were assessed with: (1) individual item reliabilities; (2) the convergent validity of the measures associated with individual constructs; and, (3) discriminant validity. The reliability analysis of the two personality traits Extraversion and Neuroticism did not yield acceptable results according to the standardized scales (Borkenau and Ostendorf, 1993) and had to be purified by excluding some of the items with low loadings, resulting in scales of five items for Extraversion-scale and for items for Neuroticism. These findings and the necessary modifications were not unexpected; others have reported similar results with the German NEO-FFI subscales assessed Confirmatory Factor Analyses (e.g. Renner, 2002). All items have loadings above 0.6 and, therefore, have high item reliabilities. Convergent validity was measured using Fornell and Larcker's (1981) measure of internal consistency (IC) and Average Variance Extracted (AVE) was calculated with satisfying results (Table 1).

For ensuring discriminant validity Fornell and Larcker (1981) suggest that average variance shared between a construct and its measures should be greater than the variance shared between the constructs and other constructs in the model. Discriminant validity is given, when the diagonal elements (square root AVE) are greater than the off-diagonal elements in the corresponding rows and columns. Discriminant validity between interest and activation was not satisfactory, therefore these two facets were merged into "interest/activation" and the model was recalculated. Table 1 reports the internal consistency of the constructs, the average variance extracted and discriminant validity, showing satisfying results.

Path coefficients and predictive ability. PLS uses the bootstrapping method (Efron and Gong, 1983) to compute the standard errors and thereby evaluate the significance of the structural coefficients. Standard errors of parameters were computed on the basis of 250 bootstrapping runs.

Table 1. Latent Variable Correlation Matrix of the Final Model

	Extra-version	INTACT	Fairness	SONE	Neuro-ticism	Joy	SDNE	OONE	Satis-faction
Extraversion	**.77**								
INTACT	.19	**.74**							
Fairness	.00	.34	**.81**						
SONE	-.03	.39	-.50	**.78**					
Neuroticism	-.04	-.01	-.06	-.21	**.70**				
Joy	.10	-.06	.62	-.37	.04	**.88**			
SDNE	.01	.14	-.12	.44	.15	-.10	**.84**		
OONE	.02	.47	-.72	.71	.08	-.62	.27	**.92**	
Satisfaction	.00	-.34	.81	-.48	.04	.61	-.16	-.71	**.96**
IC	*.88*	*.89*	*.90*	*.99*	*.83*	*.91*	*.83*	*.95*	*.97*
AVE	*.59*	*.55*	*.65*	*.61*	*.49*	*.78*	*.71*	*.85*	*.93*

Square root of AVE is on the diagonal.

IC = Internal Consistency, AVE = Average Variance Extracted, SONE = Self-Oriented Negative Emotions, SDNE = Situation-Directed Negative Emotions, OONE = Others-Directed Negative Emotions, INTACT = Interest/Activation.

Figure 2 shows the path coefficients, their significance level and the R² values of the endogenous variables. The predicted relationship between personality traits and emotions also holds for the more concrete dimensions of emotions: extraversion predicts joy and interest/activation, whereas neuroticism significantly influences all three types of negative emotions, namely self-, other- and situation-oriented negative emotions (H3a, H3b). Also, price fairness judgments influence facets of negative and positive emotions: low price fairness judgments elicit strong negative others- and situations-oriented emotions (upset, hostile, irritable; and distressed, nervous, jittery, afraid, scared) and to a weaker extent also self-oriented negative emotions (shame, guilt) (H1b). High price fairness judgments lead to higher joy but to lower interest and activation.

This is contrary to the hypothesized positive relationship between price fairness and interest/activation (H1a). As expected, price fairness strongly impacts on price satisfaction (H1b).
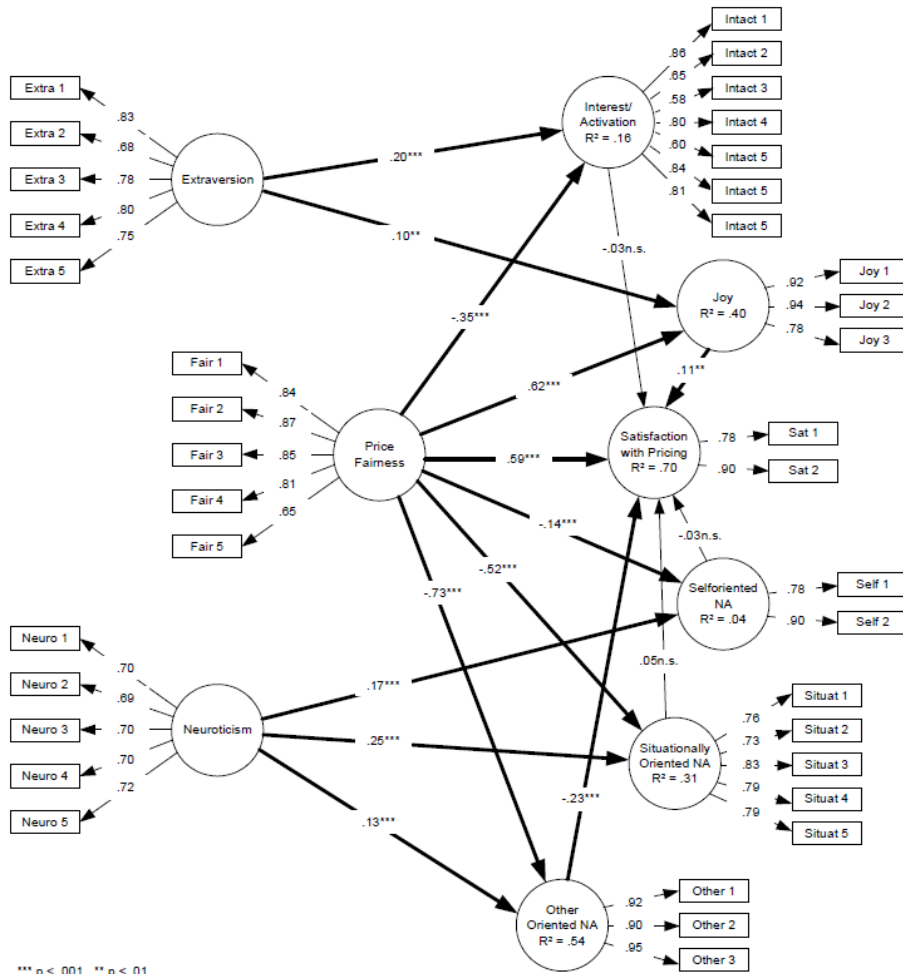
*** p < .001, ** p < .01

***p<.001, **p<.01.

Figure 2. Structural Model and Results of Partial-Least-Squares Analysis.

Among the facets of emotions, two have predictive ability for price satisfaction (H2a, H2b): "Joy" increases price satisfaction, and "Others-oriented negative emotions (upset, hostile, irritable)" reduce price satisfaction.

"Interest/ Activation", "Self-oriented negative emotions (shame, guilt)" and "situation-oriented negative emotions" (distressed, nervous, jittery, afraid, and scared) do not significantly influence price satisfaction.

This is partly in line with the hypotheses, which proposed a significant relationship between situation-oriented negative emotions and price satisfaction. The failing relationship between self-oriented negative emotions and price satisfaction however, has been anticipated in H2b.

4. DISCUSSION

4.1. General Discussion

This brief report concisely reviews the literature on PPU, emotions, and price satisfaction and then reports a study demonstrating that PPU have strong influences on positive as well as negative emotions which, in turn, contribute differentially and independently to price satisfaction.

These findings extend earlier, limited empirics which focused on negative emotions and address the research gap identified by Xia, Monroe, and Cox (2004), who criticized the highly cognitive treatment of PPU, its content, and its consequences in the extant literature.

These findings also confirm that broad, higher-order dimensions of consumers' emotional experiences can be meaningfully decomposed into specific facets or "basic emotions" which contribute independently and in different ways to the explanation of price satisfaction.

In particular, joy and other-oriented-negative emotions are influenced by both temporally-specific appraisals (PPU) and enduring personality traits; Extraversion influences positive emotions and Neuroticism influences negative emotions in predictable patterns. In turn, those basic emotions influence price satisfaction over and above the influence of PPU (self-oriented-negative emotions had no effect on price satisfaction).

These findings are also meaningful from a managerial perspective; they corroborate the importance of establishing and communicating fair pricing policies and they illuminate the highly emotional processes via which consumers respond to the perceived fairness in an exchange.

Perceptions that prices are unfair evoke strong emotions, dissatisfaction, and unfavorable post-purchase behaviors.

4.2. Limitations and Future Research

These data are self-reported responses in an experimental manipulation with student subjects. There may be some question regarding whether it is possible to elicit emotional reaction in an experimental format (e.g. Wallbott and Scherer, 1989).

On the other hand this method allows for the control of other potentially distorting influences and for testing of relationships within a homogeneous target group, and students are a relevant consumer segment for the banking services. The scenarios presented a realistic scenario to the students by choosing a setting with which most students have been familiar (45% of them reported having overdrawn an account at least once and more than 70% reported having had a positive or negative experience with price or performance with their bank).

The current research did not explore the outcomes beyond price satisfaction. Future research may usefully investigate the consequences of price satisfaction and simultaneously link those consequences to these antecedent emotions and fairness appraisals: Do price fairness, fairness-related emotions, and price satisfaction directly influence behaviors such as complaining, word-of-mouth, or switching? From research on global product satisfaction studies it is known that angry customers behave differently than customers who "only" feel regret or shame (Bougie, Pieters, and Zeelenberg, 2003). Future research may also extend these findings to non-student samples, non-banking product categories, and to observed behaviors as well as self-reported evaluations and emotions.

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Chapter 8

LOVING YOU FROM YOUR FIRST CENTS AND LEAVING YOU WITH OUR DEBTS: MONEY MANAGEMENT IN THE HOUSEHOLD

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ABSTRACT

This chapter presents an overview of finances in general – and expenditures in particular – exert influence on close, interpersonal relationships, potentially driving a wedge between them. Their influence in money matters has several facets, and can determine the quality, dynamics and outcome of close, romantic relationships.

In the best circumstances, joint money-management issues can have a positive influence on partners' well-being and can broaden their experiences and widen their understanding of each other. Money matters can bind people together: joint financial decisions can be an instrument of pursuing common goals, acquiring shared experiences or mutually gaining material goods. However, there is an abundance of less appealing issues related to money management that may overshadow and sour a relationship between partners. Conflicts over a partner's spending behavior, inability to compromise, overspending, and consequent hardships with paying off debts, are only a few of those daily experiences that are closely related to money.

In this chapter we review strategies for seducing the person to whom one may be attracted, with a focus on the male's behavior, as it is still believed they need to signal wealth to raise female's attention. Second, we will review literature on partners' matching. The third section details a bundle of issues related to living in the same household and money management. We will first review money management patterns among couples and associated conflicts; and then we continue with an overview and assessment of documented strategies of influencing purchase decisions in a family setting. The fourth section will be about marketing and policy implications of the reviewed characteristics of family purchase decisions and money management.

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1. INTRODUCTION

In 2008 Sara Siegel Bernard wrote a surprising piece in the NYTimes[1] arguing that, despite the general preference in the modern world toward marrying for romantic reasons, it seems that marrying a financial soul mate has several benefits and could positively impact the marriage. Considering rational factors in the decision to marry, or even marrying only based on rational considerations has long cultural history and has been well documented. In fact, marrying for romantic reasons is only a recent development, dating from around the beginning of the 20th century.

In this chapter we present a brief summary of findings in psychology, family consulting and sociology which provide some background for the rationale of thinking before marrying someone, with the key focus on partners' attraction to each other, their matching to each other and practices involving household money management. The chapter is an overview of how money (and finances in general) wedge into close interpersonal relationships and exert influence upon them. This influence has several facets, and could potentially determine the quality, the dynamics and the outcome of these relationships. Our focus will be exclusively on romantic relationships, and marriages or cohabitation among heterosexual couples. The reason for this restriction is twofold. First, the vast majority of research on family purchase decisions and money management has been done on heterosexual couples. Second, we assume that behavior strategies and dynamics present among heterosexual couples is very similar to those within homosexual couples, since gender differences do not seem to strongly impact the bundle of related behaviors.

In the best circumstances, money and mutual money-management issues could have a positive influence on partners' well-being and could broaden their experiences and widen their understanding of the other. Money can bind people together, since it can be an instrument of pursuing mutual goals, acquiring shared experiences or mutually gaining material goods. Moreover, money management, and corresponding joint decisions, could potentially facilitate learning about the partner's values and goals, and also could enhance the negotiating and bargaining skills of partners.

Unfortunately, however, there is an abundance of less appealing issues related to money and its management that may overshadow and eventually sour a relationship between partners. Conflicts over the other's spending behavior, inability to compromise, overspending and consequential hardships with paying off debts are only a few of those daily experiences that are closely related to money. Additionally, partners often find out what different values and life goals they have when they have their first serious conversation and negotiation about how to ration money within a household. These arguments can often evolve into big fights from which a couple can barely proceed without substantial resentment or even disappointment.

With this short introduction and everyone's personal recollections about money-related experiences with someone close, perhaps it is not hard to argue that money management in a close relationship is an important topic not only from a strictly scientific point of view, but also because of its infinite implications on mental health, on policy making and on responsible marketing.

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[1] http://www.nytimes.com/2008/09/10/business/businessspecial3/10WED.html?pagewanted=all

The chapter is laid out as follows. First, we review strategies for seducing the person to whom one may be attracted. Here we focus on the male's behavior, as it is still believed they need to signal wealth to raise the female's attention. Second, we will review literature on partners' matching. This section will be organized by comparing findings on matching of types. One of these is the so-called *assortative matching*, implying a positive assortment between individuals. The other is the so-called *complementary matching* implying that opposites attract. We will list behaviors that favor either of the two types of matching and review which type of matching is advanced in partner selection. The main focus will be on matching in the domain of money management. The third section details a bundle of issues related to living in the same household and money management. We will first review money management patterns among couples and conflicts associated with money issues. Then we will continue with an overview and assessment of documented strategies for influencing purchase decisions in a family setting. Here we will have a special look at vacation decisions since – due to the influence of children – they seem to be special among purchase decisions. The brief fourth section will be about marketing and policy implications of the reviewed characteristics of family purchase decisions and money management. The chapter will be concluded with final comments and limitations.

2. MISLEADING SEDUCTION: MEN MAKE A MISLEADING IMPRESSION OF THEIR WEALTH TO IMPRESS WOMEN

From an evolutionary perspective, it is not surprising that a man might potentially increase his mating success by showing off his wealth, since it would convey the message of being able to provide sufficient resources in raising offspring. In humans, one possible signal of greater fitness is *conspicuous consumption* (Veblen, 1899/1994). Conspicuous consumption refers to the act of spending money to gain social status and impress upon others the spender's affluence (Griskevicius et al., 2007). In a mating situation this may be an instance of myopic behavior, i.e. featuring great discounting of future consumption (Wilson & Daly, 2004). Purchases that signal social status and the capacity for buying frivolous and unnecessary goods – even if these purchases are out proportion to the male's budget – are held to impress females (Sundie et al., 2011). For example, in an experimental situation, when men are visually exposed to women, they report increased valuation of material goods (Roney, 2003). It has also been demonstrated that men are inclined to engage in conspicuous consumption in mating situations to impress attractive women, while women do not engage in similarly extravagant spending (Griskevicius et al., 2007). However, this behavior is only present when men are pursuing short-term mating goals (Sundie et al., 2011). For example, when men are presented a picture of an appealing woman, in addition to over-appreciating luxury or high-investment goods, they behave in a more present-biased way than those presented with unappealing women (Wilson & Daly, 2004). And in fact, this behavior seems somewhat successful: women's choices are highly influenced by their perceptions of men's socioeconomic status and wealth (Kenrick, Sundie, Nicastle, & Stone, 2001; Townsend & Levy, 1990). Thus, women reinforce men's showing off and their present-biased behavior. Since, however, this consumption pattern is not necessarily consistent with the man's long

term capacity, it could make a false impression and lead to unrealistic expectations for women.

3. MATCHING: FROM ATTRACTION TO MARRIAGE

Who mates with whom has been an intriguing question not only for teenagers and artists, but also among scientists in a wide range of disciplines. Most Western societies provide two – seemingly mutually exclusive – proverbial answers to this puzzle. The proverb that "opposite attract" implies that people with complementary characteristics tend to be desirable to each other. On the contrary, we also learn that "birds of a feather flock together", indicating that people with *similar* characteristics are likely to couple.

Research on mating systems actually verifies both clichés, depending on what characteristic is in focus. In fact, it has been demonstrated that human mating systems deviate from randomness (Buss & Barnes, 1986) in two systematic ways. One is that like attracts like – i.e., people tend to be drawn to someone who is similar to them, as is the case with *assortative mating* (Thiessen & Greeg, 1980). Watson, Klohnen, Casillas, Simms, Haig and Berry (2004) conducted a large comprehensive study on similarities in demographics, education, verbal intelligence, values and cognitive abilities among 291 married couples. The general pattern suggested is that demographic variables correlate the most, while values and cognitive abilities correlate the least between members of a couple. These findings are consistent with a long list of previous studies demonstrating that people choose spouses or partners with similar demographics, social economic status (Jones, Pelham, Carvallo, & Mirenberg, 2004), education level (Mare, 1991), and a wide range of physical characteristics (Spuhler, 1968), whereas values, attitudes, opinions and world view are only moderately correlated between partners (Hill, Rubin, & Peplau, 1976) and personality characteristics are even less so (Buss, 1984). However, a recent meta-analysis of 313 lab and field studies suggests that *perceived* similarity – as opposed to *actual* similarity – is more predictive for lasting interactions, whereas actual similarity is more important in non-interactions and short interactions (Montoya, Horton, & Kirchner, 2008). Furthermore, in most studies there is only a moderate correlation of cognitive ability found within a couple (Johnson, Ahern, & Cole, 1980). One of the largest studies ever done to investigate personality trait similarities between spouses (Ahern, Johnson, Wilson, McClearn, & Vandenberg, 1982) examined 54 personality traits. They found that, although most of these personality traits were positively correlated, the magnitudes of the correlations were generally small.

On the other hand, despite the pervasiveness of folk wisdom on how "opposites attract", empirical evidence on *complementarity matching* seems to be less convincing (for review see (White & Hatcher, 1984). One thing, however, seems to be true: cooperative work and interactions benefit from complementarity, and people report greater satisfaction after interacting with complementary partners than with similar partners (Dryer & Horowitz, 1997).

To reconcile the validity of these two apparently inconsistent pieces of folk-wisdom, Klohnen & Mendelsohn (1998) suggest that individuals seek and stay closely related to a partner who is closer to their idealized self-conceptions. This implies that, for those traits in which the individual excels and perceives himself close to his ideal self-conception in this

domain, he will seek positive assortment. For traits or behaviors in which the individual experiences himself being far off from his ideal self, he would seek complementarities. Rick, Small, & Finkel, (2011), for example, found supporting evidence for complementarity in spending behavior. They examined married couples' spending tendencies based on their self-reports and their assessments of each other, and found that couples have opposite spending tendencies, indicating that tightwads and spendthrifts attract. Furthermore, they also found that people are not necessarily content with their own extravagance or frugality. The unhappiness with one's own dominant spending behavior, together with the tendency towards marrying someone with opposite behavior, supports Klohnen and Mendelsohn's (1998) suggestion regarding the dynamics of complementary attraction.

Once partners experience a good match between themselves, the strong binding power of love – or at least a strong attraction and/or attachment – arises. Obviously, attraction, love and attachment are essential factors of the formation of long-term relationships and commitment. The phenomenon of love – beyond providing infinite inspiration for artists – has been a central focus various fields of science as well. Although there is a large body of descriptive and explanatory research on love done by psychologists, sociologists, biologists and other behavior scientists, in this chapter we focus on how love is described in economics and economic psychology, and especially on how matching may be construed as a predictor of commitment toward a relationship.

From an economic point of view, the question of matching can easily be simplified by considering how partners' income levels and/or income potentials match, and then how this matching plays a role in marital sorting. On the empirical side a great number of studies have found that cohabitants' current and/or potential earnings, along with their education, are positively related to shifting from cohabitation to marriage (Brown, 2000; Smock & Manning, 1997; Wu & Pollard, 2000; Xie, Raymo, Goyette, & Arland, 2003). This vein of research mainly investigates cohabitating people and predominantly relies on interviews, surveys or diaries to investigate the factors determining transition into marriage or dissolution. In the past couple of decades, the prevalence of cohabitation has reasonably increased as it becomes more accepted by society, although its prevalence still shows differences across countries (see e.g., Kiernan, 2002 cited by Cherlin, 2004). In the United States, for example, cohabitation is still considered a trial before marriage, despite the fact that a decreasing number of cohabitations actually end up in a marriage (e.g., Smock & Gupta, 2002; Davis, Smith, & Marsden, 2003). In fact, it seems that cohabitation has a casual role in declining marriage rates (Bumpass, Sweet, & Cherlin, 1991).

When cohabitation ends up with a marriage proposal, money and finances seem to play a causal role in this decision. A wide range of research documents that the transition from cohabitation to marriage significantly depends on how partners assess the relationship's economic potential. Smock, Manning and Porter (2005), for example, interviewed 115 young adults, focusing on their decision about making the step to marry. They found that when cohabitants contemplate getting married, their evaluation of each others' current economic circumstances (e.g., current loans they are paying or their potential to afford a house and a car) plays a crucial role on whether or not shift to marriage. As these interviews revealed, one of the key obstacles of getting married is not the lack of love or commitment to the relationship, but rather doubts about being able to finance a newly formed family.

Beyond the empirical research, scholars in the theory-driven camp also investigate the mechanism of household formation (Becker, 1973) with respect to marital matching (for a

comprehensive review of economic research on 'why marry' see, for example, Weiss, 1997). Becker, in his seminal work (1973), introduced economic concepts into analyzing the institution of marriage, and set the stage for the mechanism of marital sorting in a marriage market. One way to analyze marriage is by using a matching framework (Mortensen, 1988). This approach analyzes marriage markets and marital sorting with a focus on the macroeconomics of the marriage market (Burdett & Coles, 1997). Hess (2004), for example, provides a model of how marriage can be prompted by the desire for income insurance, while taking also into account how love interacts in the decision to marry and in determining the success of the marriage. This model promotes assortative mating as it predicts that two hedges (i.e., where the income of the spouses are negatively correlated) are more likely to marry. Love, however, complicates the picture. Those couples, where the uncertainty of future income shocks is relatively low (i.e., they have already experienced income shocks at the onset of their marriage) and they are bonded together with persistent love will be more likely to divorce in the future. Since only love will keep them together in the long run. On the contrary, however, couples whose love is less long-lasting and whose income shocks occur later in their lives are more likely to stay married, since the cost of being married to a poor hedge will increase in time (Hess, 2004). Similarly, Fernandez, Guner, & Knowles (2005) propose a model in which greater income inequality decreases the likelihood of "marrying down", since doing so increases borrowing constraints. Their model implies that inequality and marital sorting, as two endogenously determined variables, can reinforce each other, since the avoidance of marrying down could potentially lead to even lower aggregate levels of income accumulation and lower per capita income levels, thus resulting in further borrowing constraints for those initially worse off (Fernandez et al., 2005).

4. LIVING IN THE SAME HOUSEHOLD

In this section we review the literature on family money management and family purchase decisions. First we cover identified practices on money management and review the factors which may help predict them. We will also cover how various money management practices are associated with spouses' perceptions of their own and their partner's control. We will also summarize findings on conflicts revolving around money, and literature linking these conflicts to marital well-being. Then we shift to a description of types of family purchase decisions, with a special focus on strategies of influence documented among spouses. In doing so we will investigate the static and dynamic aspects of these influence strategies, and their relation to spouses' perceptions of equity. We will conclude this section with a summary of vacation decisions since, due to the strong influence of children, these decisions are of special interest.

4.1. Money Management within the Household

What is the significance of money in close relationships? Coria (1994) writes that money is of such central importance in the private household that a study of it ultimately reaches into all aspects of close relationships. She also states that the way money is handled reflects the

complex power relations amongst the partners and their children. Discussion of money issues touches on a taboo area: men are easily offended if the conversation turns to money, and women often feel guilty if they are asked to justify their everyday expenditure. Wilson (1987) also stresses the difficulties encountered in studying financial matters in private households. Few households have sufficient financial resources to satisfy all the desires of the family members. For that reason partners often see themselves as being in competition with each other when financial matters are discussed. Money is a source of conflicts of interest which people do not like discussing.

In this section we review the similarities between household labor division and household money management, with the main focus on the latter. The reason for bringing up household labor division is that there seems to be a strong consistency between the patterns of household labor division and household money management. This common pattern may be explained by a third variable, which could potentially be the perception of the breadwinner role and the "stereotypical rights" assigned to this role, which seem to be institutionalized in some marriages (Yodanis & Lauer, 2007). This proposition – strongly ingrained in new institutionalism – relies on the idea that institutional arrangements in which we are living provide the scope and limits of our wants, and also that the actual institutional framework gives the means to pursue these goals (Swidler, 1986). Therefore, marital roles and the division of responsibilities are in accordance with the actual social context and zeitgeist.

The two most prevalent money management patterns among married couples are likely to either be consistent with the relative resources contributed to the joint pool (and thus mainly male-dominated), or alternatively to be more egalitarian. In the next sections first we will describe these two patterns. Then we will also discuss their consequences on partners' perceptions of deprivation of consumption, and on how much personal spending money they have at their disposal.

Real and Perceived Breadwinners – The Case of Household Labor Division

Some social scientists claim (e.g., Coria, 1994; Wilson, 1987) that the person who has money at their disposal in close relationships possesses a powerful weapon, allowing the user to exercise control over everyday events, and power over others through that control. By contrast, the person who is dependent on money earned by another has to fit in with that person. It is often the woman who is dependent on the income of the man, especially in families with dependent children. In low-income households, money matters are often an issue that women have to confront because, whilst they are responsible for setting standards in the home, they have little or no control over financial resources (Wilson, 1987).

One possible way to investigate household and marital money management is to draw on the distinction between micro-level and macro-level marital power-relations suggested by Blood and Wolfe (1960). On the macro-level they describe the general patriarchal mindset which sets the stage for men having the final say in almost all issues within the family (e.g., money management, household labor division, family purchase decisions, etc.) and also leading to a male-favored distribution of household labor. On the micro-level they point out the relative resources (i.e., income, education, social status, etc.) that each partner brings into the marriage. In this macro- and micro-level framework, husbands and wives negotiate their own shares of household work (or of anything that ultimately implies sharing scarce resources). This negotiation is driven by the partners' perception of who contributes more resources to the joint pool. The outcome of the negotiation is mostly determined by the

relative resources provided by each of the spouses. Thus, the negotiated household labor division is more likely to favor men. Empirical studies on dividing household labor at the couple level reinforce this pattern reporting that, despite the major increase in women's participation in the labor market, they are still the ones doing the majority of housework (Bianchi, Milkie, Sayer, & Robinson, 2000; Bodi, Mikula & Riederer, 2010; Coltrane, 2000; Lothaller, Mikula & Schoebi, 2009). It has been also claimed that on the macro-level, women's power is still strongly embedded into the stereotypical gender-power relationship, and thus gets substantially discounted (Blumberg, 1984). This implies that the lower the women's relative economic power, the more likely she will be oppressed on both the micro- and macro-level. On the contrary however, the higher the economic power that women may acquire, the more macro-power potential they will gain with it. Although, as has been pointed out by Blumberg (1984), women's macro-power will still be constrained by the gender-centric society. Drawing on the importance of macro-level factors in determining household labor division, Fuwa (2004) shows that macro-level gender inequality does actually limit the effect of micro-level variables (relative income, time availability and gender ideology). In her large-scale study conducted in 22 countries, enrolling 14,429 participants, she finds a strong interaction effect between egalitarian culture and time availability, and also between egalitarian culture and gender ideology, but that egalitarian culture and relative resources did not interact. This suggests that individual variables can only lend bargaining power in household labor division where the societal standards have shifted from traditional to egalitarian.

Even though one would easily assume that when the woman contributes more to the joint household pool (i.e., cross-class marriages), men would take over a greater share of the household labor, this seems not to be the case. Rather, the gender-driven traditional view on household labor division seems to be so pervasive that it is even present in cross-class marriages. It looks like traditions do outweigh the significance of relative input to the joint pool. McRae (1987) for example, investigated allocation patterns and corresponding distributions of household chores among cross-class families and, although women were making more money than men, most of the household labor was still the women's responsibility. In addition this status-reversal may be problematic to handle for couples, and women may try to play down their relative dominance over resources (Snape, Molloy, & Kumar, 1999; Tichenor, 1999).

Practices in Managing Money in Households

Surprisingly, most studies find that the person in charge of household money management and the control of money is still determined by more traditional views of gender and sex-roles, and seems to be almost independent from house income level and age – even if the wife significantly contributes to the income (Waseem, 2010).

From a broader scope, however, prevailing literature explains money management practices by the couples' joint characteristics, each partner's individual characteristics or by the cultural meaning of the breadwinner role.

The first group of research, advancing the inappropriateness of the theory-driven pooling model (Samuelson, 1956), claims that a couples' money management practices can be explained by the partners' relative incomes, thus providing the framework of a descriptively more valid bargaining model (Blood & Wolfe, 1960; Lundberg & Pollak, 1996). The key idea

of these works (as has been pointed out with respect to household labor division) is that the bargaining power increases in proportion to partners' relative contributions.

The second group of research advances the idea that the family's total income level determines how the pooled money will be managed (Kenney, 2006; Nyman, 1999). Vogler and Pahl (1994) and Pahl (1995, 2000) review results on two large-scale interview studies of over 1,300 married or as-married couples from Britain. Their goal was to identify patterns of household money management with a special focus on types of created pools, the modes of managing these pools and specific behavior correlations between pools. These results show that lower-income families are most likely to have female managed pools, and also that wives are the most susceptible to experiencing financial deprivation (i.e., forgoing meals, clothes, etc.). On the contrary, the highest income families were most likely to be male managed. Jointly managed pools were only present when the wife substantially contributed to the family's income pool. These interviews also revealed some information about how relative income corresponds to power in money decisions within the family. The pattern uncovered was that if the male makes more money, he has the final say on money issues; however, when the women makes more, the final say is usually a jointly reached decision among couples.

The third batch of studies emphasize how societal norms shape and determine behavioral norms among couples; leading to a gender-grained behavior pattern of household money management (e.g., Fuwa, 2004; Yodanis & Lauer, 2007). These studies also show that macro-level variables (i.e, societal norms) strongly impact micro-level variables (i.e., individual level variables, such as relative income). More specifically, Yodanis and Lauer (2007) for instance found that when husbands and wives make equal amounts of money, they tend to have joint money management, and that this joint management prevails even when the wife's income is greater than the husband's; but when it is the husband who makes more, then he is more likely to take over the control on the household money management. This asymmetry in money management mirrors the way that societal norms kick in when the relative income goes against the standard configuration (i.e., males making more money). In general, it seems that institutional norms moderate the effect of relative resources.

Finally, the fourth group focuses on how relationship characteristics determine the mode of money management (e.g., Treas, 1993; Burgoyne & Morison, 1997). Treas (1993), for example, finds that the likelihood of pooling assets together decreases if the partners are less committed toward their marriage, or if this is not their first marriage. Treas (1993) argues this preference for financial independence may be driven by the desire to reduce the transaction cost of marriage. This finding is reinforced by Burgoyne and Morrison (1997) who found that remarried couples are more likely to insist on maintaining their economic independence, (i.e., keeping separate accounts), partly because of their financial responsibility toward their own children. The other potential explanation for the observed independence is that remarried wives may have already learned how to stand up for their rights and bargain for more power in the new marriage.

All in all, we have found that the broader cultural context plays an important role in household labor division and money management practices. It seems that cultural context is so pervasive that it may even override the relative resource contribution among spouses. This implies that, even if females make more money than males, they are less likely to have a corresponding dominance over the control of money or see a significant decrease in household labor. Furthermore, we have also found that history and other marriages could

potentially shift couples toward not pooling their earnings, and also that prior marriages could empower women to gain more control in their subsequent marriages/cohabitations.

Conflicts over Money and Financial Issues

Anyone who has ever lived in a family as a child or a partner, or has ever cohabitated with a significant other would agree to some extent with the following quote: "Whenever we'd get in fights, it'd be about money" (Smock, Manning, & Porter, 2005 p. 692).

Research on marital well-being confirms common personal experiences, finding that the most frequent cause of marital conflict, and the most common reason to divorce, is money: spending, budgeting, credit card repayment and debt management in general (e.g., Bryant, Taylor, Lincoln, Chatters, & Jackson, 2008; Kerkmann, Lee, Lown, & Allgood, 2000; Olson & Olson-Sigg, 2000; Stanley, Markman, & Whitton, 2002). In addition, this association is still present after controlling for socioeconomic status, race and other demographic and life cycle variables (e.g., Broman, 2002; Cutrona, Russell, Burzette, Wesner, & Bryant, 2011).

In general, a vast majority of studies on marital satisfaction identify household debts and financial strain as imposing one the greatest hardships upon married couples, contributing significantly to marital instability. This association between marital debt and marital quality, however, seems to be mediated by several factors. To fill this gap, Dew (2008) surveyed 1,078 newlyweds and found that as the couple's debt increased (i.e., a composite of consumer debts, school debts and mortgage) their marital satisfaction decreased. However, this effect was only caused by increase in consumer debt (that is, not school loans or mortgage) and was mediated by other variables – spending less time together, and an increase in disputes – and thus it was not the debt per se which caused the decline in marital satisfaction. Another mediating factor to the decreased marital quality associated with economic hardship is the affective dimension. As Conger et al. (1990) found in their study, economic strain increases husbands' hostility and decreases their warmth toward their wives. Increased hostility decreases the wife's perception on marital quality and increases the wives' experiences of marital instability. In addition, husbands' hostility alone (without the mediation of wives' perception of decreased marital quality) increases wives' experience on marital instability. At the same time, however, decrease in husbands' warmth leads to wife's decreased perception of marital quality, but this alone does not lead to increased marital instability as reported by wives. On the contrary, economic strain was not found to contribute to increased hostility or decreased warmth of the wife. To further uncover underlying factors of marital instability due to financial strain, (Gudmunson, Beutler, Israelsen, McCoy, & Hill, 2007) found that such strain caused emotional distress for husbands and wives evenly. This distress caused partners to give a decreased assessment of their marital stability. Furthermore, husbands' and wives' assessments of marital stability were highly correlated, suggesting a strong consistency of spouses' assessments on their marital stability. They have also found that a decrease in time spent together mediates the perception of decreased marital quality. Moreover, the mediator to decreased time together was an increased number of fights between them. The impact of assests and debts was investigated in a national, representative longitudinal study by Dew (2007). He surveyed 3,731 participants (who were married over the course of three decades) to investigate the impact of assets and consumer debts on marital conflict and marital satisfaction. He found that assets and debts significantly predict perceived economic pressure, albeit in opposite ways: while assets negatively predict economic pressure, debts do it on positive fashion. At the same time, however, assets did not predict an internal locus of

control, depression or marital satisfaction. The effect of debt, however, seemed to be a little tricky. Debt alone has the greatest positive effect on marital conflict. Nevertheless, when the impact of debt on marital conflict is assessed through economic pressure and through depression, this impact is smaller. At the same time, debts alone could predict neither internal locus of control nor marital satisfaction. The pattern identified by Dew (2007) shows that assets and debt play different roles in marriage, since assets did not predict marital distress, while debt did.

There are, in contrast, studies examining great marriages from the perspective of how they handle financial challenges. Schwartz (1994) in his study investigates couples with successful marriages. He finds that these marriages are characterized by a high level of trust, shared decision making in all domains, division on household labor and – most importantly from our perspective – financial equity, as they felt economically independent from each other. Similarly, Skogrand, Johnson, Horrocks, and DeFrain (2011) in their qualitative study find that couples with great marriages have great trust in the one who handles the couples' financial issues. These couples also reported the importance of talking over their finances with each other and reaching joint decisions in them. Furthermore, most of these couples wisely held a 'no or little debt' policy. This helped them to avoid stress, disputes and decreases in time spent together. Finally, they also believed that living within their means is beneficial for their marital well-being (and behaved accordingly).

To sum up, debts and money problems contribute to decrease in marital well-being and could potentially cause divorce. In this section we have reviewed some literature on potential mediating factors between debts and financial problems on marital well-being. Among the mediators are the decrease in quality time spent together and the increased frequency of fights between spouses. On the affective side, the increase in negative affective states and husbands' potential unpleasant behaviors toward their wives also mediate the relationship between economic hardships and decreases in marital satisfaction. Furthermore, we have also shown that assets and debts alone predict economic pressure, but that their impact on marriages are far from being bipolar.

On the bright side, however, we have also found successful behaviors in dealing with financial issues for the sake of saving marital well-being. The key to marital satisfaction in financial domain is trust, communication, a no-debts policy and living within the couple's financial limits.

5. Family Decision-making and Family Purchase Decisions

As various research has shown, family members (i.e., spouses), gradually arrive to a decision through various strategies, as opposed to reaching immediate consensus (e.g., (Bonfield, Kaufman, & Hernandez, 1984; Kirchler, Rodler, Hoelzl & Meier, 2001). Weick (1971) has little doubt that decision-making and other processes in everyday situations deviate markedly from the pattern of normative models: people in private households solve their problems at times when everyone is either still tired or tired again – that is, in the morning or in the evening after a day at work. Economic decisions are embedded in the everyday of a relationship, which is scattered about with a variety of different types of problem. These often do not land in one's lap one after another, but instead require solving

simultaneously. Is it any wonder that a large number of problems remain unresolved under such circumstances, where household members "jump" from one problem to the next without having resolved the previous issue? The view of economic and non-economic decision-making in private households put forward by Weick (1971) calls for a holistic perspective. Decisions are not activities that can be isolated and removed from everyday events and analyzed separately. To arrive at an adequate understanding of the dynamics involved, decisions have to be studied in the stream of activities which are unfolding at the same time. This has been rarely done in research based on methods such as observations, interviews and survey techniques. An exception is the Vienna Diary Study (Kirchler et al., 2001).

We begin this section by reviewing influence strategies among couples and possible predictors of these strategies. We will continue by reviewing the temporal aspect of family purchase decisions, with a special focus on temporal adjustment in spouses' influence strategies over time, and the importance of reciprocity and fairness in couples' decision histories. This will be followed by summary on results of the Vienna Diary Study (Kirchler et al., 2001). In this longitudinal study, 40 couples were enrolled for a course of 12 months and were asked to record in a diary joint discussions about various topics, and to especially report details on financial topics. We will conclude this section by reviewing vacation decisions and the impact of children on this decision, since vacation decisions form a special group of family purchase decision due to the strong influence of children.

One group of papers – more in the descriptive camp – overviews and analyzes differences across couples in their purchase decisions from the perspective of employed *influence strategies* and *task sharing*. Task sharing implies a generic distinction between *implementation tasks* and *decision tasks*. The former refers to things that can be done without much deliberation, and do not require specific knowledge, whereas the latter require more extensive thought processes and consideration of available alternatives. The applied meaning of influence strategy here is twofold. On the one hand, it refers to a qualitative aspect of the strategy applied, drawing on the conceptualization by French and Raven (1959) of using different sources of power, such as referent power, expert power, reward power, coercive power and legitimate power. On the other hand, the vast majority of these studies operationalize spousal influence as "the degree to which authority, power and decision responsibility is attributed to the husband or wife by the spouse" (Qualls, 1987). Studies in this group report that in both domains (influence strategies and task sharing), educational level (Rosen & Granbois, 1983), attitude toward sex-roles (Qualls, 1987; Rosen & Granbois, 1983; Smith & Moen, 1998), wife employment (Rosen & Granbois, 1983), household income (Filiatrault & Ritchie, 1980; Rosen & Granbois, 1983), balance of marital power (Corfman & Lehmann, 1987; Szinovacz, 1987) and the presence of children (Filiatrault & Ritchie, 1980; Spiro, 1983) predict differences across couples. Moreover, the impact of these factors may vary across tasks, and may be moderated by personality factors. Rosen and Granbois (1983), for example, interviewed 82 couples and found that in lower income families where the husband and wife mutually share traditional sex roles, the wife is in charge for implementation tasks (i.e., paying bills, etc). At the same time however, in tasks involving some financial deliberation and corresponding decisions (such as the order in which bills should be paid or scheduling credit payments) the locus of control as a personality variable may kick in. This study shows that for spouses having an external locus of control, decisions remain mainly unshared, and the same holds if the wife works for financial reasons (thus, nontraditional sex-role attitude is not endogenous). Kim and Lee (1996), for example,

classified couples based on their dominant influencing strategy in purchase decisions. They identify four types of couples based on their mixed influencing strategy in reconciling discordant preferences in home purchase. The four types are wife-driven couples, dogmatic couples, compromising couples and light influencing couples; and group membership is likely to be predicted by demographics and attitudes toward gender-roles.

Closely related is the finding that spouses display somewhat of a 'blind spot' on how their dominant influencing strategy is perceived by their spouses. That is, that they do not recognize how their strategy impacts their partner. Spiro (1983) for example interviewed 196 couples about their recent (within the past three months) strategies applied when purchasing a major durable good. In this interview each partner provided a self-report on what he applied as an influencing strategy, and also indicated how he perceived his partner's strategy. Results were shocking: only 65 of the total reported 1,050 influencing episodes coincided (Spiro, 1983). Additionally, these misalignments seem to be systematic: self-reports always under-appreciated how forcefully their actual influencing attempt would be perceived. To further refine the picture on this inconsistency, Smith and Moen (1998) conducted face to face interviews on 228 couples who were retired or close to retirement about their retirement decision process. The general picture shows that one's spouse has significant influence on the retirement decision, but that spouses tend to have different perceptions of spousal influence. Specifically, retirees tend to perceive their spouse being more influential than spouses perceive themselves to be.

Articles in the other group focus on the dynamics, the history and the temporal adjustment of spousal purchase decisions. Some studies concentrate on decision history and on static factors (e.g., Smith & Moen, 1998), while others exclusively focus on the temporal dynamics of the decision making process (e.g., Corfman & Lehmann, 1987; Pollay, 1968). Additionally, these papers contradict the 'blind spot' reported by the first group of papers as they argue that the temporal dynamics are partly driven by the perception of how one's influence and decision impacted the other partner. One of the earliest models on couples' decision history describes how this history impacts subsequent decisions (Corfman & Lehmann, 1987). The experimental study designed to test this model showed that one partner's relative preference for consumption (that is, one partner preferring some particular consumption over another) together with decision history (that is, equalizing gains and losses over time) are the two most important predictors of relative influence. In other words: the partner who shows stronger preference toward the particular consumption has greater influence; and when spouses have incompatible preferences in a particular consumption, they recall previous similar situations and determine whose turn is now to be favored. So, if previously one spouse got the shorter end of the stick, then the current decision will favor this partner, in order to equalize fairness over time. Taking such turns could be explained as the long term commitment of spouses toward the relationship. The strong commitment toward the relationship somewhat limits the generalizability of this study, as one can assume that the 77 participant couples in Corfman and Lehmann's (1987) study had a stable relationship.

Nelson (1988) in her critical literature review on couples' conflict resolution and a subsequent empirical investigation of 284 individuals' (thus, not a couple-level) recent family purchase decisions proposes an influence-strategy scale and investigates factors underlying individual conflict management choices. She identifies four factors: (a) using punishment, threats and negative behaviors, (b) using positive emotions and subtle manipulation, (c) using withdrawal and egocentrism and finally (d) using persuasion, reason and logic.

Table 1. Classification of tactics (Kirchler, et al., 2001, p. 189)

Tactic content		Tactic label	Examples
Emotion	1.	Positive emotions	Manipulation, flattery, smiling, humour, seductive behaviour.
	2.	Negative emotions	Threats, cynicism, ridicule, shouting.
Physical force	3.	Helplessness	Crying, showing weaknesses, acting ill.
	4.	Physical force	Forcing, injuring, violence, aggression.
Resources	5.	Offering resources	Performing services, being attentive.
	6.	Withdrawing resources	Withdrawing financial contributions, punishing.
Presence	7.	Insisting	Nagging, constantly returning to the subject, conversations designed to wear down opposition.
	8.	Withdrawal	Refusing to share responsibility, changing the subject, going away, leaving the scene.
Information	9.	Open presentation of facts	Asking for co-operation, presenting own needs, talking openly about importance/interest to self.
	10.	Presenting false facts	Suppressing relevant information, distorting information.
Persons	11.	Indirect coalition	Referring to other people, emphasizing utility of purchase to children.
	12.	Direct coalition	Discussing in the presence of others.
Fact	13.	Fait accompli	Buying autonomously, deciding without consulting partner.
Role segmentation	14.	Deciding according to roles	Deciding autonomously according to established role segmentation.
	15.	Yielding according to roles	Autonomous decision by partner according to role.
Bargaining	16.	Trade-offs	Offers of "trade-offs", book-keeping, reminders of past favours.
	17.	Integrative bargaining	Search for the best solution to satisfy all concerned
Reasoned argument	18.	Reasoned argument	Presenting factual arguments; logical argument.

As a step further Kirchler (1990) conducted a study on 35 couples to discern the relationship between applied influence and situational characteristics in a family purchase decision and a comprehensive study on 40 couples who kept a diary over one year (Kirchler et al., 2001). The Vienna Diary Study undertook an extensive analysis of the significance of spouses' relative resource contributions, relative competence, interest in the discussion topic,

and the decision history in their influence on purchase decisions. Five different topics of disagreement were investigated. It was found that relative resource contributions had no impact on influence patterns. In other words, the spouse who earned more money had not more say in economic decisions. However, relative competence and interest were highly significant: the more knowledge and expertise a spouse had and the more interested he or she was in the topic at stake, the more likely he or she dominated a decision. Also, the decision history was of high relevance: the spouse who had yielded in the past, was allowed to dominate in upcoming decisions. It can be assumed that processes of equalization of power and influence take place over time, leading to the establishment of an equal balance of influence between the partners in the long run. These processes may occur by chance, or may follow some particular system. Some form of book-keeping is required to deal with systematic processes. The enrolled 40 couples recorded their disagreements and their decisions daily over a period of a year. Day by day, men and women separately recorded, amongst other things: (a) whether they had spoken with one another; (b) how much time they spent together; (c) for how long the conversation lasted and (d) what they had spoken about and whether they had different opinions. If there was a conflict, they were also asked to indicate (e) how long the conversation about the conflicting issue lasted; (f) where they were at this time, what they were doing and who else was present; (g) how much special knowledge each person had about the conflicting issue; (h) how important the issue was to both partners; the extent to which the conversation was (i) objective and (j) emotional; (k) how much influence each partner exerting in the discussion; and (l) how much benefit each partner derived from the discussion. Respondents were also asked to record (m) whether the conflict was a value conflict, a probability conflict or a distributional conflict, and finally (n) what tactics had been used by both partners to try to influence the other (see Table 1). Since both partners reported on the same situations independently, the degree of consistency between their reports was calculated.

It was found in this study that spouses prefer avoiding conflict and are likely to give in, just to keep the peace. However once a dispute does arise, the self-reported dominant strategy is reasoning (that is, using logic to convince the other) and bargaining (that is, finding some compromise). The applied tactics, however, are highly contingent upon the type of the conflict. Specifically, probability conflicts (e.g., when partners agree on the need of getting a particular item, but their evaluation of the item's attributes are discordant) are mainly avoided or managed by reasoning, while value conflicts (e.g., conflicting views on issues involving fundamental values and principles that guide behavior) called for persuasive techniques. Furthermore, these disputes are usually not settled in one episode, but rather multiple visitations upon the issue by couples. In a further study Kirchler (1993) investigates whether conflict type, relationship quality (marital quality and marital power) and personality variables predict influence tactics applied in the couples' purchase decision. In addition Kirchler (1993) also investigated whether the length of cohabitation correlates with dominant influence tactic. Results showed that the longer the couples have been cohabitating, the more likely they are to have roles regarding who dominates these kinds of decisions. This suggests a temporal adjustment of roles in family purchase decisions. Regardless of conflict type and gender, happy couples were more likely to report an integrative approach in joint decisions and were less likely to make autonomous decisions. Again, irrespective of conflict type, dominant women were more likely to use integrative tactics and reasoning than dominant men. Dominant men were more likely to report the use of authoritarian tactics. Interestingly,

however, there was no relationship found between personality variables – measured by personality inventory and a test developed by Brandstaetter (1988) – and preferred influence tactic.

As has also been pointed out by Kirchler (1993), couples show a substantial accommodation in their influencing strategies over time. This temporal adjustment was systematically investigated by Su, Fern and Ye (2003). They used a three time-period model (pre-decision, decision and post-decision) to investigate whether spouses reciprocate coercion in a decision, the impact of a previous decision on a subsequent decision and whether spouses stick to one decision strategy. Their results partly favor Qualls' (1987) findings, as there is no retaliation for coercion and the partner with the stronger preference gets his way. Additionally, they also found a temporal adjustment between partners' purchase decision processes. That is, the person who previously yielded will have a turn at getting his way in the next decision, suggestive of a carry-over effect or prior spousal decision. This finding is also in line with the suggestion of Corfman & Lehmann (1987) on equalizing gains over time among couples. Finally, it has been also found that couples tend to revise their behaviors across decisions, and to adapt their strategies.

As has been variously shown (e.g., Corfman & Lehmann, 1987; and by Su et al. 2003), temporal adjustment also implies some sort of a mental accounting of whose turn is coming, or which partner's preferences should be favored in the current decision. In other words the outcomes of previous decisions do have a bearing on the subsequent decision, suggesting that, even if decisions vary by their topic and timing, they are still not perceived as independent. In fact, it has been suggested that spousal preference toward fairness in time may underlie sustaining spousal temporal dynamics (Willigen & Drentea, 2001). Su, Zhou, Zhou, and Li (2008) enrolled 129 couples in a study to investigate family decision processes about a vacation. They found that spouses' perceived fairness/unfairness of a prior decision outcome could potentially mediate his/her inclination to forgo from a wished consumption, or could prompt the partner to claim compensation in a subsequent joint decision. This mediation, however, is moderated by personality traits and empathy of the spouses. Specifically, empathic wives and empathic husbands do not need to be compensated as much as less empathic ones. Another interesting finding is that egalitarian husbands and wives become more assertive in their subsequent decision after experiencing unfairness. At the same time, however, they are also vulnerable to different types of unfairness. Egalitarian wives become more assertive after experiencing procedural unfairness, whereas egalitarian husbands' subsequent assertiveness is triggered after perceiving outcome unfairness. Finally, if they perceived the procedure to be fair they are less vulnerable to the outcome of the decisions. Taking these results together it seems that one spouse's preference is not necessarily independent from what he/she expects his/her partner's preference to be. Some studies also investigate partners' influence strategies in a lab setting. An observational study of 123 young dating couples (aged between 17-23 years) investigated influencing strategies applied by partners (Orina, Wood, & Simpson, 2002). One interesting result of this study was that coercion was reciprocated. This contradicts previously cited results on couples' temporal adjustment where coercion was not found to be reciprocated. Another interesting finding of this study is that the partner who felt closer made more relationship reference than the one feeling less close, indicating that he/she looked at themselves as a unit. One limitation of this study, however, the low age of subjects. This is important, because it has been found (e.g., Kirchler, 1993) that couples' dynamics of influence strategy reactively evolves over time.

Thus, these young participants may still lack the routine and the synergy of handling discordant decisions with their partner.

From a marketing and policy making point of view, decision making about vacations – such as selecting travel destination, finding the optimal lodging, working out the budget and generally making the vacation to happen – seems to be a special type of family purchase decision (Bronner & de Hoog, 2008; Nanda, Hu, & Bai, 2007). On the one hand, a vacation decision, like any other decision, could potentially reflect the couples' dominant purchase decision dynamics. On the other hand however, since the subject of the decision is more pleasant and because vacation decisions are rare albeit regular (ideally made once or multiple times per year) dynamics of vacation decisions attract special interest of researchers in marketing and in economic psychology.

One of the first systematic studies on vacation decisions from the perspective of a joint decision process among couples was done by Jenkins (1978). In the late 1970s he investigated married couples' vacation decision processes with the special focus of identifying influences in the various sub-decision areas and also on pinpointing applied decision criteria. Perhaps due to the zeitgeist or the location of his study (couples in Columbus, Ohio were enrolled in this study) Jenkins found not a single decision in which wives were dominant. On the contrary however, husbands seemed to have dominance in determining the length of the vacation and the budget constraints. Taking the children or not, selecting the proper transportation and choosing the accommodation were, however, joint decisions between husbands and wives (Myers & Moncrief, 1978). Interestingly, though, in Jenkins' study (1978) many individuals reported that their spouses had more influence in reaching the decision. Nevertheless, this perception of equity seems to be less generic than other studies reporting one party's perceived dominance in these types of decisions. There are also cases – albeit not exclusively in vacation decision making processes – in which both parties overestimate their own influence (Davis & Rigaux, 1974). Other studies on vacation decision making, however, report that subjects' subjective feelings such as love towards their partner and self-esteem predict a specific applied influencing strategy, while the partners' objective economic status within the relationship (i.e., actual economic resources) did not predict a specific influencing strategy (Bokek-Cohen, 2011). Moreover it has been also documented that joint decision making is contingent on family's social economic status (Martinez & Polo, 1999; Zalatan, 1998), on the family's cultural background (Stafford, Ganesh, & Luckett, 2011) and on the family cycle in general (Fodness, 1992). Myers and Moncrief (1978), for example, discern conditions of joint decision making over leisure travel decision among married couples. They find that joint decision making is prevalent at the top and at low social statuses, suggestive of a U-shaped relation between the jointness of decision making and level of social status. The same study reveals that joint decisions over how and where to spend leisure travel are more frequent among young couples. Furthermore, Filiatrault and Ritchie (1980) emphasized that the vacation decision making process is contingent upon whether the married couple has or does not have children. On the one hand, for families (that is, couples with children) husbands tended to have more influence in the overall vacation decision, while for couples (spouses with no children) jointly reached decisions were more frequent. Additionally, couples with no children reported higher response consensus than couples with children.

Investigating vacation decision making from a process point of view it seems that wives are dominantly involved in preparing, organizing the trip, while they take less share in

financing it (Zalatan, 1998). To further reinforce the important role of wives, Mottiar & Quinn (2004) surveyed 31 couples about how they reach decisions when selecting a holiday. They found that although the process of figuring out the details of a vacation is a joint decision at the early stages of this process, women have a dominant role. This implies that only those destinations which have been selected by the wife will be subjected to the couple's joint consideration and corresponding discussion. This early selection process puts women into the role of being a gatekeeper, as the proposed holidays dominantly reflect their preferences - or at least the female's perceptions and ideas about the male's and/or whole family's preferences.

Moreover, studies on vacation decision making also show that the decision making process qualitatively differs across couples with and without children. With respect to decisions about vacations, spouses report (and researchers' findings agree) that children do exert influence on their parents in selecting destinations and planned activities (see also Filiatrault & Ritchie, 1980; Swinyard & Sim, 1987).

Children' crucial influence on selecting vacation destinations (or more generally, selecting a product or brand) has not only been recognized (and perhaps somewhat exploited) by marketing experts, but it has been also received notable scientific attention (e.g., Cullingford, 1995; Flurry, 2007; Seaton & Tagg, 1995; Turley, 2001). Studies particularly investigating children's influence on vacation decisions conclude that, besides indirect impact of children in selecting vacation destinations and lodging (see e.g., Jang, Lee, Lee, & Hong, 2007), kids in fact exert direct influence on these decisions (e.g., Labrecque & Ricard, 2001; Lackman & Lanasa, 1993; Seaton & Tagg, 1995). Despite the overwhelming scientific evidence (and our everyday experiences) of this kind of influence, studies also show that "giving in" is highly dependent on parenting style, on the kids' personality and on whether or not buying what the child wants is perceived as giving in to "pester power". For instance, no matter how much the child wanted to get an unhealthy cereal, child-centered parents were less likely to buy it than less child-centered parents, although the parent's superimposing potential was diminished as the kids' assertiveness increased (Berey & Pollay, 1968). Other studies investigating parents' self-perception of their capacity to resist their children's teasing showed that parents form a somewhat rosier and less realistic picture about the extent to which they give in to their children' pestering (Turner, Kelly, & McKenna, 2006). Furthermore, it has been documented that children have greater power in consumer decisions in one-parent households than in two-parent households (McNeal & Yeh, 2003), and also that children gain greater influence in decision with age (Seaton & Tagg, 1995; Swinyard & Sim, 1987). Perhaps not surprisingly, it is actually not the age per se, but the age-related application of sophisticated influencing strategies which increase children's assertive power on family decision making (Palan & Wilkes, 1997). By the time children reach their teenage years, they learn that it is more efficient to use an influencing strategy than to simply ask for a product (Kim, Lee, & Hall, 1991).

In this section we have reviewed some of the literature on couples' influencing strategies. On one hand, we showed how influencing strategy is moderated by demographic factors, personality traits, the dominance structure of the relationship and conflict type. On the other hand, we also demonstrated that influence strategy also shows a temporal pattern. This pattern is characterized by equalizing who is being favored – so that spouses essentially take turns in making concessions to one another. We have also reported results on a comprehensive study, the Vienna Diary Study, to show the details and specific dynamics and features of families'

decision making processes. Finally, we took a closer look at family vacation decisions to show that once children come into play, the decision dynamics become even more complex.

6. IMPLICATIONS

Finally, we briefly review some marketing and policy implications of the observations and mechanisms identified thus far.

First of all, this chapter reinforces the already identified marketing trick labeled as communal marketing (Fiske, 1991). The central idea of this is that a marketing message can be more efficient if it is communicated to the spouse but targeting the family as a unit. Perhaps the most straightforward implication for marketing professionals is the direct and indirect influence of children on purchase decisions, as a vast majority of studies show that children have a strong influence in food selection and on vacation destination selection as well. This implies that children are potential gate-keepers in their parents' decisions to purchase certain products (Berey & Pollay, 1968). Another potential implication for marketing comes from insight into the influence strategies among couples. Targeting the more influential spouse could enhance the family's willingness to buy, especially if the marketing strategy is able to incorporate the temporal adjustment of family purchase decisions (Su et al., 2003).

Again, taking into account the susceptibility of children to advertisement, as well as their influence on food shopping, policy makers may consider encouraging the advertising of healthy foods directly to kids (Turner et al., 2006). From the perspective of influencing and joint decisions, policies targeted at equalizing gender inequalities on the labor market and in family decision-making may benefit from this review. For example, policies which facilitate women in child care, offering paid maternal leave or even regulating more flexible working hours for women could potentially shift money management practices toward more egalitarian modes (Pahl, 1995). Policies could encourage women's return to the job market and make them able to negotiate salaries that are on par with males'. This could increase women's bargaining power in division of household labor and in gaining greater shares from the joint family pool.

Finally, given the frequency and the severity of conflicts over money (especially among couples along with a great deal of debt) and their potentially fatal effects on marriage, policies should encourage financial education and/or peer-consulting not only for newlyweds, but also for couples in longer marriages.

CONCLUSION

After reviewing some of the pitfalls of marrying someone with whom we may not match in our financial behavior, one can grant some credit to Sara Siegel Bernard's recommendation in the NYTimes.

During this literature review on money issues in close relationships we have found that initial attraction and love may not be enough for an enduring and fulfilling family life. In fact, incompatibility in spending and/or saving behavior, or different ideas on gender-roles, may

undermine the harmony within couples. Furthermore, it has been also demonstrated that, regardless who is controlling the budget, a relationship is much more likely to be a harmonious one if spending and purchases are discussed and consensual. If these functions are neglected, then the left-out partner may feel himself deprived of his wealth. Furthermore, the perception of the fairness of one's own and one's partner's behavior are not necessary consistent among couples while making a purchase decision. Instead, it often reported that the other exerted unsolicited and substantial influence, although the partner remains unaware of this. This, along with the feeling of being left out from a decision, can lead to distrust and decreased marital well-being. In addition, we have also learned that financial problems and overwhelming consumer debts could also lead to decline in the marital well-being. This decline can occur through not having time for each and through emotional distress. In fact, it seems like couples with great marriages consciously focus on a balanced or frugal financial management in order to save their marriages. We have also learned that children can potentially have a great influence on family purchase decisions, and that giving in to a child's will is not necessarily the best for the whole family in the long run.

Finally, we need to mention the limitations of this chapter. First of all, in this book chapter we employed a conservative definition of "close relationship" as we have only focused on romantic relationships between heterosexual people. Therefore, we excluded relationships between family members other than spouses and we have also left out friendships. As a result, this chapter does not say anything about the important topics of family business and other potential money issues (e.g., personal loans, mutual businesses, etc.) between peers. Although one could potentially imagine behaviors similar to those discussed above among other family members and between friends, we make no claim that behaviors and mechanisms detailed above have generalizabilty to relationships other than romantic relationships and marriages. Second, because of the limited size of this chapter, many important findings may not be mentioned and important studies may not be reviewed. Finally, this chapter did not review theory-driven economic models and behavior economic studies, nor corresponding theoretical models on joint-decision making.

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PART II: EMOTIONS, EMPATHY AND DECISION MAKING

Chapter 9

THE EVOLUTION OF EMPATHY: FROM SINGLE COMPONENTS TO PROCESS MODELS

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ABSTRACT

Empathy is a heavily discussed subject. In this chapter, we review and discuss the major approaches to the study of the concept and discuss the established definitions of empathy. The trend toward integrative models is outlined and the divergence within the research displayed. Consequently, we suggest the Empathy Process Model (EPM) as a possible solution of the integrative efforts. This model enables a differentiated view of the step-by-step emergence in a specific empathic episode and might thus bridge the gap between foundational and applied research. By differentiating empathic responses, larger variations of empathic behavior can be analyzed, such as joint reflection or what we call the Empathic Short Circuit (ESC).

INTRODUCTION

Empathy is a lot like the word "fun." Fun can be used to describe various phenomena, and we can argue extensively about which ones should be called fun (such as collecting stamps), and which ones should not (such as collecting tin toys). Like empathy, fun obviously depends on a person's personality, general likes and dislikes, current mood, relationships with other people (sympathy, similarity), situational aspects, and so forth. To understand fun, it does not seem necessary to empirically collect all the possible co-varying and influencing factors. Instead, it seems necessary to generate an idea about what fun basically is, how it can be aroused, and how its components interact. To understand empathy, this chapter will take a

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look beyond correlations and regressions to determine what empathy basically is, how it can be aroused, and how its components interact.

One interactional purpose of empathic behavior is to act and communicate in such a way that the other person feels understood. To achieve this, one must understand the situation and emotions of the other person first. Empathy is therefore a process of specific understanding, emotional relating, and focused interaction, or at least it should be, as empathy research is plagued by exaggerated efforts to define it as well as to differentiate it from, e.g., compassion. These efforts have resulted in an abundance of abstract and delusive definitions such as "to think and feel oneself into the inner life of another person" (Kohut, 1984, p. 82) or "to be part of someone else's emotion or intention" (Bischof-Köhler, 2006, p. 14, translated by the authors), but lacking a strong concept of the basic mechanisms of empathy (Preston and de Waal, 2002). Many studies seem to cope with the somewhat confusing multiplicity by simply refraining from defining empathy altogether (as criticized by Pedersen, 2009) or by referring to a general and universal definition of empathy such as being both an affective and a cognitive phenomenon (summarized by Richter, 2009).

THE DISPARITY OF CONCEPTUALIZATIONS:
A QUICK LOOK BACK

The problem with empathy is that although the concept has been in the focus of psychology for more than a century (Lipps, 1897), we still use the word to describe quite a variety of phenomena: empathy as a personality trait, a skill, a state, an interaction, and so forth (Kunyk and Olson, 2001). In 1948, Reik constituted that "the word empathy sometimes means one thing, sometimes means another, until now it does not mean anything" (p. 357). In 2005, Steins still found empathy to be "defined in many ways" (p. 467, translated by the authors).

When Titchener (e.g., 1909) discussed and translated Lipp's concept Einfühlung into empathy, he laid the groundwork for the scientific debate. In his first psychological definition of empathy, he conceptualized it primarily as purely an emotional response (Eisenberg and Strayer, 1987), in as much as it did not seem accessible through reasoning, but by inner kinesthetic imitation (Wispé, 1986). Later, Titchener (1915) described it as imagination with made up contexts, a rather cognitive perspective with which he paved the way for today's established differentiation between cognitive and affective empathy.

The cognitive component summarizes the understanding of the situation of the other person, i.e., basically the other person's thoughts and feelings. If a friend loses her job, I might cognitively empathize with her and imagine her to be disappointed and to have doubts about her abilities.

The affective component of empathy is about not only knowing but about actually experiencing the feelings of the other person. One's own emotional state then seems more aligned with the other person's situation than with one's own (Hoffman, 2000). A sad friend evokes sadness in me, although right now, I myself might have nothing to be sad about.

This tradition of duality in empathy has been manifested over the years by a measurement-oriented approach. It seems noteworthy that the renowned names in empathy research became popular by presenting empathy scales, not theoretical frameworks.

Mehrabian and Epstein (1972) suggested a measurement for emotional empathy, Hogan (1975) for empathic self-representation, and Levenson and Ruef (1992) for accuracy in cognitive emotion detection – to name just a few. Davis (1980) consolidated this view by creating his Interpersonal Reactivity Index (IRI), which measures cognitive and emotional empathy. The IRI quickly became the most popular empathy inventory (Jolliffe and Farrington, 2004).

It is constructed out of four theoretically distinct but empirically correlated dimensions (Davis, 1983). The cognitive part of empathy is represented by the dimensions "Fantasy" and "Perspective Taking," measuring how much a person can imagine and predict someone else's emotional situation and reactions. The emotional part consists of the dimensions of "Empathic Concern" and "Personal Distress," which elucidate ways of participating in another person's emotions (Davis, 1983).

In most reviews thereafter, empathy was described in this two-fold manner. Most researchers agreed with Cohen and Strayer (1996), who described empathy as mostly and generally seen as "the ability to understand and share in another's emotional state or context" (p. 988). This view of the two facets of empathy has been the stable agreement for a surprisingly long time.

> There seems to be "broad agreement that it involves both cognitive and affective processes. On the one hand, empathy requires the cognitive understanding of another person's feelings – often labeled empathic accuracy. On the other hand, it involves the affective response to another person." (Richter and Kunzmann, 2010, p. 1).

It is quite surprising that this simple duality should account for this large variety of situations and expressions of empathy that we all experience every day, not differentiating with whom we empathize, in what situations, and to what extent we do it, what choices are involved consciously or unconsciously, and so forth.

A step forward was made by Rameson and Lieberman (2009) in suggesting – from a neurological perspective – that empathy might best be understood through a "dual-process model" consisting "of both automatic affective experience and controlled cognitive processing, which are distinct but interrelated processes" (p. 95). Rameson and Lieberman suggested explicating the idea of automatic or unconscious and controlled or conscious processes. Similar thoughts have been expressed by Spreng, McKinnon, Mar, and Levine (2009) and Jolliffe and Farrington (2004). These thoughts can be summarized as proposing (1) an automatic emotional reaction and (2) a controlled cognitive process of perspective taking. Or as Gerdes, Segal, and Lietz (2010) put it: "empathy is an automatic affective reaction and a cluster of cognitive abilities" (p. 2338).

The risk of this trend is that it might seem sufficient to merely mention this dual concept and leave it at that, simply because there seems to be a general agreement (i.e., current mainstream). Once this general idea of empathy and the methods of its measurement had been established, it tended to continue and manifest itself as an "operationalization theory." Considering the fact that "the empirical data on empathy are very consistent" (Preston and de Waal, 2002, p. 1), this seems plausible. One might, however, feel reminded of the concept of intelligence, which has been provocatively described as what intelligence tests measure (cf. Boring, 1923).

It can be argued that this measurement-oriented approach to the conceptualization of empathy, which we still experience today, leads to a guileless kind of ignorance of the theoretical controversy. Even well-designed studies thus face the (unexpressed and maybe not reflected upon) difficulty of referring to this broad dual concept as some sort of emotion plus some sort of cognition (e.g., Konrath, O'Brien, and Hsing, 2011; Richter, 2009; Wei, Liao, Ku, and Shaffer, 2011).

The idea of duality is based on the latent idea of empathy as an unconscious and stable behavioral disposition, like a "temperamental trait" (as defined by Roth and Hammelstein, 2012, p. 12). This is, however, not the only perspective on the concept. An alternative is to see empathy as an ability and/ or skill, which can be consciously applied and actively utilized in social situations. A benefit of this perspective is the possibility of development and change. As an ability, empathy develops in the early childhood years (Eisenberg, 2000; Zahn-Waxler, Radke-Yarrow, Wagner, and Chapman, 1992). As a skill – based on the ability – an individual's level of empathy can be changed and further developed in the adult years. There are many empathy training programs that have been developed based on the assumption that it can be fostered and trained (for a meta-analysis, see Butters, 2010), and these programs by now have their own tradition (Feshbach, 1975; Stepien and Baernstein, 2006; Gunkel, 2011). Seeing empathy as a "facilitative communication skill" (Corcoran, 1982, p. 63) can be traced back to Carkhuff (1969) and Rogers (e.g., 1957). Empathy as still conceived of as a cognitive and affective phenomenon can thus be seen as the capacity or competence to sense someone else's emotions and understand someone else's thoughts and beliefs (Thwaites, 2007). This corresponds to the classic idea of empathy as a form of "vicarious introspection" (Kohut, 1959, p. 459), which became a focus in contemporary models of interpersonal communication such as Rosenberg's (2003) idea of Empathic or Nonviolent Communication. I can decide to be empathic, empathy can be implemented consciously, and it can be trained and taught, as studies from various fields of application have shown (e.g., Foubert and Newberry, 2006; Long, Angera, and Hakoyama, 2008; Mulloy, Smiley, and Mawson, 1999; Sherman and Cramer, 2005).

This conception of empathy as an applicable competence is an important step in seeing empathy where it actually takes place: the interaction between people. A third perspective – empathy as an interpersonal or interactional phenomenon – leads back to Reik (1948) and again to Rogers (e.g., 1975). Rogers described empathy as a core condition for therapeutic success and described it as a characteristic of the interaction between therapist and client.

The therapist has to perceive, understand, and communicate this understanding to the client within the therapeutic process (Rogers, 1967). A similar idea can typically be found in the literature of applied research. Here, Kunyk and Olsen (2001) resumed that empathy can be seen as a three-step interactional process of communication, in which (1) the actor has to perceive the target's state and resonate with it, (2) the actor has to express his or her empathy to the target, and (3) the target has to receive and experience the expressed empathy. This idea has been described by Barrett-Lennard (1981) as an empathy cycle, in which the receiver of empathy becomes the sender as he feeds back his reception to the initial sender, who in turn receives the message and feeds it back again.

In this view, general processes of human interaction are comprised into a minimal send-receive-feedback formula. But it might be argued that this is only using the word "empathy" to replace "communication" (cf. Transmitter Receiver Model by Shannon, 1948). The actual phenomenon of empathy, i.e., the relating to someone else's situation and emotion, is in no

way concretized. The gain of this perspective, however, is that it highlights the social meaning of empathy. Without awareness for this interactional aspect, the experienced empathy might not be useful, if not perceivably expressed for the recipient.

If we summarize these conceptualizations, we see empathy split into different concepts as it has been viewed from different but not yet integrated perspectives. We can see it as an ability or skill, as a characteristic of an interpersonal interaction, as a cognitive and consciously controlled process of perspective taking, and as an affective and automatic (i.e., not consciously controllable) process of emotion sharing. We might ask what a general model of empathy would be like if in fact all of these perspectives were valid, although only parts of the whole phenomenon. We might thus ask what empathy would be like if we were able to integrate all of the different perspectives into a single concept. As this diversity of concepts obviously calls for integrative modeling, the first approaches in this direction will be discussed in the next section.

INTEGRATIVE MODELS: FIRST APPROACHES

Grawe (2002) suggested that research in applied psychology follows certain phases. After a period of developing methods and concepts that aim to diversify the subject and emphasize the differences among each other, a period of eclecticism will follow to reduce the resulting large variety of the first period to a limited number of integrative, reflected models. If we apply this thought to the field of empathy, we can understand the slowly growing number of integrative approaches.

There are two ways to integrate concepts. One way is to simply combine the given modules to form an optimized version of an established concept; a second one is to create a completely new model, but which still includes its predecessors.

A popular example of the first path is the combination of empathy as being both an interactional and a cognitive-affective phenomenon, as has been offered by Levenson and Ruef (1992). Reviewing the literature, they identified three qualities of empathy: (1) knowing what a person is feeling (equal to the cognitive aspects), (2) feeling what another person is feeling (equal to the affective aspect), and (3) responding compassionately to another person's distress (equal to the interactional aspect). Ideally, progress now would be to add component after component to determine whether a holistic model would be possible by following this procedure. However, integrative ideas, instead of formulating a coherent model, have merely added one component to the duality. As an example, Decety and Jackson (2007) determined that emotion regulation was the most reasonable third element to be added to the duality of empathy, whereas Richter (2009) proposed self-other-differentiation to be the essential third component. It is interesting that one model seems to undermine the progress of the other. We thus seem to be faced not only with different ideas about empathy, but with different ideas about how to integrate it as well.

Following the second path of integration, Decety and Moriguchi (2007) suggested a new model from a neurological point of view. They ultimately defined empathy as the interaction of four physically observable neural networks as follows. (1) "Affective sharing" bases the phenomenon of feeling amused when seeing another person laugh on the activity of mirror neurons. (2) "Self-awareness" is essential for not getting emotionally lost in mirroring, but for

differentiating between self-related (internally generated) and other-related (mirrored) emotions. (Although sensible, this separation has been deemed difficult if not impossible by, e.g., Neumann et al., 2009). (3) "Mental flexibility and perspective taking" refers to the ability to imagine the situation of the other and to infer the emotions likely to be experienced by this other person. The core idea of (4) "emotion regulation" is to reduce the impact of one's emotions from mirroring another person so that one can remain able to act compassionately and not be overwhelmed by it. Obviously, the first and last of the components can be seen as the classic affective aspects, whereas the second and third represent the classic cognitive aspects.

Thus, the model can be seen as endorsing the duality of empathy. However, the gain of this new concept is far beyond that.

First, this model offers a new and deeper differentiation into the processes of empathy. Difficulties and interruptions in the empathic process can be ascribed to one of four components. These components are indeed treated as independent processes, but, second, are based on neural networks, giving the concept a strong point in its validity. Finally, this model is a step toward and integration of other models as it incorporates the idea of ability (to differentiate, to regulate, to become aware) with the common cognition plus affect model. With this, the focus is again on the initial interactional purpose of empathy, i.e., to be able to act compassionately with a person emotionally in need.

However strong, we still have separate components of empathy, we do not yet have a holistic idea of how it enfolds, we do not know how (or if) the components can be structured consecutively, and we do not know how they interact.

A comprehensive suggestion along this line of thought has indeed been presented already by Preston and de Waal (2002). In studying and reviewing the literature on the neural processes of empathic behavior in primates, they concluded by proposing a perception-action model of empathy based on the action-perception hypothesis (cf. Prinz, 1997). They argued that the perception of another person's emotions automatically leads to the activation of equivalent states in the observer. The observer thus experiences similar emotions (emotional contagion) and is thus energized to act upon them (automatic action tendencies). The human being is potentially freed from this contagion and automaticity in as much as he or she is able to differentiate the merely mirrored from genuinely internally derived emotions (as has been suggested by Wispé, 1986) and is thus able to regulate them. One could argue that Preston and de Waal actually formulated a process idea of empathy, enabling the derivation of a strong hypothesis on the nature of empathy: IF process element x (external, e.g., one person observing an emotionally aroused other), AND process element y (internal, e.g., attention and thus arousal of similar emotions in the observer), THEN process element z (observable, e.g., empathic reaction).

A similar approach has been phrased by Nichols, Stich, Leslie, and Klein (1996), referring to information or memory as the critical initiator. To be empathic, the observer has to have had a similar experience (e.g., loss of a dear friend) accessible to his or her memory, which can be activated by observing someone else in this kind of situation.

This situation reminds the observer of his or her past experience and activates the corresponding emotions. Here again, the idea of a process seems to be implied: (1) analysis of the situation, (2) comparison with past experiences, and (3) activation of associated emotions. This approach offers the derivation of hypotheses for experiments as well: A faulty evaluation

of a situation can lead to emotions that differ from those of the observed person, however strong the emotional expression of the latter.

The interesting difference from Preston and de Waal's (2002) above-mentioned concept clearly lies in the aspect of how the emotion is aroused: either automatically by mirroring on a purely emotional level, or via memory by activating similar experiences, which arouse (presumably similar) emotions.

The interesting similarity between the two concepts from a perspective of integration is that both concepts are phrased as processes. Here, we do not have the disparity of somewhat cognitive and somewhat affective aspects without a clear relation, but rather, we have the opportunity to combine the elements into one process in a defined timely succession. To refer to this, Gerdes and Segal (2011) found a process definition of empathy by Barker (2003), which denotes empathy as "the act of perceiving, understanding, experiencing, and responding to the emotional state and ideas of another person" (Barker, 2003, p. 141). It is regrettable, however, that so far, the efforts have not gone any further than phrasing this single sentence, especially since Allport (1968, as cited in Preston and de Waal, 2002) already wrote more than 40 years ago that "the process of empathy remains a riddle in social psychology (. . .) The nature of the mechanism is not yet understood" (p. 30). But we will try to compensate for this deficit in the next section by taking the next step in integrative modeling. There, we suggest our own Empathy Process Model (EPM) to integrate the concepts and perspectives, to enable the derivation of new hypotheses, and to offer specific strategies for the application of this model in therapy and training programs.

INTEGRATING THE INTEGRATING: THE EMPATHY PROCESS MODEL

The idea of incorporating the components of empathy into a single process model can be compared to the conceptualization of transactional stress by Lazarus (1993).

Here too the focus has been shifted from simply adding the seemingly independent components of stress (stressor plus cognition plus emotion plus physiology plus context plus personality and so forth) toward proposing a single sequence that integrates these elements into a chain of events.

In the following, we shall describe the Empathy Process Model (EPM), which has been derived from reflecting and integrating the conceptual disparity discussed above. The aim is to string the basic elements of empathy into one coherent process model and thus to describe empathy with its prerequisites, conditions, sequences, characteristics, and results.

The process of empathy as we see it can be summarized in the already mentioned words of Barker (2003): "the act of perceiving, understanding, experiencing, and responding to the emotional state and ideas of another person" (p. 141). In a nutshell, empathy is, as we put it, a process of

1   perceiving another person and his or her emotional situation,
2   mentally modeling the person's situation, thoughts, and feelings,
3   empathically feeling similar to how the other person feels, and
4   responding to the situation and experiences of the other person (see figure 1).

To put this idea of the EPM into practice, we might take the example of a person X, who sees a person Z accidentally cut his finger. In phase (1) perception, person X might perceive Z's wound with blood coming from it and might see tears on a crying face.
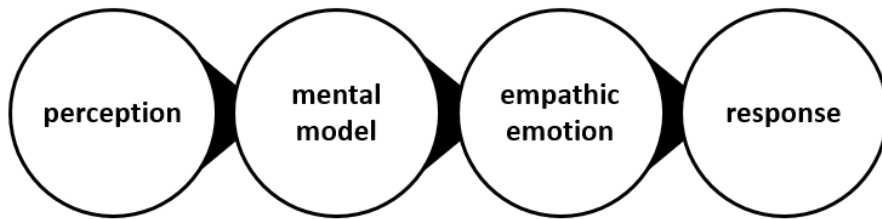
Figure 1. Overview of the Empathy Process Model (EPM) in its most general form.[1]

X now constructs (2) a mental model of the situation of Z – in this example, she might presume that Z has pain, fear, and the need to stop the bleeding. From this model, X will automatically generate (3) an empathic feeling, which is similar to the ones she believes Z has, meaning that she will feel to some extent something similar to pain and fear as well. X will then give (4) a response in relation to the imagined situation of Z, driven by her own feelings. She might go for a first-aid box and caress person Z.

In the following chapter, we will elaborate upon and explicate each of the EPM components in differentiated detail and with more complex examples.

Phase 1 – Perception

The first element of the EPM, "perception," simply means perceiving information that is relevant for understanding the situation of another person. Two general types of information may be differentiated: emotional information as expressed by the other person, such as a crying face, and additional situational information, which can be an indicator of a possible cause of the emotion, such as a bleeding wound or a personal insult. The processing of this information can range from no attention and thus no information intake at all, via superficial and shallow levels, to complex and multi-layered processing. Every phase is the presupposition of the next element in the process of empathy. Therefore, the more deeply the information is processed, the more the individual's empathic potential can be triggered.

Phase 2 – Mental Model

The second element, the "mental model," captures the mental reconstruction of the other person's emotional state and situation. It is comparable to the theory of mind concept (Premack and Woodruff, 1978) and to the empathy element perspective taking (e.g., Steins and Wicklund, 1993). It is a process of deriving, weighing, and combining the perceived or

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[1] Please note that we decided to place the empathic emotion after the mental model in order to avoid making a statement in the debate about the primacy of emotion or cognition. There might be plausible models in which the emotion and the mental model are conceptualized as parallel, i.e., simultaneous. Our focus on the conscious application of empathy in the field required the chosen sequence: mental model – empathic emotion.

remembered information about the person. The mental representation is a holistic view of the other person, integrating

- background information (past experiences, beliefs, values),
- perceived current emotions (moods and feelings), and
- the perceived present situation and its possible interpretation by the other person.

The result is a constructed concept of what the other person is likely to think, feel, and do. The depth of the mental model varies from not creating any mental representation at all to a detailed and in-depth construction of the other person's world, including his or her interpretation of it.

The more information has been acquired, the more detailed the mental model can be. Also, the more detailed the mental model, the higher the accuracy of the empathic emotion (cf. Ickes, 1993; Zaki, Bolger, and Ochsner, 2009) that can be reached.

To add detail to a mental model, single suggestions such as understanding the person's thoughts, beliefs, emotions, perspectives, and so forth have been made. We suggest using an integrated concept and adapting the concept of Nonviolent Communication by Rosenberg (Rosenberg, 2003; Rosenberg and Molho, 1998) for this purpose.

Here, Rosenberg explicates four steps of communicating in a non-violent way, which are (1) to describe what one has observed, (2) to say how one feels in this situation, (3) to name the need that is or is not being met, and (4) to utter a request to fulfill the need. We can easily adapt this concept of four steps into four foci of understanding.

We can thus claim to have a detailed mental model of the state of another person if we understand (1) the relevant observation and the perspective of the other person, (2) how the person feels, (3) the person's active needs, and (4) the request about what should be done.
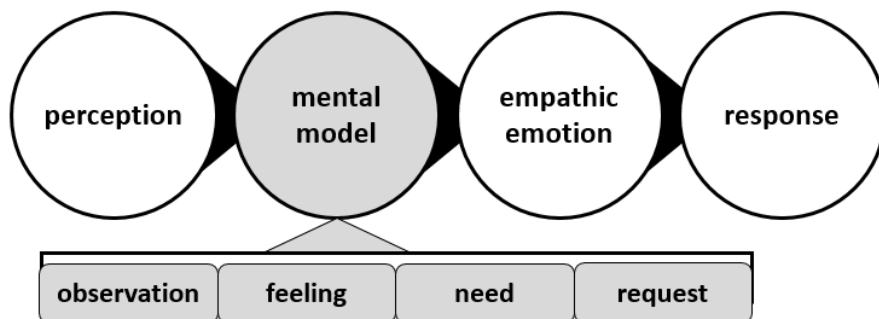
Figure 2. The Empathy Process Model (EPM) with elaborated mental model component.

In the simple case of a little boy with a cut finger, we might come to understand that (1) he sees his finger bleeding, (2) he feels fear and pain, (3) he has a need for safety and comfort, and (4) he wants us to stop the bleeding with bandages.

Phrasing understanding with these four foci seems to be a psychologically comprehensible approach as we can combine the attentional (perception), phenomenological (feeling), motivational (need), and interactive (request) aspects. The importance of these foci becomes obvious when we examine the above-mentioned cut finger again in a different setting. Again, a little boy has cut his finger. We now understand that (1) he again sees his

bleeding wound, (2) he is happy and thrilled (3) as he has a need for excitement and connectedness, and (4) he wants me to cut my finger, too, so we can press them together to become blood brothers. The operationalization of empathic accuracy is thus the understanding of the other person on all four levels.

Phase 3 – Empathic Emotion

The third stage of the empathy process, "empathic emotion," is the translation of the mental model into an emotion.[2] My mental representation of a friend's pain elicits the emotion of pain in me. As described in the emotion-based empathy definitions above, this empathically aroused emotion (i.e., shared emotion) can be understood only within the context of the other person (Hoffman, 2000). It arises with the mental construction built to represent the other person's current situation and emotional state. Of course, this shared emotion has to be induced by oneself, as it is based on one's own mental model of the emotion of other person. A mental model of another person, however, can only be an estimate, given the complexity of emotional nuances and mental processes. Therefore, the shared emotion can be similar, but never equal to the emotion of the other person (Singer, 2006; Singer et al., 2006).

The process of emotion elicitation is, we presume, quasi instantaneous, automatic, and unconscious (Gordon, 1996), as has been suggested by research on mirror neurons (e.g., Rizzolatti and Craighero, 2004; Thioux, Gazzola, and Keysers, 2008). It ranges from a rudimentary activation of the general concept of an emotion to a complex arousal and a complete emotional realization, i.e., conscious feeling.

The disposition to convert the automatically shared emotions into a noticeable feeling can be interpreted as the trait aspect of empathy.

In the early stages of child development, there are no complex mental processes available. The concepts of mirroring, mimicking, and emotional contagion (Hatfield and Rapson, 2000) have been used to explain emotional resonance in infants (e.g., Eisenberg, 1986) as they require no cognitive understanding of the situation (Vreeke and van der Mark, 2003). We still can experience emotional contagion in this pure form, for example, when we see and hear a doll laugh. We might have the strange awareness of starting to laugh ourselves, although we know that there is no reason to do so and might even evaluate this as silly behavior.

Phase 4 – Response

The final stage of the empathy process according to the EPM is the "response" phase. This includes all kinds of behavior, may it be internal (thoughts, evaluations, etc.) or external (facial expressions, verbal communication, etc.), as long as the behavior is somehow related to the state or situation of the other person. In this phase, I can help stop the bleeding of a

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[2] We are using the terms *emotion* and *feeling* as elaborated by Damasio (e.g., Damasio et al., 2000). Hence, emotion is seen as specific physiological and mental states of an organism, whereas feeling is merely the phenomenological awareness of the emotion.

friend's wound, I can express my sadness, I can caress, ignore, ask, make jokes, distract, and so forth.

Whether it seems inappropriate or not, every behavior that is somehow related to the situation of the other person can be seen as part of the empathy process. This view differs from normative views like those put forth by Baron-Cohen and Wheelwright (2004), but it is plausible for two simple reasons. First, each element we exclude as being inappropriate would need a moral evaluation of inappropriateness, which we cannot make from a scientific point of view. Second, we believe that as soon as some sort of perception, some sort of mental modeling, and thus some sort of emotion has been activated, every behavior can be interpreted in relation to the other person. Even if I choose to ignore the received information and the evoked emotion, this can be called a response to the situation of the other person. This is clearly an interactional or communication-oriented approach, as has been suggested, e.g., by Vreeke and van der Mark (2003) before. Herein lies the great advantage: that we can differentiate the response into other-oriented and self-referred reactions as follows.

If I behave in a way that is directly related to the other person, the focus of my behavior is on the other person.

My reaction is concerned with their needs, their emotions, and their perspective. Here, we can further differentiate my reaction into joint reflection and instant action. Joint reflection is necessary if I need more information about the situation and state of the other person in order to act accordingly. If a friend has cut his finger accidentally and is bleeding badly, I know the relevant information just by seeing the wound and can act accordingly. It would be silly to reflect on feelings and needs here. If, however, I see a friend sitting on the couch in tears with no apparent wound, it would be justifiable to first validate the mental model about the situation before acting upon it.

To validate my mental model, I would have to determine whether my guesses about the other's observations, feelings, needs, and requests are correct (as elaborated above, see "mental model"). As an example, let us say my partner just came back from work and told me that her office was a madhouse. If my response-focus is on my partner right now, I might ask about her observation first, like whether she had another meeting that took up much more time than had been scheduled. I might ask whether she felt frustrated, needed some companionship, and wanted to talk about it with me. Alternatively, she might be amused because a co-worker made a fracas that made everybody laugh. Thus, the information that was not complete at first makes it necessary to jointly reflect and thus check and correct my mental model in order to act appropriately.

The second possibility of other-oriented behavior, the instant action, would include all immediate behaviors that might be requests of the other person. Instant action is possible whenever I have sufficient information to act upon. Let us take the example of my partner who came back from the madhouse office with frustration. I might know her well enough to know she wants a peaceful evening and a cup of tea; hence, I might arrange that for her. Instant action can be precarious if my mental model is not in accordance with the other person. If I act upon the belief that my partner wants to be left alone and have some quiet time, she might be angry with me for not paying enough attention to her. Joint reflection ensures congruence before action, but takes extra time and effort. Instant action is the more common reaction and is usually efficient if the congruence is at least acceptable.

Next to the above-mentioned other-oriented reactions, there are self-referred reactions. Here, the focus of my actions is on me; thus, I am concerned with my needs, my emotions,

my perspective, and my evaluations. My relation to the situation of the other person is merely formal and superficial, although it might seem direct and altruistic. The other's situation is but an occasion for me to act, but it is neither the focus nor the reason.

If we again take the example from above of my partner coming home from work and telling me that her office is a madhouse, a self-referred response would be, e.g., to tell her that my day at work was even worse, like a madhouse on steroids. This remark is obviously in relation to her situation to some extent, but only on a superficial level. There is no relation to her situation as she experienced it; i.e., there is no reference to her perspective, her feelings, her needs, or to her possible requests. Variants of self-referred reactions include stating or referring to one's own associations, interpretations, emotions, evaluations, needs, wished, requests, etc. Ignoring can thus be seen – as mentioned above – as a response within the empathic episode, for it presupposes a mental representation of the other (which can be ignored). It reflects the decision not to comply with any request of the other person, including the general request to pay and display attention. This type of reaction often conveys the impression of being focused on the other person as it shows a certain relation to the other's situation. However, the contents of the reaction are solely motivated by one's own needs, such as emotion regulation ("Stop crying, this isn't as bad as it looks!") or attention ("I told you it would end this way, didn't I tell you that?"). Considering the effect of social desirability, we assume that these self-referred reactions are often subjectively experienced as indeed related to the other person, and the self-referred character of the reaction is mostly not conscious. We call such a reaction an Empathic Short-Circuit (ESC), and we will elaborate on such reactions in the next subchapter because of its special relevance to the professional application of empathy-related work.

To summarize the last phase of the EPM, the response, we can react with our focus on the situation and state of another person or with the focus on ourselves, and we can jointly reflect or act instantly upon sufficient or insufficient information. This phase is obviously rich and diverse in options. Therefore, the final subchapter will – exemplarily – elaborate upon one special yet frequent case of self-referred reactions with insufficient information: the Empathic Short Circuit (ESC).

The Empathic Short Circuit (ESC)

Considering the Empathy Process Model (EPM) and the discussion above, empathy seems to be an inevitable part of communication. Ideally in communication, we would want a counterpart whose reactions refer rather directly to our situation and are based on sufficient information about it.

As discussed above, there are, however, self-referred reactions, which are not based on our situation, but are merely superficially if at all related to it. In emotionally tense situations, such as a good friend's misfortune, reactions like "There, there" or "It'll be all right, stop whining" are classic examples. My friend's unpleasant feelings, because of his misfortune, are aroused empathically in me. If I do not understand these unpleasant feelings as simply empathically aroused, I will see them as my very own feelings (comparable to losing "the 'as if' quality" as Rogers (1957, p. 99) described it). The source of my empathic emotion lies, however, not in me but in the other person. Therefore, I cannot change much about it. Helplessness is thus added to the unpleasantness. This might be a risk to my emotional

stability as tension builds up. I can end the emotional confrontation and thus the unpleasant feelings, e.g., by understating the problem ("Come on, it's not that bad"), or by making suggestions ("Why don't you sell your house"). In either case, the focus of these reactions is on my own unpleasant feelings, and the goal is to get rid of them quickly. Instead of checking and correcting my mental model by trying to understand the emotional tragedy of the other person, the reaction is focused on my own emotions and needs, that is, to end the confrontation with the intense emotions. The process of joint reflection is cut short before it even began. These shortcut reactions seem like short circuits. After an electric short circuit, the power is down and the electric potential is zero. We might therefore call these reactions Empathic Short Circuits (ESC) as they are shortcuts in an emotionally tense interaction that end the conversational potential because of an undifferentiated empathic emotion and the self-referred focus on one's own emotions. The ESC is an attempt to escape from the unpleasant empathic emotions within by ending the situation without.

The consequences of the ESC are most likely disappointment and dissatisfaction for both the other, as there is neither empathic understanding nor joint action, and for the empathic person, as the interaction tends to be cut short, the person in need is not satisfied, and the emotionally tense situation remains unsolved. Past research has already indicated a relation between empathy and burnout (Miller, Birkholt, Scott, and Stage, 1995), typically in nurses (e.g., Åström, Nilsson, Norberg, Sandman, and Winbald, 1991) and in other helping professions such as teachers and social workers (e.g., Williams, 1989). This relation seems to be bound to a loss of the "as if" quality (Rogers, 1957) in the empathic person (self-other differentiation, cf. Corcoran, 1982, 1989). We see the EPM and the ESC as valid models that offer deeper insight into the processes of empathy, the interaction of its elements, and possibilities to derive hypotheses and training concepts.

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Chapter 10

EMPATHY GAPS AND DECISIONS: THE CASE OF CURIOSITY

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ABSTRACT

Empathy gaps occur when people are in one fleeting state and try to predict how they would behave in a different state. Research shows consistently that people underestimate those current influences. An empathy gap has also been shown for curiosity such that people underestimate the influence curiosity has on their decisions. We successfully replicate the original finding by Loewenstein, Prelec and Shatto (1998). In addition, we show that empathy gaps also occur when participants try to predict other people. We argue that the overreliance on current states is due to the use of simulation as prediction strategy. If, however, more use of a theory is facilitated by presenting participants a well-known other person (where theory use is likely), predictions become less egocentric and different from the self.

INTRODUCTION

Anyone who ever came back from a buffet with a plate overflowing with food, only to discover a few moments later that one's eyes literally had been bigger than one's belly, has fallen prey to an empathy gap (Loewenstein, 1996): the underestimation of the impact of current states on the prediction of future behavior. The over-reliance on current states for the prediction of future behavior has been demonstrated for a variety of different situations. For example, people who are satiated are less likely to choose a high-caloric snack for later consumption than people who are hungry (Read and van Leeuwen, 1998); men who are not

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sexually aroused report that they are less likely to behave sexually aggressive toward women than men who are sexually aroused (Loewenstein, Nagin, and Paternoster, 1997).

In studies on empathy gaps, a future decision or a prediction about another person is heavily influenced by one's own current state. This has been demonstrated for various states and emotions, like hunger and thirst (Van Boven and Loewenstein, 2003), fear of embarassment (Van Boven, Loewenstein, and Dunning, 2005), sexual arousal (Loewenstein et al., 1997), ownership of an object (Van Boven, Dunning, and Loewenstein, 2000), drug addiction (Giordano et al., 2002), or medical conditions (Loewenstein, 2005).

Empathy gaps can occur in two different directions (Loewenstein, 2005): 'Hot-to-cold' empathy gaps exist when people are in a hot state (i.e., a visceral or emotional state, like hunger, or sexual arousal) and have to predict how they will act when they are in a cold state, (i.e., not hungry, or not aroused). 'Cold-to-hot' empathy gaps take place when people are currently not aroused and have to predict their behavior for 'hot', aroused situations. An orthogonal distinction is between empathy gaps within people (intrapersonal) and between people (interpersonal; Van Boven and Loewenstein, 2003, 2005; Van Boven et al., 2005).

Empathy gaps are a consequence of anchoring on one's own current situation, and doing too little adjustment when predicting thoughts, decisions or behavior in different situations (intrapersonal) or for other people (interpersonal) (Van Boven and Loewenstein, 2003). There are various notions in social cognition that stand for such a process: *projection bias* (Loewenstein, O'Donoghue, and Rabin, 2003), *attributive projection* (Holmes, 1968), *egocentric attribution* (Heider, 1958), *egocentric bias* (Epley, Keysar, Van Boven, and Gilovich, 2004), *assumed similarity* (Cronbach, 1955), *false consensus effect* (Ross, Greene, and House, 1977), or, more globally, *social projection*.

Drawing from philosophy of mind (Fodor, 1987), we refer to this process as a consequence of *mental simulation* (Gordon, 1986; Heal, 1986). Simulation theory explains our ability to predict others (or our future self) in a very simple way: We use our own mental system as a model of the mental processes of other people (e.g., Perner and Brandl, 2009). That is, for predicting the choice of other people, we form a preference by ourselves and ascribe the resulting choice to the other person. An alternative prediction strategy is theory theory (e.g., Fodor, 1987), which claims that we use theoretical knowledge to arrive at predictions. Simulation as major prediction strategy leads to predictions that are skewed towards one's current situation, while prediction by theory is not necessarily biased by current states. It has been shown that we use more simulation for some predictions, but a theory for others (Perner, Gschaider, Kühberger, and Schrofner, 1999; Perner and Kühberger, 2002), and a mix of strategies is also possible (Bazinger and Kühberger, 2012). Thus, differences in biased projection can be attributed to a different mix of simulation and theory. The case of curiosity is perfect for demonstrating the heuristic value of simulation theory for predicting own and other people's preferences.

Curiosity

Loewenstein (1994) delivered a thorough treatment of curiosity. He proposed that for curiosity to arise, an information gap between what one knows and what one wants to know is necessary. Curiosity therefore depends on a contrast between an informational reference point and an estimation of one's actual knowledge.

We become curious if we are dissatisfied with our current state of knowledge and desire to close this information gap. If we succeed in closing the information gap, a pleasant feeling arises. People sometimes even expose themselves to curiosity-inducing situations, for example, by playing quiz games, in order to enjoy the pleasant feeling afterwards.

What objects cause curiosity is based on individual differences in interest, expectations and prior knowledge (Kashdan, Rose, and Fincham, 2004). In general, however, there are various situations or stimuli that can induce curiosity, as long as there is a salient information gap inducing a desire to reduce or close it (Loewenstein, 1994). Among those are: a simple question or a riddle; a series of events with an anticipated, but unknown solution (e.g., the ending of a crime novel); violated expectations; if somebody else has certain information that one does not have; information that was once known, but that is now forgotten.

Although curiosity is a frequent feeling, there is surprisingly little research on predicting behavior under curiosity. Loewenstein, Prelec, and Shatto (1998) conducted a series of experiments on the empathy gap in curiosity. Participants took a quiz and had to decide whether they would like to receive the quiz answers or a candy bar at the end of the experiment.

Before deciding, researchers did or did not induce curiosity in participants: Some participants solved the quiz before they made the decision on the answers or the candy (i.e., they were already in the state of curiosity by being aware of a specific information gap), others had to decide before they were presented the quiz (i.e., they presumably were not curious).

More participants who were already curious opted for the answers than participants who were not yet curious. That is, being aware of the information gap led to the decision to close it. The authors argue that this is an instance of an empathy gap for curiosity.

A failure to predict the consequences of being curious is a serious limitation of human judgment, given that we are curious in many situations of daily life. Since a literature search revealed neither other research on the consequences of curiosity for choices, nor a replication of this finding, the current research was undertaken.

EXPERIMENT 1

Our goal was to replicate the finding by Loewenstein et al. (1998), who demonstrated an intrapersonal empathy gap for curiosity.

In addition, we wanted to see if one's own states also contaminate the prediction of another person's choice, that is, whether there is also an interpersonal empathy gap. If people use their own judgment as a source of prediction, it follows that predictions for other people will also be contaminated by curiosity.

Method

Participants

Eighty students (40 male) participated voluntarily. Participants were recruited at the University of Salzburg. Mean age was 25.34 years (*SD* = 5.79).

Method and Design

A quiz that consisted of sixteen general knowledge questions was used to induce curiosity. Questions were selected from the board game *Trivial Pursuit*. Thirty-six questions were tested in a pilot-study with 25 participants for determining which one of them were the most interesting. Sixteen interesting questions were included in the experiment (see Appendix).

We used a 2 (state: hot vs. cold) x 2 (choice: own choice vs. prediction) between-participants design.

Participants in the cold, own choice condition were told that they were about to take a general knowledge quiz. Before they actually took the quiz, they were asked whether they would like to receive all answers to the quiz or €3 in cash at the end of the experiment. After having indicated their preference, they took the quiz. After the quiz, they were reminded that they had opted for the answers or the money and were asked whether they wanted to change their mind about their choice. Finally, they were given either the money or the answers. In the cold, prediction condition participants had to predict another person's choice. We gave no specific description of the other person.

Participants in the hot, own choice condition were first given the quiz in order to induce curiosity. Afterwards, they had to make a choice between receiving €3 or the quiz answers. Participants in the hot, prediction condition were given the quiz themselves and were then asked whether another person would like to receive the money or the answers after the quiz.

Results

The results are depicted in Figure 1. Participants who were made curious by taking the quiz (hot condition) chose quiz answers over money more often than participants who took the quiz after the choice (cold condition), $\chi^2(1) = 12.38$, $p < .001$. This shows an empathy gap, as participants underestimated the effect the quiz would have on their preference.
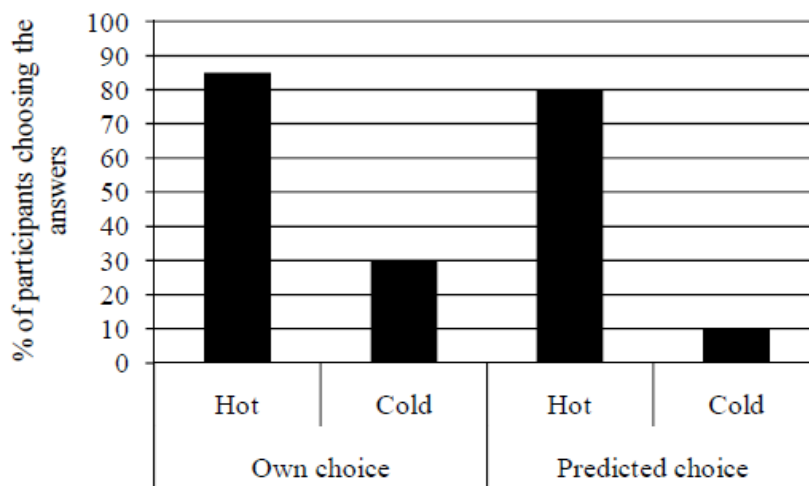
Figure 1. Percentages of participants choosing the option of receiving the answers for themselves or another person in the hot and cold conditions in Experiment 1.

Only by taking the quiz they came to realize the value of knowing the answers.

The findings also show an empathy gap for predicting the preferences of other people: Participants who predicted another person indicated that the other person would prefer the answers if they themselves were curious, but predicted a preference for money if they themselves were not curious, $\chi^2(1) = 19.80$, $p < .001$.

Participants in the cold condition were given the possibility to change their preference after the quiz. We found that significantly more participants switched from money before doing the quiz to answers after the quiz (64.3%) than staying with their original choice of taking the money (35.7%).

In addition, nobody switched from answers to money, but participants stayed with their original choice of taking the answers (McNemar, $p = .004$). This is also a strong indicator that participants underestimate the effect of curiosity: After becoming curious, people realized that this curiosity would make them prefer the answers.

Similarly, when predicting the other person, more participants indicated that the other person would switch from money to answers (55.6%) than staying with his or her original choice of taking the money (44.4%), and again no participant predicted a switch from answers to money (McNemar, $p = .002$). Therefore, people also predicted the effect of curiosity for the other person.

Discussion

Replicating the results by Loewenstein et al. (1998) in a similar experiment, we found an empathy gap for curiosity. Taken together, participants underappreciated the influence of curiosity.

They preferred money rather than the answers to a quiz before taking the quiz, but preferred the anwers when they were curious because of taking the quiz and the resulting information gap.

This empathy gap also occured when predicting another person's preference. These findings indicate a contamination of predictions by one's own current state. That is, people predict by using their own current preference, and adjust only insufficiently, if at all.

Our new finding is that people do not only predict their own preferences by anchoring on their own current state, but use the anchoring strategy also for predicting the preference of other people.

In terms of the distinction between simulation and theory, our findings point to the use of simulation rather than theory. However, these findings do not distinguish between the theory / simulation view and the anchoring / adjustment view. In order to provide for a test of the more adequate of these two views, we ran another experiment. We use the fact that the use of simulation as a prediction strategy depends on the familiarity of the target person. More specifically, people prefer theory as a prediction strategy for well-known others, but tend to use simulation for unknown others (Bazinger and Kühberger, 2012; Krienen, Tu, and Buckner, 2010).

Note that the anchoring / adjustment view does not make a specific prediction depending on the familiarity of the target. Thus, we tested whether the empathy gap varies for different target people in Experiment 2.

EXPERIMENT 2

In Experiment 1, the target person was unspecified. However, if the target person is well-known, people have much knowledge available that can be used in predictions (Bazinger and Kühberger, 2012; Krienen, Tu, and Buckner, 2010). Thus, when predicting a well-known person, more theory (i.e., specific knowledge) can be used. Theories about the role of curiosity for behaviors include specific knowledge that is acquired through direct interaction with other people (Frith and Frith, 2006), for example, 'My friend likes to learn about new things'. When predicting an unknown person, more simulation is used, as there is less specific knowledge available. Given that the empathy gap is due to simulation, more theory use will decrease the empathy gap and lead to a less egocentric prediction.

In Experiment 2, we varied the familiarity of the target person: Participants had to make a decision for themselves while being in a hot or cold curious state in addition to making a prediction for either an unknown or a well-known person. We expected that the prediction of the unknown person should be mainly based on simulation, resulting in an empathy gap, while the prediction of the well-known person should be based on a theory, resulting in a prediction that is less contaminated by one's own current state.

Method

Participants

One hundred and twelve students (46 male) participated voluntarily in the experiment. Participants were recruited at the University of Salzburg and at the University of Munich. Mean age was 22.09 years (*SD* = 2.25).

Method and Design

The method was similar to Experiment 1, but in order to test the effect of familiarity, predictions had to be made for target people varying in familiarity. Thus, participants had to make either a prediction about a well-known or an unknown target person.

In addition, they had to indicate their own choice while being in a hot or cold curious state, induced by a quiz. Thus, we used a 2 (state: hot vs. cold) x 2 (target of prediction: unknown vs. well-known) between-participants design.

As in Experiment 1, participants in the cold condition were told that they were about to take a quiz about general knowledge. They were asked whether another person would prefer €3 or the quiz answers at the end of the experiment.

Half of the participants had to predict a well-known person (*you see that person regularly and you have a lot of contact with that person*), the other half of participants had to predict an unknown person *(you have never met that person and you never had contact with that person)*.

Definitions of the degrees of familiarity were similar to those provided by Johnson (1987). In order to check for the successful manipulation of familiarity, participants were asked whether they had or had not thought of a specific person after the experiment.

Finally, participants indicated their own choice, were given the quiz, and received either money or answers.

Following the prediction, participants had to report their prediction strategy. Participants reported on a scale from 0 "strongly disagree" to 5 "strongly agree" the amount of using simulation or theory in their predictions (Bazinger and Kühberger, 2012).

We used two simulation items, and two theory items:

Simulation I (self as proxy): I chose the option that I like best.

Simulation II (perspective taking): If I were in the other's place, I would have chosen a specific option. This guided my prediction.

General Knowledge: I considered the preferences of people in general, and chose the option that I think is preferred by most people.

Specific Knowledge: I have specific knowledge about the other person, and used that knowledge in my prediction.

The first two items aim at measuring simulation, the latter two items measure theory use (see Bazinger and Kühberger, 2012).

Participants in the hot condition were told that another person (either unknown or well-known) would take the quiz, and they were given the quiz themselves. After solving the quiz, they were asked to predict whether the other person would like to receive the money or the answers, and they reported their prediction strategies. Afterwards, they had to indicate their own choice and finally, received either money or answers.

Results

In a first step, in order to ensure the successful manipulation of familiarity, we excluded 10 participants in the well-known target person condition, who indicated not having thought of a specific person, and 16 participants in the unknown target person condition who indicated having thought of someone specific. This left a total of 86 participants.

The findings for the predicted choices are reported in Figure 2. As expected, participants who were in a hot state by actually taking the quiz chose the answers more often than participants who were in a cold state, $\chi^2(1) = 18.41$, $p < .001$. When predicting an unknown person, the empathy gap also appeared, $\chi^2(1) = 7.79$, $p = .005$. However, for well-known people, no significant empathy gap could be found, $\chi^2(1) = 2.36$, $p = .124$. For examing whether own choice and the prediction condition were significantly different, we analyzed the match between own choice and the prediction. We found no significant difference between this match in the hot (80%) and cold conditions (93.3%) for the unknown other (p = .381, Fisher's exact test), but there were marginally more frequent matches in the cold (96%) than in the hot condition (76.2%) for the well-known other (p = .079, Fisher's exact test).

Participants made slightly different predictions for well-known others than for themselves, showing no significant empathy gap in the latter condition.

Self-reports of participants were analyzed by calculating a simulation index by dividing the simulation score (sum of 'perspective taking' and 'self as proxy') by the sum of all items. This index measures the relative amount of reported simulation.

If the simulation index is close to 1, it indicates that simulation was the major prediction strategy, if it is close to 0, it indicates that theory was reported as the main prediction strategy.
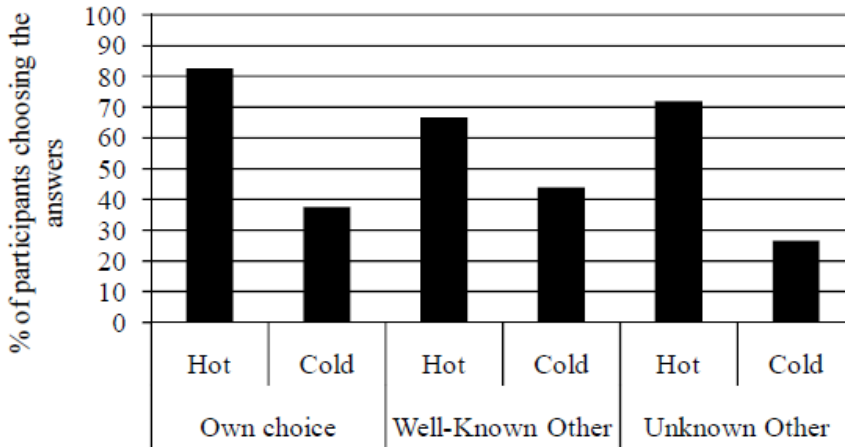
Figure 2. Percentages of participants chosing or predicting the option of receiving the answers for themselves or another person (well-known or unknown) in the hot and cold conditions in Experiment 2.

A t-test showed that participants reported significantly more simulation for predicting unknown others ($M = .44$, $SD = .18$) than for well-known others ($M = .35$, $SD = .12$), $t(84) = -2.78$, $p = .007$.

In sum, we replicated the findings of Experiment 1 of an empathy gap for curiosity. In addition, the familiarity of the target person was shown to have an influence on prediction strategies and the prediction outcome.

The empathy gap is based on the use of simulation, as the anchoring / adjustment view cannot explain different prediction outcomes for self, unknown or well-known other.

For unknown target people, more simulation was reported, and an empathy gap more similar to reality was found.

GENERAL DISCUSSION

Our current emotions and visceral states seem to keep a tight grip on us and have an influence on our decisions. This phenomenon, known as the hot-cold-empathy gap, has been demonstrated for a wide array of choices, and we were able to replicate it for curiosity here. Even further, this influence of one's own current state is not only present in one's own choices: It does also influence the prediction of one's future choices, and the prediction of other people's choices.

We argue that the empathy gap for predictions depends on the use of simulation: Predictions of oneself and of others are based on one's current situation, and therefore, the current state has an undue influence on the prediction. This pattern changes if more theory is used. Then the predictions for self and others differ, as it was the case for the prediction of the well-known other. Therefore, use of theory instead of use of simulation leads to a prediction that has less to do with one's own state. In our experiments, we used the familiarity of the target person as variable that influenced prediction strategies. Relatedly, O'Brien and Ellsworth (2012) showed that people project visceral states (like feeling of coldness or thirst) on similar others, but not on dissimilar others.

Current, fleeting emotions like curiosity can influence our behavior and decisions in ways that we cannot appreciate from a cold perspective: As joyful a lottery jackpot or as depressing an accident with a following paraplegia may be, the reported happiness of lottery winners and of paraplegics is not significantly different after a few months (Brickman, Coates, and Janoff-Bulman, 1978). The biasing effect of actual states—be it cold or hot—on predictions may not be underestimated. Indeed, such situations are quite common. Examples include when a satiated mother feeding her child underappreciates her child's hunger, or a when a healthy person making a medical decision for a sick relative is unable to take the physical and psychological consequences of the illness into due consideration. The problem of empathy gaps is especially virluent in medical decision making: We see patients opting for highly intrunsive, yet not helpful treatments as an attempt to reduce the first rush of fear and anxiety rather than making a cooled-off decision; doctors undermedicate patients' pain, because they are in a cold state themselves; decisions about end-of-life care change radically when people are actually faced with a terminal illness (e.g., Loewenstein, 2005).Therefore, we are confronted with predicting not only ourselves, but also other people who are in different emotional or visceral states on a regular basis.

Still, the empathy gap is a robust phenomenon, at least when we have to predict unknown people. There is hope that for well-known people the biasing effect is less strong.

The question is how predictions and resulting decisions can be improved. As pointed out by Loewenstein et al. (2003), it does not seem that the empathy gap disappears with more experience with a certain state. Otherwise, there would be no empathy gaps for hunger, as this is an area where plenty of experience is available. While people understand the concept of satiation or stimulation, they still underappreciate the effect it has on one's behavior. Also, there is already a certain level of awareness about the problem of empathy gaps. This is reflected in some governmental laws such as a waiting or 'cooling-off' period for handgun sales in the US for preventing impulsive suicide or homocide (Lambert and Silva, 1998), or in common rules such as 'count to ten before responding' or 'never shop on an empty stomach' (Loewenstein et al., 2003). Indeed, it is suggested that for some empathy gaps, especially those that are related to medical decisions, it is best that a doctor with a more neutral position might be consulted rather than the family or the patient himself. While this is not transferable to other types of decision making, it might help with overly rushed choices out of a hot state, or, at the oher extreme, the inability to imagine onself in a hot state.

Our results show that facilitating theory use (as it was the case for predicting a well-known other) leads to a less egocentric predictions in situations involving hot / cold empathy gaps. Thus, inviting the use of theories might help with empathy gaps. Of course, it might be difficult to think of theories that describe exactly, for example, how much food should be loaded on one's plate when being at a buffet, or how quickly anger dissolves after a heated discussion with a partner, but sometimes there is experience that offers a guideline. As familiarity seems to be a helpful factor that leads to theory, it may help in diminishing empathy gaps in predictions. Thus, a debiasing strategy could consist of advising people not to predict their own choice, but to imagine to predict for some well-known other person. This might invite theory use, and if people manage to overcome their initial egocentricism, they can use this theory to refine their predictions (Epley et al., 2004). While theory use in the case of empathy gaps can lead to a succesful prediction (by using theories like 'people are curious after trying to answer a quiz, that's why quiz shows are popular') and might improve the result, this tactic should be taken with a grain of salt: A theory can certainly be wrong, which

can, in turn, lead to an incorrect prediction all over again. Therefore, while theory use might reduce an empathy gap, it might not always be the best strategy if the theory is wrong.

People have a hard time evaluating the usefulness of their knowledge about others: Lerouge and Warlop (2007) showed that participants tend use all availabe specific knowledge for predictions about well-known others, even if that knowledge does not necessarily lead to a correct prediction. In sum, for well-known people, we rely heavily on knowledge about them, which leads to more theory use, that can, but need not to, improve predictions.

APPENDIX

What is Bud Spencer's original profession?
Who was the first female United States Secretary of State?
Which country offered Albert Einstein the presidency?
Which important global political event took place on June 1, 1997?
In which US state is Woodstock located?
What vegetable was first cultivated by mankind?
Which European country granted women the right to vote in 1971 with a slim majority?
What percentage of the earth is covered by continental land mass?
Who has the nickname 'Slowhand'?
Who reigned in Cuba before Fidel Castro?
Which geological phenomenon has a tongue and is able to calve?
Which movie, directed by Steven Spielberg, was recipient of seven Academy Awards?
Who composed 'The Four Seasons'?
Which country switched in 1967 from left-hand traffic to right-hand traffic?
Which city is referred to as 'Venice of the east'?
In which city was John F. Kennedy shot?

ACKNOWLEDGMENTS

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Chapter 11

THE NEUROPSYCHOLOGY OF EMOTIONAL AND COGNITIVE MECHANISMS IN DECISION MAKING

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ABSTRACT

In the beginnings of decision-making research it has been proposed that making advantageous choices is only a result of rational cognitions. Reasoned considerations of the possible outcomes, their quantifiable favorability and their probabilities of occurrence were supposed to be the precondition for a good decision. Emotions were regarded as unnecessary or even negatively interfering influences. In contrast, lots of recent neuropsychological research has discovered that there are decision situations in which emotions are crucial for making good choices. It has been demonstrated that emotions can automatically guide persons towards advantageous options, even without conscious knowledge. Sometimes our decisions are even better because of preceding emotional reactions. However, the relative impact of emotion and cognition on decisions seems to depend upon the situation: In decisions under ambiguity, in which no explicit information

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about the rules for positive and negative outcomes is available, emotions seem to be indispensably required for learning to prefer the advantageous options. In decisions under risk, in which the rules for outcomes and their probabilities are available to the decider, emotions are involved to a lesser degree, but they interact with required cognitive processes, such as executive functions. Consequently, depending on the situation, not only brain networks processing cognitive operations have been found to be involved in decision making. Also areas that process and evaluate emotions are active when decisions are made. These neural processes can interact, and therefore temporarily induced emotional states such as anger, fear, or happiness can affect the quality of decisions under ambiguity and risk. Stress, as one extreme form of emotions, elicits several hormonal changes that cause bodily arousal and activations or deactivations, respectively, in brain areas which are also involved in making decisions. Accordingly, it has been found that stress can affect decision-making behavior. This chapter reviews neuropsychological theories and lines of previous research explaining the role of emotions in decision making with a focus on findings on the behavioral and brain level.

INTRODUCTION

There is no doubt that the course of our life is fundamentally influenced by the decisions we make. Every day we chose numerous times between two or more options. In theories of economic decision making it has been stated that decisions are better the more they are made as a result of rational and logical reasoning (see e.g., Thaler, 2000). Emotions should play a minor role here and could even prevent us from making the best choice, because emotions are often irrational.

Most of us may remember situations in which our feelings had taken over the control and decisions we had made in this state appeared disadvantageous retrospectively.

Indeed, also psychological research has reported that strong emotions can impair human abilities, especially cognitive functions which should be important for what we would call rationality. But does that automatically mean that emotions impair the ability to make good decisions? Decisions also seem to have another face.

Sometimes we experience situations in which we simply feel which option we want to take and it appears to us that we know that it is the right choice. This *gut feeling* or *intuition* of what is right or wrong can emerge very fast and even before we can find an explanation for the reasons why we want to choose the one and reject the other option.

Both kinds of decisions, rational and intuitive ones, seem to exist and sometimes they lead to better or worse results.

This short view about how we experience decisions already implies that there could be different factors which constitute them: internal processes, external influences and characteristics of the decision situation. In general, two systems are thought to underlie the internal processes which take place before a choice: a cognitive, rational system and an intuitive, emotional system (e.g., Evans, 2003; Kahneman, 2003).

Furthermore, external influences could change our cognitions and also our emotional state. Situations in which decisions are made also vary. For example, there can be more or less information which can be used for the cognitions necessary to make a reasoned choice.

This chapter is about all three factors with a focus on the roles of emotional mechanisms in decision making. From a neuropsychological perspective we will provide a view on emotions in decision making as it is currently understood in theory and research.

We will start with a short overview about how psychological science has seen the decision-making process in the last 60 years leading to an increased acceptance of emotions as an important factor. Then we will summarize the theoretical assumptions on the roles of emotions in decisions in two types of decision situations.

These are decisions under ambiguity (when no information about the rules for occurrences of positive and negative outcomes is available) and under risk (when information about the probabilities for positive and negative outcomes is available). Referring to these two different types of decision situations the following parts will review research on emotional mechanisms in decision making. Additionally, stress will be used as an example to explain effects of bodily (or *somatic*) emotion processing on decisions.

DO EMOTIONS CONTRIBUTE TO GOOD DECISIONS?

Making a decision is a complex process which is nowadays recognized to be comprised of different emotional and also cognitive mechanisms. There is a long lasting history of theories, debates and research which addressed the question how much a decision is influenced by automatic emotions or by logical analytic processes. The long accepted *utility theory* (Arrow, 1971; Friedman and Savage, 1948; Keeney and Raiffa, 1993) assumed the human decision maker to make logical choices for the options with the highest expected utility – a value which is calculated in due consideration of the amount of expected outcomes and the probabilities for their occurrences. Later, this view was enhanced by the *prospect theory* (Kahneman, 2003; Kahneman and Tversky, 1979), because the psychological and economic world began to accept that humans do not always show choice behavior which can be explained by mere "logic". This accounts even for situations which would principally allow logical reasoning to guide choices. Furthermore, it was not clear how humans are able to make good choices in situations which do not offer enough information or which are too complex for logical analyses.

A neuropsychological approach to the topic gives further insight into the possible role of emotions in decision making. In neuropsychology the examination of patients with damages or dysfunctions in specific brain areas often help to learn more about the general internal mechanisms which lead to a certain behavior, even in healthy individuals. It was the case of Phineas Gage, one of the most famous patients in the history of neuroscience, which led initially to an understanding of the role of emotions in decision making (Harlow, 1848, 1868). Phineas Gage worked for a railway company in Vermont. During a blasting operation he had a severe accident. He was hit by an iron bar which pierced through his forehead causing an irreparable damage to a specific region in his frontal brain: the ventromedial region of the prefrontal cortex (vmPFC; Damasio, Grabowski, Frank, Galaburda, and Damasio, 1994). Astonishingly, he survived the accident. However, the injury changed Gage dramatically. Before the accident he had all attributes of a respectable man and was well accepted by his friends and colleagues because of his reliability, sense of responsibility and his pleasant nature.

After the accident the examinations showed that he was still normally intelligent, fully capable of speaking and had good memory functions. Nevertheless, a crucial change in his behavior was observed. Gage became irresponsible, was no longer reliable and was unable to control his behavior according to advices when they competed with his desires (see also Bechara, 2011a; Damasio, 1994).

In the 20th century further cases of patients with this *frontal lobe syndrome* were examined (Benton, 1991; Eslinger and Damasio, 1985; Stuss, Gow, and Hetherington, 1992). It seemed that parts of the frontal cortex, particularly the orbitofrontal cortex and the vmPFC, are important for anticipating future consequences and for making advantageous decisions (Bechara, Damasio, Damasio, and Anderson, 1994). All these patients showed, comparable to Phineas Gage, difficulties with making decisions for themselves and in social contexts. Despite their normal cognitive functions including normal problem solving abilities, they were unable to learn from mistakes and to make advantageous decisions in everyday life. They also had problems with recognizing and describing their feelings. Since the condition of cognitive abilities could not be the reasons for their problems with decision making, it was assumed that the inability to sense and express emotions must be closely related to the difficulties with decision making. These discoveries led to new theories of decision making and were the start of a line of research which addressed the contributions of emotional mechanisms to advantageous decision-making behavior.

In the following section we will explain from a neuropsychological perspective, how the decision process is theoretically described nowadays. Therefore, it has to be regarded first that the way of how emotion and cognition contribute to our decisions is closely linked to the situation in which the decision is made.

DECISIONS UNDER AMBIGUITY AND RISK – THEORETICAL ASSUMPTIONS ON CONTRIBUTING EMOTIONAL MECHANISMS

Two Types of Decision Situations: Ambiguity and Risk

It is still a topic of current research to understand the contributions of both emotional and cognitive mechanisms in the process of decision making. Principally, it is assumed that emotions are involved in most decisions, but the amount to which emotional states influence choices varies dependent on the characteristics of the decision situation. There are of course differences in the emotional importance a specific choice has for the decider.

For example, considering the personal relevance, the choice of toothpaste in the supermarket differs significantly from the decision whether or not to marry one's life partner. Nevertheless, this obvious difference which is in this example mostly caused by the relevance of the decision is not the only reason why emotional mechanisms play a varying role in different situations. In the current literature on decision making it is stated that the availability of information on the rules for possible outcomes is a central attribute of the situation and fundamentally determines the roles of emotional and cognitive mechanisms for the resulting choice (Krain, Wilson, Arbuckle, Castellanos, and Milham, 2006). Generally, in real life and in laboratory situations it is distinguished between decisions under conditions of ambiguity

(also called decisions from experience) and decisions under conditions of risk (also called decisions from description; Bechara, 2011b; Bechara and Damasio, 2005; Brand, Labudda, and Markowitsch, 2006; Edwards, 1954; Epstein and Wang, 1994). The difference between these two types of decision situations is the explicit availability of information on the attributes of the choice alternatives. These differences concerns the rules for the occurrences of rewards and punishments (e.g., monetary gains or losses), when choosing a specific alternative.

Under conditions of ambiguity there is no explicit information provided on the specific rules. Therefore, the decider does initially not know under which circumstances and with which probability the choice of an option will lead to a reward or a punishment, neither does he/she know the rewards' or punishments' amounts. However, from the experience with previous decisions it can be learned whether an alternative frequently leads to a reward or a punishment. An example for a decision under ambiguity may be the choice between different food delivery services after having moved to a new city. The decider does not exactly know with which probability a reward will follow after the decision for one of the options.

Therefore, he/she cannot predict whether the delivered food will arrive in time or whether it will be tasty. Nevertheless, the experience with the service will be rewarding or punishing and in the future this will lead to further orders or to the avoidance of the service. In contrast, under conditions of risk, there are explicit information on the rules for rewards and punishments, including their amounts and their probabilities of occurrence. A real-life example for a decision under risk is whether or not to exceed the speed limit on the everyday trip home from office with explicit knowledge that police catches the speeding on this road four times a month and that exceeding the speed limit by more than ten miles per hour will cost a certain amount of penalty. Thus, probability information about the possible outcomes of the decisions are available and it can be detected with which probability fast driving will lead to a specific reward (arriving home earlier) or to a specific punishment (monetary penalty). Both types of decisions often occur in everyday life and being able to make them with success is a main ingredient in a satisfying life. In the following part theoretical views on the neuropsychological mechanisms of decision making are explained. The first is the somatic marker hypothesis, a neural model of emotional mechanisms of decision making. After that actual process models of decisions under ambiguity and risk are shortly sketched.

The Somatic Marker Hypothesis

A very influential view on emotional mechanisms in decision making is the Somatic Marker Hypothesis (SMH) originally formulated by Antonio Damasio (refer to Bechara and Damasio, 2005; Damasio, 1994, 1996; Damasio, Tranel, and Damasio, 1991). Herein, it is assumed that there is an emotional mechanism which automatically biases the decider towards the advantageous options offered by the decision situation. The precondition for this is that experience has been made beforehand with the available options. An option is chosen and the outcome of the decision, a reward or punishment, is experienced. This feedback causes emotional responses of the body: visceral modifications, endocrine releases, changes in heart rate or slight muscle contractions (Bechara and Damasio, 2005). These somatic reactions, can be perceived by the decision maker, but may also remain unconscious. However, in both cases the emotional experience with the chosen alternative is memorized.

A *somatic marker* for the alternative is set. When the decision maker later deliberates about choosing the same alternative again the brain automatically creates a reaction. There are two paths this reaction can go, a body loop or an as-if-loop. Both principally anticipate the previously experienced emotions after having chosen the alternative. The body loop simply repeats the bodily emotional reaction. In contrast, the as-if-loop triggers the brain's representations of the anticipated emotions, without really implementing it in the body periphery. In both cases the anticipatory signals bias the decider: to go towards the considered alternative if the previous experience has been positive or to avoid it if the previous experience has been negative. This way, the decider learns to make good choices by re-experiencing the emotional reaction on the feedback of previous choices.

It is assumed that specific brain networks interact with the body in creating and processing the somatic markers. First, the sensory cortex processes the sensory properties of an outcome, which can be rewarding or punishing. Reacting to this information the amygdala initiates an emotional response in the body. This is forwarded to the body periphery by effector nuclei in the brain stem. In the vmPFC the experienced emotional reaction is linked to the previous choice behavior (i.e. choosing a specific alternative). It later on initiates the anticipating body loop and the as-if-loop when considering the decision for the same alternative again. In this process the dorsolateral prefrontal cortex (dlPFC) is also involved as it is important for holding representations of behavior in mind. Furthermore, the emotional states of the previous decisions are processed in the sensory system (including the insular cortex, the striatum and the ventral tegmental area). This causes conscious hunches and guesses or unconscious biases towards the advantageous alternatives (Naqvi, Shiv, and Bechara, 2006). The neural processes are displayed in Figure 1. The SMH describes a possible functioning of emotional decision-making mechanisms. However, it has to be mentioned that the SMH is also critically evaluated in the literature. These critics arose from theoretical considerations and empirical results and will be referred to in the section "Evidence on emotional processes in decision making". Furthermore, the SMH does not claim to be a full theory of decision making. It describes a part of the mechanisms which lead to decisions. Models of decision making under ambiguity and risk make more detailed assumptions about the choice process and somatic markers are supposed to be relevant in both types of decision situations: decisions under ambiguity and decision under risk.

Current Process Models of Decision Making under Ambiguity and Risk

The model of decisions under ambiguity was suggested by Bechara, Damasio, Tranel and Damasio (1997). They expected that beside somatic markers, available facts about the decisions situation also have an influence on choices. Facts can be manifested as explicit knowledge about the outcomes of previous choices, representations of future outcomes or the number of available alternatives. This information is supposed to be involved in reasoning strategies which can affect behavior, although they are supposed to interact with situational conditions and can be influenced by the emotional signals from the body. Find an adaption of the model in Figure 2. Current literature on the topic of decisions under risk frequently refers to the model by Brand and colleagues (Brand et al., 2006). In this model it is described that decisions are mainly made on the basis of cognitive processing but are also influenced by biasing emotional signals.
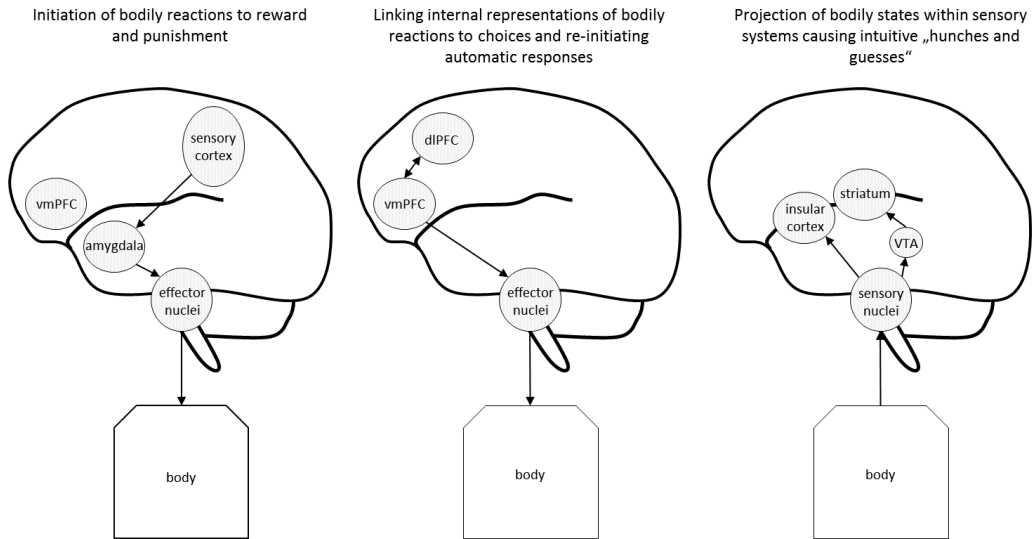
Figure modified after Naqvi, Shiv, and Bechara, 2006. vmPFC = ventromedial prefrontal cortex, VTA = ventral tegmental area, dlPFC = dorsolateral prefrontal cortex.

Figure 1. Key brain networks which are supposed to be responsible for the creation, re-initiation and projection of the body's somatic states. The somatic states reflect physiological reactions to rewards and punishments following a decision. They also occur automatically in anticipation of certain outcomes when the person considers choices in decision situations he/she is familiar with.
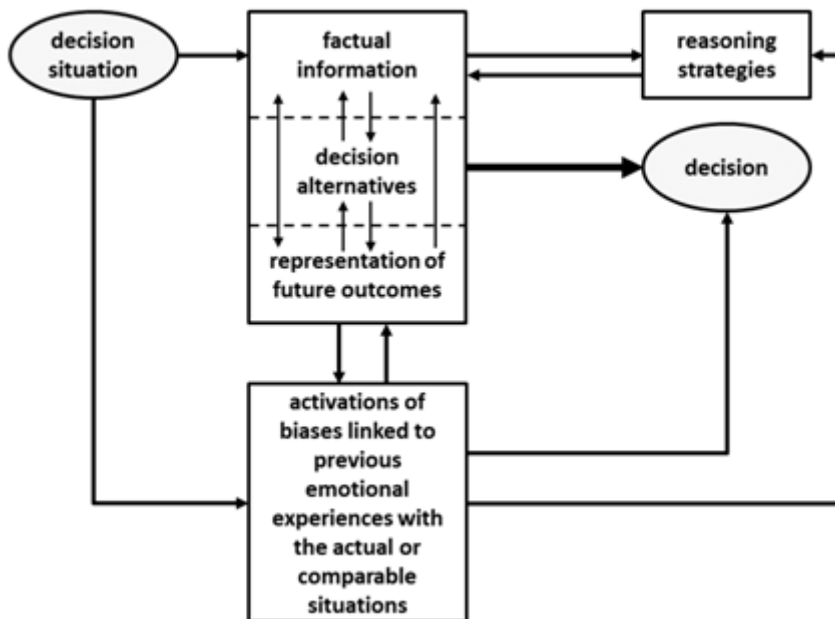
Figure modified after Bechara, Damasio, Tranel, and Damasio, 1997.

Figure 2. Model of decision making under ambiguity, showing the way from a given decision situation to the decision.

The best way to make decisions in risky situations should be to use both, the *cognitive route* and the *emotional feedback route*. The cognitive route is supposed to be closely related to the executive system including working memory and specific executive functions.

These are important for analyzing the decision situation by categorizing the available alternatives and assessing probabilities and the related gains or losses. Working memory is responsible for holding in mind the memories of past decisions and their outcomes as well as personal experiences. This information can be used for the development of decision strategies and for monitoring the success of the current decision strategy. In the feedback route the decision outcomes are on the one hand processed emotionally as described in the SMH. On the other hand the feedback can also be used to understand the situation's rules and to consciously revise the current decision strategy. Find the model of decision making under risk in Figure 3. In summary, the models expect that the decision processes in both types of situations recruit emotional and cognitive mechanisms. However, their relative impact should be different depending on the situation. The models' assumptions were tested in numerous neuropsychological studies. In the following section studies on decisions under ambiguity and risk are summarized, which examined the links between emotional signals and behavioral performances in decision-making tasks.

EVIDENCE FOR EMOTIONAL PROCESSES IN DECISION MAKING

Neuropsychological research has in the last two decades (i.e. 1990s – 2012) made remarkable efforts to examine the emotional processes in decision making. In this section typical methodologies in neuropsychological decision-making research are introduced and results of studies on the emotional correlates of decisions under ambiguity and risk are outlined.

Decisions under Ambiguity: Research with the Iowa Gambling Task

Decision making under ambiguity is most frequently investigated with the Iowa Gambling Task (IGT; Bechara, 2007; Bechara, Tranel, and Damasio, 2000), the most popular decision-making task in neuropsychological research. In this computerized task four decks of undisclosed cards are presented on the screen. The subject is asked to choose among the four decks and is informed that each choice will be followed by a gain and sometimes additionally by a loss of fictitious money.

The subject's goal is to win as much money as possible and to lose as little as possible. It is also made clear that there are good and bad decks, but that the subject has to find out which ones these decks are.

There is no further information given in the task's instruction. Thus, the subject does neither know the number of trials (which is 100) nor does he/she know the gains and losses related to the decks.

Hence, the subject has to start by trying out the decks. Immediately after each choice the computer indicates the amount of gain on the screen accompanied by a distinct positive sound.
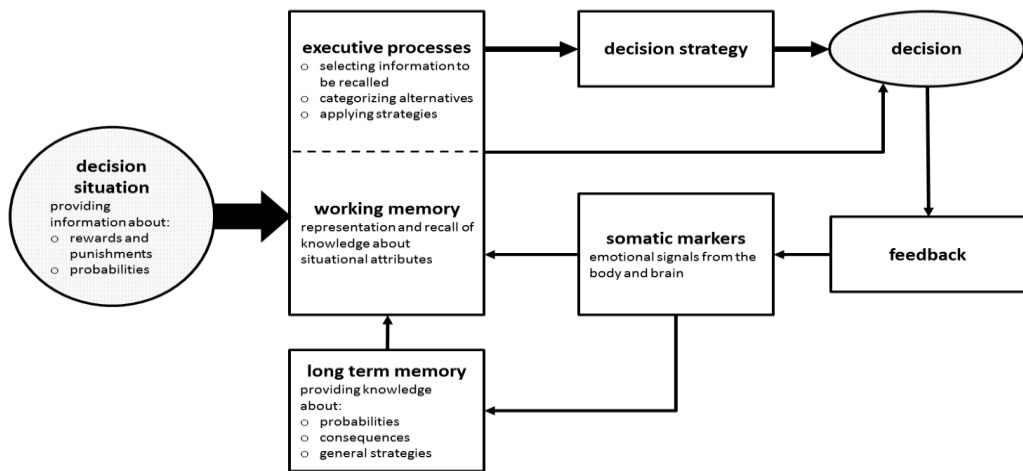
Figure modified after Brand, Labudda, and Markowitsch, 2006.

Figure 3. Modified model of decision making under risk conditions. showing the way from a given decision situation to the decision.

Sometimes an amount of loss follows, accompanied by a negative sound. From this feedback subjects have to learn which decks are good and which are bad. The two good ones (decks C and D in the classical IGT) provide low gains, and only low occasional losses and choosing them will in the long run lead to a positive money balance. In contrast, the bad decks (A and B) offer high gains but occasionally very high losses, and lead to a high negative balance in the long run. Normally, subjects begin with choosing between the cards randomly and then tend to choose more from the disadvantageous decks, because of the high gains. When the gains of these two decks begin to be occasionally accompanied by very high losses, the subjects successively learn to avoid these decks and to prefer the advantageous ones with the moderate gains and low losses. To map this learning curve in the IGT a net score is frequently calculated for 5 blocks with 20 decisions per block. The net score is generated by subtracting the number of disadvantageous choices from the number of advantageous choices. Commonly, brain healthy subjects have an ascending curve which indicates the progressing preference for advantageous decks. An example of this learning curve can be found in Figure 4.

With the IGT a lot of studies have been conducted with healthy subjects and patient populations. Most results can be interpreted in terms of the SMH (but some interpretations are still discussed; see e.g., Dunn, Dalgleish, and Lawrence, 2006). In a study with the IGT Bechara and colleagues (Bechara, Tranel, Damasio, and Damasio, 1996) used skin conductance response (SCR) measures to identify bodily emotional reactions to gains and losses and before the choices of advantageous and disadvantageous alternatives. A sample of healthy subjects and a sample of subjects with damage to the prefrontal cortex were

examined. Both healthy individuals and patients reacted with SCRs to the gains and losses after choosing a card. Remarkably, after a while only the healthy subjects began to create SCRs *before* their choices, when still pondering about from which deck to choose.
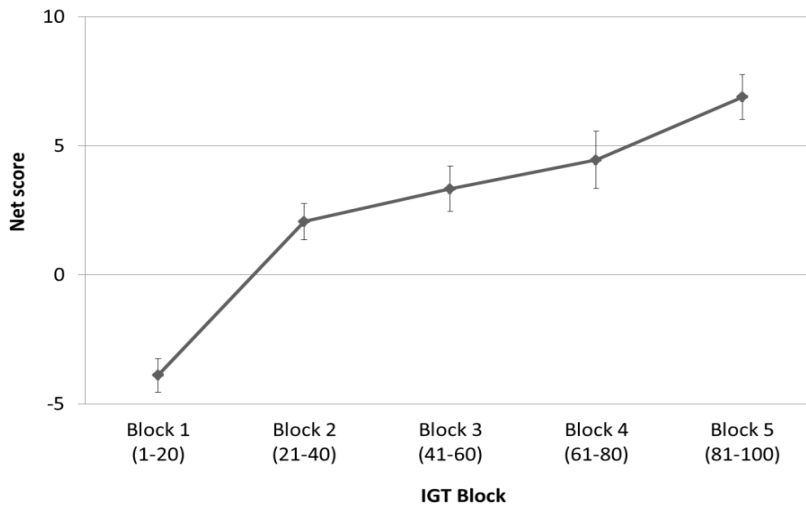
Figure 4. Exemplary ascending learning curve in the Iowa Gambling Task (IGT), as it is frequently found in healthy subjects (here unpublished data of 100 healthy male and female subjects, aged 18-73 years, $M = 33.02$, $SD = 14.04$ years). Error bars represent standard errors.

Moreover, their SCR responses were more intense, before choices from the disadvantageous decks, compared to the advantageous ones. In contrast, the patients with prefrontal cortex damage did not create these anticipatory SCRs.

These results are interpreted as evidence for main assumptions in the SMH that anticipatory emotional states bias future choices and that prefrontal cortex functions are important for generating the somatic markers which are necessary for the anticipation. Numerous following studies have examined patients' and healthy persons' physiological reactions on the good and bad decks of the IGT and supported previous findings and thereby again the assumptions in the SMH (Bechara et al., 2001; Brand, Grabenhorst, Starcke, Vandekerckhove, and Markowitsch, 2007; Carter and Pasqualini, 2004; Crone, Somsen, van Beek, and van der Molen, 2004; Jenkinson, Baker, Edelstyn, and Ellis, 2008; Suzuki, Hirota, Takasawa, and Shigemasu, 2003).

Further studies not only investigated these automatic emotional mechanisms but also addressed the question whether explicit cognitive processing of the decision situation is required for making advantageous decisions in the IGT.

Two conclusive investigations tested whether the creation of the outlined emotional reactions are related to conscious knowledge about the rules in the IGT and whether cognitive resources are required to learn deciding advantageously in this task. In the first study (Bechara, Damasio, Tranel, and Damasio, 1997) again SCRs of participants were recorded during IGT decision making. Additionally, the subjects were shortly interrupted every ten trials and were asked about their knowledge about the task's attributes. It was found that

subjects undergo different phases in the course of the IGT. The phases are named pre-punishment (before a loss has been experienced), pre-hunch (when choosing cards from the various decks without any preference), hunch (when subjects begin to "like" or "dislike" certain decks and can guess which decks might be better or worse) and conceptual period (when subjects are able to correctly articulate the nature of the task, i.e. which are the good and which are the bad decks). Remarkably, some healthy subjects completely failed to reach the conceptual phase. However, all subjects created anticipatory SCRs and even those who did not reach the conceptual phase began to prefer the advantageous decks in the later trials of the task. The same procedure was also used for a sample of subjects with damages to the prefrontal cortex. In contrast to the healthy individuals, none of them showed signs of being in the hunch phase, so they did not develop any feeling about the decks. Nevertheless, 50% of the patients reached the conceptual phase, but although they had the explicit knowledge they still made more choices for the disadvantageous decks. From the results it was concluded that in healthy participants the activation of emotional signals lead to advantageous decisions before they developed conscious assessments of the cards contingencies. In the patients, lesions to the vmPFC hindered the access to the representation of the past experiences with the card decks.

In thesecond study which has addressed the role of explicit cognitive processing in the IGT, Turnbull and colleagues (Turnbull, Evans, Bunce, Carzolio, and O'Connor, 2005) examined whether the rational-analytical processing system (supposed to produce load on executive functions) is required to learn choosing the good decks or whether automatic emotional-experiential processing is sufficient to develop good decision making in the IGT. The rational-analytical system is supposed to work slowly and serially, which means that it can only process one task at a time (Kahneman, 2003). If this system would be required to make advantageous choices in the IGT, a parallel secondary task which loads on this system should interfere with decision-making performance in the IGT (Evans, 2003; Kahneman, 2003). The emotional-experiential system works fast and parallel (Kahneman, 2003).

If it had a crucial role in learning to prefer the good decks in the IGT, this learning would be possible even though an executive task is solved in parallel. In the study by Turnbull and colleagues (2005), subjects had to play the IGT and simultaneously they had to generate numbers between 1 and 9 randomly without using sequences or patterns. It had previously been demonstrated that this random number generation task requires executive resources (Baddeley and Della Sala, 1996).

The results showed that subjects who had to solve this task simultaneously performed slightly worse in the IGT in comparison to the subjects who performed a secondary task without executive load and to subjects who performed the IGT completely without a secondary task. Nevertheless, even with the parallel executive task the participants learned to increasingly prefer the advantageous decks and made overall more advantageous than disadvantageous decisions. Turnbull and colleagues concluded that the resources, which are required to solve an executive task, do not overlap with the emotional learning which is required to solve the IGT. It seems that choosing advantageous alternatives in ambiguous situations can be undertaken by non-cognitive intuitions.

The results of these two studies imply that in healthy brains the automatic emotional processes seem to take place as suggested in the SMH. Moreover, emotional learning from feedback can lead to advantageous decision making before explicit knowledge is created

about the decision situation and conscious executive processing is not necessarily required for good decision making under conditions of ambiguity.

In a review article Bechara (2004) summarizes the results of further studies which underline the important role of specific brain regions for these types of decisions.

It is outlined how the results of numerous neuropsychological examinations of patients with specific brain lesions provide further evidence for the role of emotional processing in decisions under ambiguous conditions. Bechara focusses on the role of sections in the vmPFC, which are responsible for processing emotional events and for generating gut feelings or hunches in choice situations. Patients with lesions in these specific brain regions are reported to show unimpaired cognitive intellectual abilities, like intelligence or creativity. Nevertheless, they develop severe problems with making decisions for themselves or in social situations. Bechara reports that these problems concern planning the work day or the future and choosing friends, partners or everyday life activities.

He also argues that lesions in different cortex regions differentially seem to affect decision-making competence in the IGT.

The behavior of patients with lesions in the vmPFC was compared to that of a brain damaged control group (with lesions to the lateral occipital and lateral temporal cortex) and a healthy control group (Bechara, Damasio, and Damasio, 2000). The brain damaged and the healthy control subjects showed a normal learning curve in the IGT. Only the group of subjects with prefrontal cortex lesions was impaired in IGT decision making and continued choosing from the disadvantageous decks. A following study compared the roles of the left and right vmPFC in decision making in real life and in the IGT (Tranel, Bechara, and Denburg, 2002). Both groups of patients showed normal performances in neuropsychological tests of cognitive functions. However, patients with right vmPFC lesions reported severe problems in everyday life and problems were also found in IGT decision making. Patients with comparable lesions on the left side reported no problems with life decision making and made more advantageous choices in the IGT (although not as advantageous as healthy comparison subjects). As a possible explanation for this difference Bechara (2004) suggests the different roles of the right and left vmPFC in behaviors of preferring things which are related to positive emotions (processed on the left side) and behaviors of avoiding things related to negative emotions (processed on the right side). The patients with the right side lesions were thought to react less sensitive to the occasional punishments resulting from frequent choices of decks A and B and go on picking cards from these decks irrespective of the high losses.

In the SMH, it was also stated that the amygdala should be a key structure in the emotional network which implements advantageous decision making. Bechara and colleagues (Bechara, Damasio, Damasio, and Lee, 1999) conducted a study with a group of patients with damage to the vmPFC, a group with damages to the amygdala and a healthy control group. Again, the IGT was used and SCRs were recorded during the task. The main results were that both patient groups showed impaired decision-making behavior but that there were differences in the SCRs dependent on whether the amygdala or the vmPFC was damaged. While both groups failed to generate somatic states in anticipatory phases, the patients with amygdala damage also failed to generate SCRs as a reaction to the task's feedback. These reactions were almost normal in vmPFC patients. The results showed that although both patient groups were impaired in decision making, the reasons for these impairments seem to be different. Consequently, the roles of the two brain regions (vmPFC and amygdala) were

supposed to be also different. The amygdala seems to be responsible for attaching affects to stimuli in a process of conditioning (see also Phelps, 2006; Phelps and LeDoux, 2005).

The defects of this function lead to the inability to create somatic reactions after losses and to attach a representation of this experience to the alternatives of the IGT.

The vmPFC seems to be important for handling the brain's representations of somatic experiences with the different decks. After a while the choices for different decks have evoked several emotional experiences of rewards and punishments of different intensities. The vmPFC is responsible for integrating the emotional information about the options and for deciding to take or not to take an alternative.

Beside the studies with healthy subjects and patients with brain damages, there are also investigations of patients with psychiatric disorders. Here, we focus on disorders which are related to impaired or dysfunctional processing of emotions and reward. A wide field of this research addresses decision making of persons with substance dependencies. Numerous studies have investigated IGT decision making, for example in persons who abuse alcohol, cocaine or marijuana (e.g., Bolla et al., 2003; Goudriaan, Grekin, and Sher, 2007; Verdejo-García, Pérez-García, and Bechara, 2006). In an overview Buelow and Suhr (2009) summarized that most of these examinations showed reduced decision-making performance in substance dependent individuals and these reductions are also found in periods of abstinence (Fishbein et al., 2005). However, there are inconsistencies and methodological constraints, which reduce the conclusiveness of the results. Inconsistent are for instance the decision-making deficits of cocaine dependent subjects, which seem to occur only when the subjects also abuse other drugs beside cocaine (Adinoff et al., 2003).

Generally most studies have interpreted the reductions in IGT performance as a result of damages to prefrontal cortex caused by the toxicity of the abused substances. However, whether this possible cause and effect relationship really exists remains unenlightened. A concurrent explanation for decision-making deficits can be that in drug dependent individuals, there are comorbid psychopathologies (Midanik, Tam, and Weisner, 2007) or personality characteristics (Suhr and Tsanadis, 2007) which lead to dysfunctional handling of immediate rewards and long term consequences. This dysfunction could be the reason for both: drug abuse and impaired IGT performance.

Beside dependencies there are further disorders in which a link between processing and handling emotions and decision making in the IGT could be demonstrated. One of these is the borderline personality disorder. A core dimension of it is emotional instability leading to problems with decision making in everyday life's situations.

Haaland and Landrø (2007) suggested that emotional instability should therefore also lead to deficits in IGT performance. The authors compared IGT behavior between subjects with borderline personality disorder and healthy controls. The borderline-patients made more disadvantageous decisions than the controls and these decision-making deficits were unrelated to measures of cognitive functions. The patients' emotional instability could therefore be the reason for their problems with decisions making under ambiguity.

Another disorder, which causes changes in emotion processing, is depression. A key feature of depression is a loss of interest and of positive experience in normal daily activities, while negative cognitive biases are predominant. Also, depressive persons often avoid potentially rewarding situations. Must, Szabó, Bódi, Szász, Janka, and Kéri (2006) reported patients with depression to make more disadvantageous choices in the IGT and concluded that the depressed subjects are indifferent towards punishments and lured by immediate

rewards. However, there are also results hinting to the contrary. Smoski and colleagues (Smoski, Lynch, Rosenthal, Cheavens, Chapman, and Krishnan, 2008) also compared IGT performances between depressed and healthy subjects and found better performance in the depressive sample.

The authors suggested that the depressive individuals avoid risks and the related potential high rewards and therefore prefer the alternatives which bring only low gains and losses but higher long term outcome.

In sum, the studies reviewed so far, mostly support the assumptions in the SMH and underline the important role of emotional processing in decisions under ambiguity. Nevertheless, there are also critical evaluations of the SMH and the IGT. These especially concern the development of explicit knowledge in the phases of the IGT.

In the study by Bechara and colleagues (1997) it was described that healthy persons begin to create bodily reactions to IGT's disadvantageous alternatives and start to avoid them even before they create explicit knowledge about their disadvantageousness. This result was interpreted to be a main evidence for the validity of the SMH. Bechara and colleagues (1997) had concluded that somatic markers precede explicit knowledge in guiding humans towards good choices. Nevertheless, a concurrent argumentation was raised by Maia and McClelland (2004). They claimed that the questions, which were used to assess the participants' knowledge in Bechara's study, were insufficient to uncover the whole knowledge about the game. Maia and McClelland conducted a study comparable to that by Bechara and colleagues (1997).

Every 10 trials they asked for knowledge and feelings about the decks in the IGT, but their questions assessed evaluations of the decks separately and more explicitly than the questions asked in Bechara's work. It was found that the majority of participants reported explicit knowledge about the task's contingencies from the 20th trial on. Notably, often this knowledge was not reflected in behavior: participants made a remarkable amount of disadvantageous choices although they already knew about the task's contingencies. The authors suggested that subjects kept on exploring the decks or indulged in risk taking. On the basis of these results Maia and McClelland assumed that the conclusion raised by Bechara and colleagues was not supported: no evidence was found that emotional biases *precede* knowledge in guiding towards the advantageous alternatives. Therefore, the authors argued that Bechara's main evidence for the SMH would have lost its validity, and therefore queried the SMH itself. Bechara and colleages reacted to these assumptions in a response article (Bechara, Damasio, Tranel, and Damasio, 2005). It was argued that the results by Maia and McClelland did not contradict assumptions in the SMH, because the SMH was not focused on whether or not persons have explicit knowledge about contingencies. It would concentrate on the presence or absence of somatic markers. These could of course be accompanied by cognitive processes and should assist these. Furthermore, the main evidence for the SMH, coming from studies with vmPFC patients, would still support the SMH, showing that despite intact cognitive functions patients with these damages fail to make advantageous decisions in the IGT, because of defects in the creation of somatic markers. Differences in the creation of somatic markers may, according to Bechara's argumentation, also be the reason for the finding that some subjects made disadvantageous choices although they already had correct knowledge about IGT's contingencies. Within this interpretation the results would support the SMH: adequate cognitive processes do not guarantee good decision making if they are not aided by emotional signals. In a reply Maia and McClelland (2005) offer another explanation

for the result. They suggest that the subjects, although they have adequate knowledge, are still uncertain about it and keep on exploring alternative behaviors.

Additionally, another explanation for the deficits in decision making of vmPFC patients is assumed.

It is proposed that their problems with IGT decision making occur because of impairments in reversal learning. At the beginning of the IGT, the disadvantageous decks appear to be better because they offer higher gains. Then the decks begin to create losses and subjects have to learn that they are disadvantageous.

This interpretation was supported by a study in which a modified IGT was administered to patients with PFC damages (Fellows and Farah, 2005). The order of the cards in the decks was changed to avoid the initial preference for the disadvantageous decks. In this task version the patients' performance was comparable to the performance of the healthy controls. According to Maia and McClelland (2005) this result contradicts the SMH because the patients should, according to SMH, also have shown impairments in this task version. Maia and McClelland come to the conclusion that there is no evidence for the assumptions in the SMH and that the SMH is at least not necessary to explain healthy subjects' behavior in the IGT. In a review article on this topic Dunn and colleagues (2006) consider this and other evidence on the SMH in further detail and come to the conclusion that "while presenting an elegant theory of how emotion influences decision-making, the SMH requires additional empirical support to remain tenable" (p. 239).

Beside the doubts about the validity of evidence on the SMH, there are also critiques of the IGT as a measure of decision making under ambiguity. Buelow and Suhr (2009) reviewed work with the IGT and close that a clear definition of what the IGT measures is missing. The main reasons are that data on IGT's reliability are rare and that there are findings, which indicate that IGT behavior is susceptible to subjects' personality and actual mood states (Crone, Vendel, and van der Molen, 2003; Schmidt and Addison, 1999; Suhr and Tsanadis, 2007). However, Buelow and Suhr (2009) conclude that data show that decision making in the IGT is associated with emotional processes.

In summary, the critics and disputes about the SMH demonstrate that the mechanisms of emotional and cognitive processing in decision making under ambiguity are not completely understood so far. However, the studies with vmPFC patients and healthy participants have a conclusion which remains unchallenged: emotions play a significant role in decision making under ambiguity. The next section will review evidence on the role of emotions as well as its relations to cognitions in the second type of decisions: decision under risk conditions.

Decisions under Risk: Recent Research with the Game of Dice Task and Other Gambling Tasks

In decisions under risk conditions the role of emotional reactions has been addressed, so far, less intensively. One of the main reasons may be that this type of decisions was considered to be rather based on strategic, rational-analytical than on emotional-intuitive processing. It has been argued that in risky decision situations information about the probabilities for different gains and losses are available and that, consequently, the decider can principally calculate which of the given alternatives are advantageous and could choose them consistently (Arrow, 1971; Keeney and Raiffa, 1993). The assumption that cognitive

abilities are important is also reflected in the introduced model by Brand et al. (2006) in which it is assumed that particularly executive functions, working memory and long-term strategies have predominant influence on the choice process. Consequently, a lot of studies addressed how these abilities affect decision-making behavior under risk (e.g., Brand, Laier, Pawlikowski, and Markowitsch, 2009; Cokely and Kelley, 2009; Schiebener, Zamarian, Delazer, and Brand, 2011). Nevertheless, there are also a few investigations which addressed the role of emotional influences in these kinds of decisions (note that already in the model by Brand and colleagues an emotional path has been suggested, see Figure 3). In the following part of this chapter, the research which addressed the roles of executive functions in risky decisions is summarized. Afterwards studies are described which investigated directly the role of emotions. Although executive processes seem to be more important than emotions we will later on see that bodily emotional states can be crucially influential, at least in some individuals, because they can cause changes in the deliberate processing of the decision situation.

For the assessment of decision-making abilities under risk conditions different tasks have been used. Examples are the Cambridge Gambling Task (Rogers and Simon, 1999), the Cups Task (Levin and Hart, 2003), the Delay Discounting Task (Monterosso, Ehrman, Napier, O'Brien, and Childress, 2001), the Columbia Card Task (Figner, Mackinlay, Wilkening, and Weber, 2009), the Balloon Analogue Risk Task (Lejuez et al., 2002), the Probability Associated Gambling Task (Sinz, Zamarian, Benke, Wenning, and Delazer, 2008; Zamarian, Sinz, Bonatti, Gamboz, and Delazer, 2008) or the Game of Dice Task (Brand et al., 2005). All of these tasks share the attribute that the rules for gains and losses are explicit, however the tasks differ in complexity and in the stability of the prevailing winning probabilities. In this chapter, we will review studies with the Cambridge Gambling Task (CGT), the Balloon Analogue Risk Task (BART) and the Game of Dice Task (GDT). Therefore, we shortly explain these three tasks in the following.

In the CGT, the subjects have the aim to maximize a starting capital of 100 points by placing bets on the hiding spot of a yellow token. On the screen 10 boxes are displayed, which are either red or blue. The subject is informed that a yellow token is hidden beneath one of the boxes.

Now, he/she has to decide whether the token is under a blue or under a red box. Additionally, the subject has to decide which amount of point he/she bets on the choice. An amount is offered, and there are 5 seconds to decide whether to bet on it. After 5 seconds the bet amount changes. It increases in the ascending condition and decreases in the descending condition of the task. When the subject has decided to bet (by clicking on the bet amount), it is revealed under which box the token was placed and it is displayed whether the subject has won or lost. The amount of points is added to the overall point balance, in case of winning and subtracted in the case of losing. The winning probabilities (ratios of red and blue boxes, from 1:9 to 9:1) are varied across the trials.

The second task, the BART, is a computerized task in which participants are required to pump up a small simulated balloon presented on the screen with a balloon pump next to it. Subjects are told that every time they decide to pump up the balloon they will earn an amount of 5 cents. Furthermore, participants know that they will be presented with 90 balloons and that they can pump up each balloon as many times as they like until they either decide to collect the earned money by pushing the button "collect $$$" (then the money will be transferred from a temporary bank account to permanent bank account), or until the balloon

explodes. In the last case participants would lose all their temporary money. They are told that the explosion point varies across balloons from the first pump to enough pumps to fill out the whole computer screen. Participants are not informed about the underlying probabilities when a balloon will explode. The task contains three kinds of balloons (blue, orange and yellow) which were associated with different probabilities of an explosion: the blue balloon has an averaging explosion point at 64 pumps, the orange balloon at 4 pumps and the yellow balloon at 16 pumps. Thus, the blue balloon allows the widest range of possible number of pumps. To measure risk taking in this task the number of pumps is counted.

In the third task, the GDT, the subjects have to guess which number will be thrown next by a single virtual die. They can bet on different combinations of numbers, which are related to different gains and losses. The subjects can bet on one single number (gain/loss € 1,000), a combination of two numbers (gain/loss € 500), three numbers (gain/loss € 200) or four numbers (gain/loss € 100).

If the thrown number is among the numbers the subject has betted on, he/ she wins the related amount of money. When one of the other numbers is thrown the related amount is lost. For example, the subject can bet on a combination of two numbers, e.g. the "three" and the "four", related to a gain or loss of € 500.
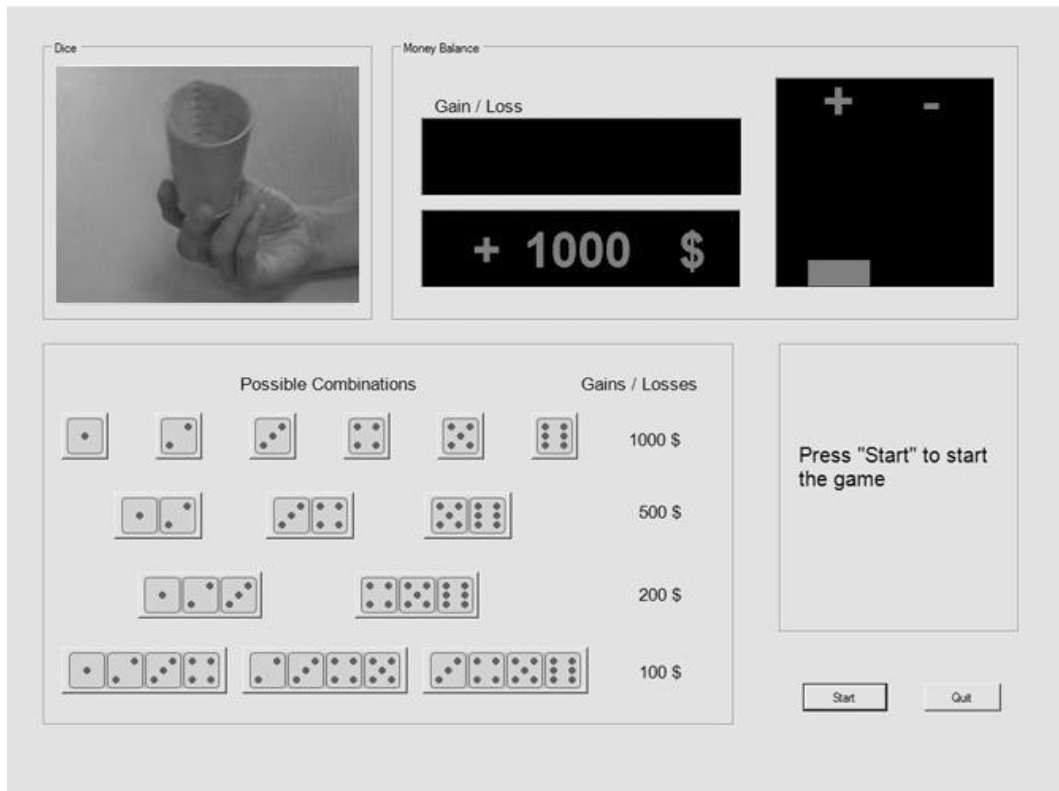
Brand et al., 2005.

Figure 5. Screenshot of the Game of Dice Task.

Then the die is thrown and the subject wins € 500 if the three or the four appears, but loses € 500 if one of the other numbers (one, two, five or six) occurs. In the GDT the subjects

are explicitly informed about the rules as well as about the fact that they have to play 18 trials of the game. The decision situation remains stable for all 18 choices. After each choice the GDT provides feedback about the outcome. Every gain is accompanied by the sound of a cash machine, a green display of the won amount of money and of the new overall capital. Every loss is accompanied by a distinct dull tone, a red display of the amount of money lost and also the new overall capital. A screenshot of the GDT can be found in Figure 5.

In this section we focus on the GDT because it has frequently been used in recent neuropsychological investigations addressing the role of emotional signals in decisions under risk.

Furthermore, the GDT together with the IGT and the CGT have been called the three most popular measures of decision making (Gleichgerrcht, Ibanez, Roca, Torralva, and Manes, 2010). The GDT is one of the more complex tasks and provides a stable decision situation in all trials (Brand and Markowitsch, 2010). In the GDT it is principally possible to calculate which alternatives are advantageous and which are disadvantageous in the long run. Betting on a combination of four numbers is related to a winning probability of 66.67% and betting on three numbers to a winning probability of 50%. Since the starting capital is € 1,000 it can – statistically spoken – be expected that betting on these alternatives will lead to a final balance of € 1,000 or more. Therefore, these two alternatives are advantageous or non-risky. Betting on two numbers is related to a winning probability of 33.33% and betting on one single number to a winning probability of 16.67%. These options will most probably lead to a negative final balance in the long run. Therefore, they are disadvantageous or risky. Performance in the GDT is defined to be better the more often the advantageous alternatives are chosen, and indeed the final monetary balance is correlated with advantageous choices.

Therefore, the GDT is supposed to mainly tap into the rational-analytical processing system, related to conscious logical thinking and the executive system (Evans, 2003). However, the feedback can also be used in intuitive-experiential processing to learn, whether an alternative is good or bad. The important role of functions of the executive system for decision making in the GDT was demonstrated in several studies with patient populations with executive dysfunctions.

It was shown, for example, that patients with Parkinson's disease (Brand, Labudda, et al., 2004; Euteneuer et al., 2009; Labudda et al., 2010), alcoholic Korsakoff's syndrome (Brand et al., 2005; Brand, Pawlikowski, et al., 2009) and Alzheimer's disease (Delazer, Sinz, Zamarian, and Benke, 2007) are impaired in the GDT and that these impairments are correlated with reductions in executive functions.

Additionally, it was demonstrated that lower GDT performance is related to higher self-reported sensation seeking (Bayard, Raffard, and Gely-Nargeot, 2011) and lower inhibitory control (Drechsler, Rizzo, and Steinhausen, 2008; Kim and Lee, 2011).

Interestingly, there are also results which show dissociations of decision making in the IGT and the GDT, indicating the differences in reliance on emotional and cognitive processes in these two tasks and thereby decisions under ambiguity and risk.

For example, it was found that patients with narcolepsy (Bayard, Abril, et al., 2011) or patients with restless legs syndrome (Bayard, Yu, Langenier, Carlander, and Dauvilliers, 2010) are impaired in making the more emotionally based decisions under ambiguity but not in making the more cognitively based decisions under risk. On the basis of the theory and the outlined findings on the behavioral level it was expected that brain regions which are related to executive processes should be activated when making decisions with explicit knowledge

about the situation's rules. These are especially functions of the dorsolateral prefrontal cortex (dlPCF), because this region is also crucially involved in executive functions such as categorization and cognitive flexibility. Furthermore, other functions which were found to be related to the dlPFC might also be relevant for making complex decisions under risk. These are attention shifting, working memory, monitoring and multitasking (see e.g., Burgess, 2000; Lie, Specht, Marshall, and Fink, 2006; Loose, Kaufmann, Tucha, Auer, and Lange, 2006; Shafritz, Kartheiser, and Belger, 2005). In a single case study, Brand and colleagues (Brand, Kalbe, et al., 2004) examined the neuropsychological profile of a female patient who had undergone a surgical removal of a colloid cyst at the Foramen of Monro.

After the surgery the patient became depressive and reported to have severe difficulties with making decisions in everyday life. Nevertheless, the neuropsychological investigation showed that she had normal to above average functions of attention, speed of information processing, anterograde memory and intelligence. In contrast, she was impaired in complex executive functions and working memory. She also displayed severe impairments in the GDT. In the 18 decision trials she made 17 decisions for disadvantageous alternatives, irrespective of the frequent negative feedback. A functional brain imaging investigation (FDG-PET) revealed dysfunctions (hypometabolism) in the dlPFC bilaterally, the cingulate cortex and the left fusiform gyrus. The results therefore supported the hypothesis that the dlPFC is important for decisions under risk conditions, especially because of its contribution to higher executive functions.

The role of the dlPFC was underlined by the results of a brain imaging study with 12 healthy individuals reported by Labudda and colleagues (Labudda et al., 2008). They used functional magnetic resonance imaging (fMRI) to investigate brain activity in a decision situation which is comparable to the situation in the GDT. Similar to the GDT, subjects had to bet on the results of throws with a single die, but here they had to choose only between two options of betting on different numbers, e.g. between betting on one single number or betting on a combination of three numbers.

Like in the GDT the different combinations were related to different amounts of gain or loss ranging from € 100 for a combination of four numbers to € 1,000 for one single number.

In distinction from the GDT the subjects received no feedback after their decisions, in order to concentrate on brain activities linked to the decision process, without influence of feedback processing. For the fMRI analysis the brain activities in these decisions were compared to the activities in a control condition which was reduced in complexity. The results showed among others activations in the bilateral dlPFC, the anterior cingulate cortex (ACC) and the inferior parietal lobe. These activations, in particular those in the dlPFC, support the hypothesis that executive functions linked to prefrontal integrity are fundamental ingredients of decisions under risk. The authors argued that executive functions contribute substantially to the handling of the conflict between the heights of gains and losses and the probabilities for their occurrences. This was reflected by the dlPFC and ACC activity. The activation of the inferior parietal lobe was interpreted as an indicator for proceeding calculation processes, like computing and comparing probabilities or possible outcomes, processes to which the inferior parietal areas have been linked in previous studies (Dehaene, Molko, Cohen, and Wilson, 2004; Pesenti, Thioux, Seron, and De Volder, 2000; Sandrini, Rossini, and Miniussi, 2004).

In addition to the studies with patient populations and the results of the brain imaging study, a series of experiments repeatedly found moderate correlations of performances in the

GDT and tests of executive functions in healthy subjects (Brand, Heinze, Labudda, and Markowitsch, 2008; Brand, Laier, et al., 2009; Drechsler et al., 2008; Euteneuer et al., 2009; Labudda et al., 2009; Schiebener et al., 2011). In order to test the dependency on the executive system for making advantageous decisions under risk in the GDT, Starcke and colleagues (Starcke, Pawlikowski, Wolf, Altstötter-Gleich, and Brand, 2011) conducted a study (inspired by the study by Turnbull and colleagues, 2005, see above) with a secondary executive task which had to be solved parallel to the GDT. Starcke et al. found that the simultaneous 2-back task, which produces high working memory load, reduced decision-making performance in the GDT. This experimental investigation demonstrated that decisions under risk indeed seem to rely extensively on the serially working executive system. As outlined previously, there was no interference of an executive task with decisions under ambiguity in the IGT (Turnbull et al., 2005).

These two studies together further demonstrate the different mechanisms underlying IGT and GDT performance, at least at some points over task duration (see also Brand, Recknor, Grabenhorst, and Bechara, 2007). A few studies also addressed the role of emotional processing in decision making under risk conditions.

In one of these studies three patients suffering from the very rare Urbach-Wiethe disease were examined (Brand, Grabenhorst, Starcke, Vandekerckhove, and Markowitsch, 2007). The disease is a syndrome which causes selective bilateral dysfunctions of the amygdala. As described before, the amygdala is recognized to have a crucial role in emotional processing (Phelps and LeDoux, 2005; Salzman and Fusi, 2010). It is important for creating bodily states of emotional arousal as reactions to stimuli and plays a dominant role in the mechanism of anticipating future rewards and punishments (Anderson and Phelps, 2001; Ball et al., 2009; Morris, Ohman, and Dolan, 1998; Morrison and Salzman, 2010; Phelps, 2006; Williams et al., 2006). Most important, one of the key functions of the amygdala is to generate somatic states which can automatically guide decision making (Bechara, Damasio, and Damasio, 2003). The GDT was administered to three patients with Urbach-Wiethe disease and to 20 healthy control subjects. Parallel, the SCR were recorded in all participants. On the behavioral level it was found that the patients indeed showed up to make more disadvantageous decisions than the healthy controls. Furthermore, the patients displayed lesser degrees of SCR before choosing disadvantageous alternatives in the GDT as well as when receiving feedback after risky decisions. In the 20 brain-healthy control subjects, the SCR in the feedback phase of the GDT trials were higher in risky compared to non-risky choices. In contrast, these differences in SCRs were not significant in the anticipatory phase, but notably there was a high negative correlation between the magnitudes of the anticipatory SCR and the number of disadvantageous decisions. This suggested that subjects who had stronger emotional reactions before making disadvantageous choices, less frequently turned to these alternatives again. This pattern leads to overall better decision-making performance in the GDT.

In summary, the results of this study indicate that reduced amygdala functions are related to disadvantageous decision making even in decisions under risk conditions although the choices could principally be made on the basis of cognitive analyses. The behavior and the SCR of the Urbach-Wiethe patients and the healthy control group indicate that generating bodily emotional states does affect behavior in risk situations. Bodily arousal as reactions to feedback and also as warning signals before making disadvantageous choices seems to be an important ingredient of the complex mechanisms underlying this type of decisions.

How processing the feedback of previous choices contributes to making good decisions under conditions of risk was further investigated in several other studies.

In particular, these studies aimed to reveal more about the usage of feedback, with regard to its composition of automatic emotional mechanisms on the one hand and controlled cognitive operations on the other (Brand, 2008; Brand, Laier, et al., 2009; Brand, Pawlikowski, et al., 2009). Feedback might be processed emotionally, but can also be taken as a source of information which is integrated in cognitive processes, such as understanding the rules of the decision situation or developing, monitoring and revising long-term decision strategies. Studies found deficits in decision making under risk in patients with opiate dependence and alcoholic Korsakoff's syndrome.

It was demonstrated that the patients' riskier behavior was related to both reduced executive functions and problems in using the feedback of previous trials (Brand, 2008; Brand, Pawlikowski, et al., 2009; Brand, Laier, et al., 2009). The data also showed that healthy subjects use negative feedback from a disadvantageous choice for switching to an advantageous alternative in 65% to 73% of cases. By patients with Korsakoff's syndrome negative feedback was used in this way in only 33% of cases, by patients with opiate dependence in 44% of cases. However, performance in the normal GDT was in both patient samples as well as in healthy comparison subjects correlated with the usage of feedback. For example, negative feedback usage was positively correlated with the GDT net score and negatively with the number of choices for the riskiest alternative (Brand, Pawlikowski, et al., 2009; Brand, Rothbauer, Driessen, and Markowitsch, 2008). Notably, in the sample of opiate dependent subjects the impairments in the gambling task were also related to dysfunctional behavior in everyday life: better decision making in the GDT was positively correlated with the number of days of abstinence. From the two studies it was concluded that problems in decision making under risk, as they are found in patients with Korsakoff's syndrome and patients with opiate dependence, are caused by dysfunctions of executive abilities and feedback processing.

To further investigate the role of feedback processing in the GDT, decision-making behavior in a task version without feedback was compared to that in the original GDT. In the GDT without feedback, participants did not receive any information about the outcomes of their decisions. They could not see which number was thrown by the virtual die and were not informed about the actual gain or loss (neither by any sound nor by visual display) or their actual capital.

After each decision they were only asked to make their next choice. However, in the introduction it was explicitly made clear that every choice and its outcome would be recorded and that they would learn about their final balance at the end of the task.

Behavior in this task was compared to behavior in the normal GDT in healthy participants and in patients with Korsakoff's syndrome (Brand, 2008; Brand, Pawlikowski, et al., 2009; Brand, Laier, et al., 2009). In healthy participants it was found that decision-making performance was reduced in the GDT without feedback even if the normal GDT was played before. Patients with Korsakoff's syndrome performed similarly in a modified GDT, without feedback compared to the normal GDT. This indicates that they did not benefit from the feedback of the normal GDT.

However, especially in the healthy subjects, there was relatively high variance across subjects performing the GDT without feedback. To address this variance Brand and colleagues (Brand, Laier, et al., 2009) analyzed whether reduced performance in the GDT

without feedback was moderated by characteristics of the decision maker. It was found that subjects with good logical thinking abilities performed well in the task irrespective of whether they received feedback or not.

This result was a hint that emotional feedback usage is not inevitably necessary for good decision making under risk. Individuals with good logical thinking do not need the feedback, because its useful effect is substituted by above average logical thinking.

In summary, the reviewed studies showed that emotions are also relevant in making advantageous decisions under explicit risk conditions. However, optimal decision making under risk conditions is most likely when emotional processes and cognitive functions act in concert.

Summary: Emotional and Cognitive Processes in Decisions under Risk and Ambiguity

As the section demonstrates, there is already a profound data basis on the neuropsychology of decisions under ambiguity in the IGT and decisions under risk in the GDT and on their relations to emotional mechanisms. It can be held that emotional processing was found to be essential in decisions under ambiguity.

Consequently, it was demonstrated that brain regions are relevant which are responsible for initiating and processing emotional reactions in the body (amygdala, brain stem nuclei, sensory cortex) and for associating these emotional experiences with real-world stimuli, like the available decision options (vmPFC, dlPFC).

In decisions under risk, emotions and feedback processing also seem to be useful for advantageous decision making, but are not indispensable. Executive functions are more important and have the potential to compensate for missing emotional cues.

The neuropsychological studies which addressed the roles of brain regions in decisions under risk indicate that both emotion processing areas (like the amygdala) as well as areas related to executive functions (dlPFC) and number processing (inferior parietal lobe) are part of the decision-making network. The brain areas which are probably relevant in decisions under ambiguity and risk are depicted in Figure 6.

The following two sub-chapters attend to the interplay of emotional and cognitive processes in decision making under risk and ambiguity.

As we will see actual emotional states can intervene with decision making by interacting with the underlying mechanisms of cognitive and emotional processing.

INFLUENCES OF EMOTIONAL STATES ON DECISION MAKING

What happens when people are in a certain mood? Can they still decide advantageously? Or are there situations in which emotional states influences people's choices? Imagine you had a bad day at work; you had to do overtime and now you are late for a date in the evening. You feel angry.

On your way home on the highway is a speed limit. Would you abide to the speed limit or would you drive faster? And is it not a common behavior of young pupils to wait until their

parents are in a good mood to show them their bad marks, because then parents often decide less strictly about the consequences?

So far, we gave an overview about the underlying cognitive and emotional processes in decision making of persons who are in no specified emotional state. We have already seen that for decision making under ambiguity it is important to rely on one's intuition (hunches and guesses; Bechara et al., 1997).

Whereas for decisions under risk the cognitive, deliberative way of processing seems to be the more appropriate one, even though the emotional way can also lead to advantageous choices (Brand et al., 2006).

However, is it possible that the underlying emotional processes which guide our decisions can be influenced by them self by differences in emotional states, like for example general moods?

a)   b)
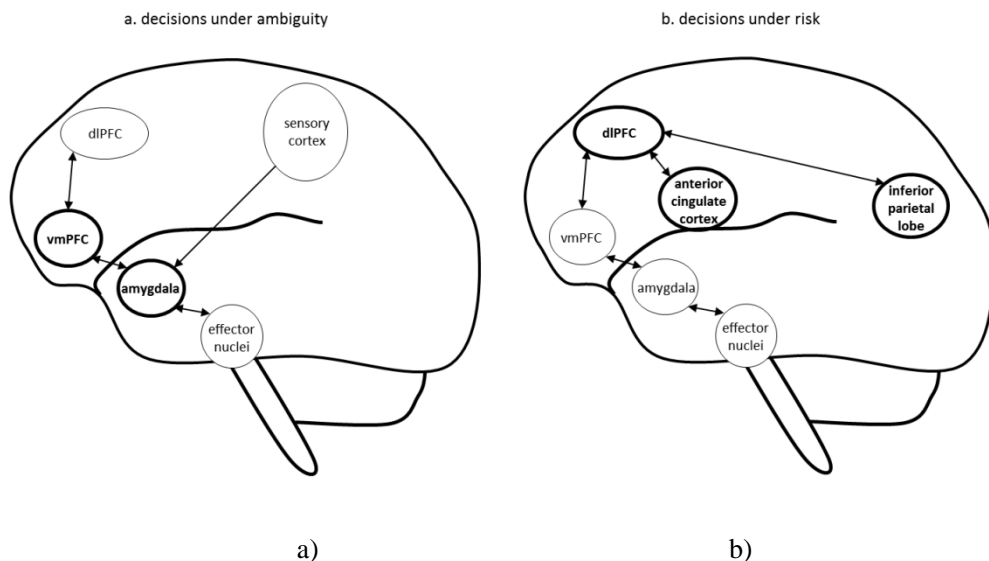
[a]decisions under ambiguity.
[b]decisions under risk.

Figure 6. Main brain networks, which are activated in decision making (a) under ambiguity and (b) under risk. In both types of decision situations networks linked to emotion-processing are important. In decisions under ambiguity, these regions (vmPFC, amygdala) and perceived bodily reactions (represented in the sensory cortex) guide decision making essentially. In decisions under risk, regions of the executive system (dlPFC, ACC) and those which are responsible for number processing and calculation (inferior parietal lobe) are particularly important. vmPFC = ventromedial prefrontal cortex, dlPFC = dorsolateral prefrontal cortex, ACC = anterior cingulate cortex.

The next section deals with the influence of current emotional states and dispositions on decision making and the underlying cognitive processes. The effect of mood on the ability to make intuitive judgments was examined by Bolte, Goschke, and Kuhl (2003). They found that positive mood increases intuitive coherent judgments.

Participants in a positive mood were more able to name the searched word which had to be associated with a before mentioned triad of words (e.g., triad: goat, pass, green; solution

word: mountain) compared to participants in a negative or neutral mood. The performance of participants in a negative mood was close to chance level. It was concluded that in comparison to negative mood, positive mood potentiates spread of activation to associations in memory and therefore leads to better performance in intuitive judgments.

In contrast, studies investigating the effect of mood on executive functions (Oaksford, Morris, Grainger, and Williams, 1996; Spies, Hesse, and Hummitzsch, 1996), demonstrated that positive mood leads to a reduction in (executive) task performance. Spies et al. found that positive mood caused greater deficits on a complex word span task than on a simple one, whereas negative mood did not lead to a decrease in executive capacity. Oaksford and colleagues used the Tower of London planning task (Shallice, 1982) and found that positive mood led to poorer planning performance than neutral mood, which was indicated by the numbers of moves needed to solve the task. Again, this pattern was not found for negative mood. One explanation could be that executive functions are more likely assigned to deliberative processes, which are shown to be improved under negative instead of positive mood. Bless and Schwarz (1999) as well as Clore, Schwarz, and Conway (1994) demonstrated that people are more likely to engage in cognitive operations, like deliberation and systematic elaboration when they are in a sad mood.

Having these findings in mind, de Vries, Holland, and Witteman (2008a) further investigated if the compatibility between mood on the one hand and decision strategies on the other influences an important ingredient in decision making: the subjective evaluation of a decision outcome. In their study, mood was induced with short either happy or sad video clips. Afterwards, participants took part in a lottery where they saw pictures of two different Thermos flasks and had to decide which of the two Thermoses they would like to win in the lottery. The subjects were randomly assigned to one of two conditions. In the intuitive-choice condition, they were asked to decide based on their first feelings. In the deliberated-choice condition, they were asked to decide after having a close look on the pros and cons for each option.

Directly after their decision participants had to estimate the monetary value of the chosen Thermos (measure of subjective value). Thereafter, mood was measured and they had to fill in a questionnaire (the Preference for Intuition and Deliberation questionnaire; PID; Betsch, 2004) measuring the individual preferences for intuitive and deliberative decision-making strategies. Results indicated that sad subjects in the deliberative condition and happy subjects in the intuitive condition estimated the price of the chosen Thermos higher compared to sad subjects who had to go with their first feeling and happy subjects who had to look at the pros and cons. This suggested that when there is a fit between mood and decision strategy (sad mood with deliberative strategy, happy mood with intuitive strategy) this leads to a higher subjective value of the outcome of a decision process. Additionally, de Vries and colleagues found that subjects with a dispositional preference for deliberative decision making (measured with the PID questionnaire) value their decision outcome more in case they could deliberate on pros and cons. Whereas, subjects with a dispositional preference for intuitive decision making rated their decision outcome higher when they had decided intuitively.

In summary these studies indicated that on the one hand emotions can improve performance on the other hand they can impair it, depending on the involved processes underlying the task and also depending on the valence of the emotion.

Temporary mood states can influence both the process of deliberation as well as of intuition, which are important ingredients of decision-making processes in different

situations. We will see if this pattern also occurs when we look at decision making under ambiguity and risk.

Emotional Influences on Decision Making under Ambiguity

Different studies using the IGT to operationalize decision making under ambiguity, could show that to perform well in this task it is useful to rely on one's own gut feelings (somatic markers; Bechara et al., 1999, 1997, 1996). But what happens if task-irrelevant emotions also have to be processed? Will this possibly disrupt the decision-making process?

De Vries, Holland, and Witteman (2008b) assumed that mood influences the reliance on feelings. Combined with their findings that positive mood fits with affect-based decision making and negative mood with deliberative decision making, they hypothesized that good mood should enhance IGT performance, especially in the second block of the IGT. As mentioned before, the IGT can be divided in five Blocks à 20 cards, from which the second block is associated with the pre-hunch phase (Bechara et al., 1997) in which participants begin to have a preference for the good decks without having explicit knowledge about the basis for this preference (see also Brand, Recknor, Grabenhorst, and Bechara, 2007). The reason is that in the second block participants start to develop the emotional signals (somatic markers), anticipated with the different decks which guide their decision behavior (for more details see Bechara et al., 1997; Wagar and Dixon, 2006).

Thus, the authors assumed that participants which are in a happy mood are thought to rely more on their feelings and thus enhance their IGT performance in the second block, while participants which are in a sad mood should rely on their feelings less and therefore show weaker performance in the IGT in comparison to the former group. In a series of three experiments de Vries and colleagues found evidence for their assumption.

Most important, in their third experiment they induced positive and negative mood by showing short sequences of a funny and a sad film, which have proved to induce the mood state intended (De Vries, Holland, and Witteman, 2008b). Thereafter, subjects had to perform the computerized IGT. The results pointed out that participants in the positive mood group decided more advantageously in the second block of the IGT than participants of the negative mood group.

Furthermore, they found that in the last block of the IGT (trials 81-100) the negative mood group was the one which decided more advantageously. This is the phase of the game in which participants have an increased certainty about the strategy and where most of the subjects are aware of the underlying contingencies (Bechara et al., 1997; Brand, Recknor, Grabenhorst, and Bechara, 2007; Maia and McClelland, 2004). Therefore, this phase of the game is more associated with deliberative decision making which in turn is more likely to be done in sad than in happy mood (De Vries, Holland, and Witteman, 2008a, 2008b).

The results of the study by de Vries and colleagues indicate that positive and negative emotion can have different effects on decisions under ambiguity in the IGT, depending on the amount of explicit knowledge about the rules of the decision situation and thereby on the involvement of emotional and cognitive mechanisms.

In another study conducted by Heilman and colleagues (Heilman, Crişan, Houser, Miclea, and Miu, 2010) it was investigated whether differences in the way persons deal with upcoming emotions can have effects on the performance in the IGT. They concentrated on

effects of two different emotion regulation strategies: cognitive reappraisal and expressive suppression. Participants were divided in three groups: the first group was told to decrease the emotional experience coming up by reformulating the meaning of the situation (cognitive reappraisal; Gross, 2002), the second group was told to suppress the outward signs of their inner feelings (expressive suppression; Gross, 2002) to decrease emotional experience and the control group did not receive any emotion regulation instructions. Thereafter, they had to watch short, negative movie clips to elicit the emotions fear or disgust. It was found that participants who experienced negative affect without applying any emotion regulation strategy showed less advantageous decision making in the IGT compared to participants who applied reappraisal. Based on these findings Heilman and colleagues suggest that negative emotions increase physiological noise and that this inhibits the somatic markers and thus leads to weakened IGT performance (already discussed in Preston, Buchanan, Stansfield, and Bechara, 2007). However, they further argue that the application of reappraisal decreases the physiological noise (c.f. Delgado, Gillis, and Phelps, 2008; Sokol-Hessner et al., 2009), which could explain why reappraisers showed better results in the IGT than the control group. Moreover, because suppression increases sympathetic activation (Gross, 1998), it is not remarkable that the suppression group showed similar decision-making behavior compared to the control group. Both, the suppression and the control group, experienced the negative emotion and therefore showed less advantageous decisions than the reappraisal group.

The studies demonstrated that different valences of emotions seem to have different influences on decision making under ambiguity. Positive emotions enhance advantageous decision making, for the reason that happy subjects possibly rely more on their own feelings than sad subjects. Contrary, negative emotion seems to impair decision making because it is thought to result in a more deliberative decision-making style which is at least for the most part of the IGT little beneficial (De Vries, Holland, and Witteman, 2008b). Additionally, it is argued that negative emotion lead to sympathetic activation. This inhibits somatic markers (emotional signals) which are important to decide advantageously in decision making under ambiguity (Bechara et al., 1996; Preston et al., 2007).

Based on these findings one could assume that in decision making under risk, negative emotions should lead to more deliberation and thereby to advantageous decisions and positive emotion to more reliance on intuitions and thereby to disadvantageous decisions. In the next section we will review studies which investigated the influence of emotion on decision making under risk.

Emotional Influence on Decision Making under Risk

As already explained before, in decision making under risk advantageous decisions can principally be made without using the emotional processing way. However, emotional processing is also considered an ingredient of the decision-making process (Brand et al., 2006). For example, it was shown that processing feedback from previous trials plays an important role in risky decision making (Brand, 2008), at least for some individuals (Brand et al., 2009).

Furthermore, induced emotions influence the decision strategy people use (De Vries, Holland, and Witteman, 2008a). Hence, it is possible, that affective influences impede the

emotional signals and consequently feedback processing which in turn could result in disadvantageous decision making also under risky conditions.

In the already mentioned study of Heilman et al. (2010) it was additionally investigated how emotion regulation influences risky decision making in the BART (Lejuez et al., 2002), in which the subjects have to pump up a balloon and have stop pumping before it explodes in order to save the earned money (for a detailed description of the task refer to the section "Evidence for emotional processes in decision making"). In the second experiment of the study by Heilman and colleagues students were recruited who had their final exam a few days before the experiment. They were asked to supply self-evaluations of their exam-performance and to indicate how important the exam was for them. For the study only those students were taken for whom the exam was highly important, and who either under- or overestimated their evaluation by 1 or 2 points out of 10. The idea was that participants who overestimated their performance should experience negative feelings when being confronted with their results, whereas subjects who underestimated their performance should experience positive feelings. Immediately after participants were informed about their exam results, they were asked to take part in this study. Mood was measured using the Positive Affect Negative Affect Schedule – Expanded Form (PANAS-X; Watson and Clark, 1994).

In order to identify the subjects who incidentally used an emotion regulation strategy (reappraisal or suppression) the Emotion Regulation Questionnaire (ERQ; Gross and John, 2003) was applied. After filling out the questionnaires subjects had to perform the BART. The results showed an effect of mood on risk taking in the task. Negative mood compared to positive mood reduced risk taking. Additionally, Heilman and colleagues found that participants who reappraised their negative affect displayed increased risk taking behavior in comparison to suppressors. The authors concluded that these results are in accordance with previous studies proposing that appraisal of control mediates the relationship between emotion and risk taking (Lerner and Keltner, 2001). Furthermore, they are in line with several studies which demonstrated that negative mood seems to cause enhanced application of deliberative decision strategy (Bless and Schwarz, 1999; Clore et al., 1994) resulting in increased performance of risky decision making (Brand, Heinze, et al., 2008). Moreover, as mentioned above, positive mood and not negative mood leads to reduced executive functions which are known to play an important role in decision making under risk (Brand et al., 2006).

Similar results were found in a study of Yuen and Lee (2003) using a decision task modified from the Choice Dilemmas Questionnaire (Kogan and Wallach, 1964). After watching a negative, neutral or positive film sequence participants' risk-taking tendencies were measured via this task. This consists of ten cases each describing one *life dilemma*, for which two options of action were available: a predictable but low rewarding act and a highly rewarding but risky act. Risk-taking tendencies of the subjects were assessed by measuring their willingness to perform one of these acts on two scales. On a Likert scale participants had to indicate their willingness to choose the conservative act, whereas the second scale asked for means of probability estimation to perform the risky act. It was found that positive mood induction entailed a higher risk-taking tendency in comparison to neutral and negative mood, thus supporting the results of Heilman et al. (2010).

A similar pattern was shown in a study by Staschkiewicz, Pawlikowski, Schöler, and Brand (under review).

It was investigated if the secondary load on executive functioning (which was already shown to impair decision making under risk on its own: c.f. Starcke et al., 2011) and the

simultaneous demand on the emotional system would lead to a combined negative effect on decision making, because of an interference with both systems involved. Therefore, Staschkiewicz and colleagues used a similar paradigm like the one used in Starcke et al. (2011): GDT with simultaneous 2-back task.

However, instead of numbers, emotional pictures were included (neutral, negative and positive) into the 2-back task. The results indicated that participants who performed the 2-back task with positive emotional stimuli simultaneous to the GDT chose more often the disadvantageous options of the GDT in comparison to participants performing the 2-back task with neutral stimuli. The authors concluded that the simultaneous demand of the executive functions and the emotional system leads to reduced decision-making performance, especially when the emotional information is positive.

From a slightly different perspective Bagneux, Bollon, and Dantzer (2012) also investigated the influence of emotion on risky decision making, using a modified GDT version (with 30 trials instead of 18) and video clips to induce anger, happiness, and fear. They refer to the Appraisal-Tendency Framework (Lerner and Keltner 2000), which predicts that certainty-associated emotions (e.g., anger or happiness) encourage heuristic processing whereas uncertainty-associated emotions (e.g., fear) lead to more systematic processing. Bagneux and colleagues hypothesized that for the reason that heuristic processing takes emotional information into account, participants who experienced anger or happiness before the GDT would rely more strongly on emotional information (feedback) from previous decisions, leading to advantageous decision-making. In contrast, participants who experienced fear before the GDT should rely more strongly on systematic processing and therefore they would make less use of the feedback in the GDT, resulting in disadvantageous decision making. The results supported the assumption by demonstrating that at least in the last three blocks (out of five; six decisions were taken together to one block) participants who watched the angry and happy video clips chose more often the advantageous alternatives than participants who watched the video clip inducing fear. Even though the difference slightly failed to reach significance the data displayed at least on a descriptive level that anger participants decide more advantageously than the happy participants. This supports the results by Staschkiewicz et al. (under review) in which negative pictures resulted in more advantageous and positive pictures to less advantageous decisions.

In total, these studies showed that in comparison to decision making under ambiguity negative mood leads to advantageous decision making under risk in a way that it increases risk aversion (c.f. Heilman et al., 2010), whereas positive mood results in more risk-taking behavior. This seems to be in line with various other studies demonstrating that negative affect causes the application of deliberative strategies (e.g., Bless and Schwarz, 1999; Clore et al., 1994) which are suggested to be advantageous for good decision-making performance under risk (Brand, Heinze, et al., 2008).

Taking together the results concerning ambiguous and risky decision making, the interpretation by de Vries, Holland, and Witteman (2008a) seems to be supported: positive mood enhances decision making under ambiguity and negative mood reduced risk taking or rather increase risk aversion which leads to more successful decision making under risk in many situations and tasks.

However, the study by Bagneux pointed out that one has to differentiate between various negative emotions, like anger and fear. Moreover, there are emotional states which are even stronger than positive or negative mood. One type of a strong emotional condition is acute or

chronic stress. Especially in the contemporary time the role of stress and the associated consequences are an important topic in the current psychological research. Thus, there are studies investigating the effect of stress on decision making demonstrating that this kind of often negatively connoted emotional state results in changes in the decision-making process (Starcke, Wolf, Markowitsch, and Brand, 2008; van den Bos, Harteveld, and Stoop, 2009). The next section rules out the specific, underlying neural correlates of stress and gives an overview about its influences on decision making.

INFLUENCES OF STRESS ON DECISION MAKING

Everyday life had pick up the pace in the last century. On the positive side, travelling from one place to another becomes faster and transferring of messages is happening quickly thanks to the World Wide Web and the mobile network. On the negative side, modern life is full of appointments, deadlines and demands. Work, family, friends and different hobbies have to be managed. This leads frequently to frustration and the feeling of being stressed.

Since the 1930s, stress is a main topic in psychological research and is investigated in many different ways. So far, it is widely accepted what Lazarus once proposed (e.g., Lazarus and Smith, 1988) that stress occurs whenever there is a discrepancy between an environmental demand and the perceived and available resources of an individual to cope with the demand. People not only experience stress when they assess a situation as personal relevant (primary appraisal), but rather when they experience missing coping resources and options (secondary appraisal). Especially situations which are unpredictable and uncontrollable are mostly described as stressful (Dickerson and Kemeny, 2004). Stress provokes psychological, physiological and behavioral reactions.

In this section we concentrate on the physiological side of stress, which Hans Selye (1956) described as unspecific bodily reaction to a stressor. First, we describe the neurobiological systems and brain areas which are involved in stress or are influenced by it. Second, we describe how to induce and measure stress in the laboratory.

Finally, we refer to studies, which investigated the influence of stress on decision making under ambiguity and risk.

Neurobiological Correlates of Stress

Stress activates two neural systems: the fast-reacting sympathetic adrenomedullary system on the one hand (SAM-system; Canon, 1914) and the slower hypothalamus pituitary adrenal axis (HPA-axis; Selye, 1956) on the other. Within the SAM-system stress reactions arise immediately after stress exposure and lead to a release of two kinds of catecholamines: adrenaline and noradrenaline. This release is followed by several reactions in the sympathetic nervous system, for instance an increase of heart rate, pulse, blood pressure, and stronger electrodermal activity. The reactions return to baseline around ten minutes after the ending of the stressor (Het, Rohleder, Schoofs, Kirschbaum, and Wolf, 2009; Kirschbaum, Pirke, and Hellhammer, 1993). Concerning the HPA-axis, stress reactions lead to a secretion of different

hormones in the hypothalamus and pituitary which in turn stimulates the release of glucocorticoids (in humans mainly cortisol; Sapolsky, 2000).

Cortisol is a major stress hormone elevating the blood glucose level which in turn leads to a mobilization of energy resources. Its peak response occurs around 21 to 40 minutes after the onset of the stressor (Dickerson and Kemeny, 2004). Cortisol returns to the baseline level (before stressor) within 41 to 60 minutes. The HPA-axis itself is regulated by loops of limbic and prefrontal structures which have a certain role in processing stress and emotions, for example the amygdala, the hippocampus and parts of the prefrontal cortex (De Kloet, Joëls, and Holsboer, 2005; Herman, Ostrander, Mueller, and Figueiredo, 2005). These brain regions have a high density of receptors where glucocorticoids can bind. Find a visualization of the SAM-system and the HPA-axis in Figure 7.

a)   b)
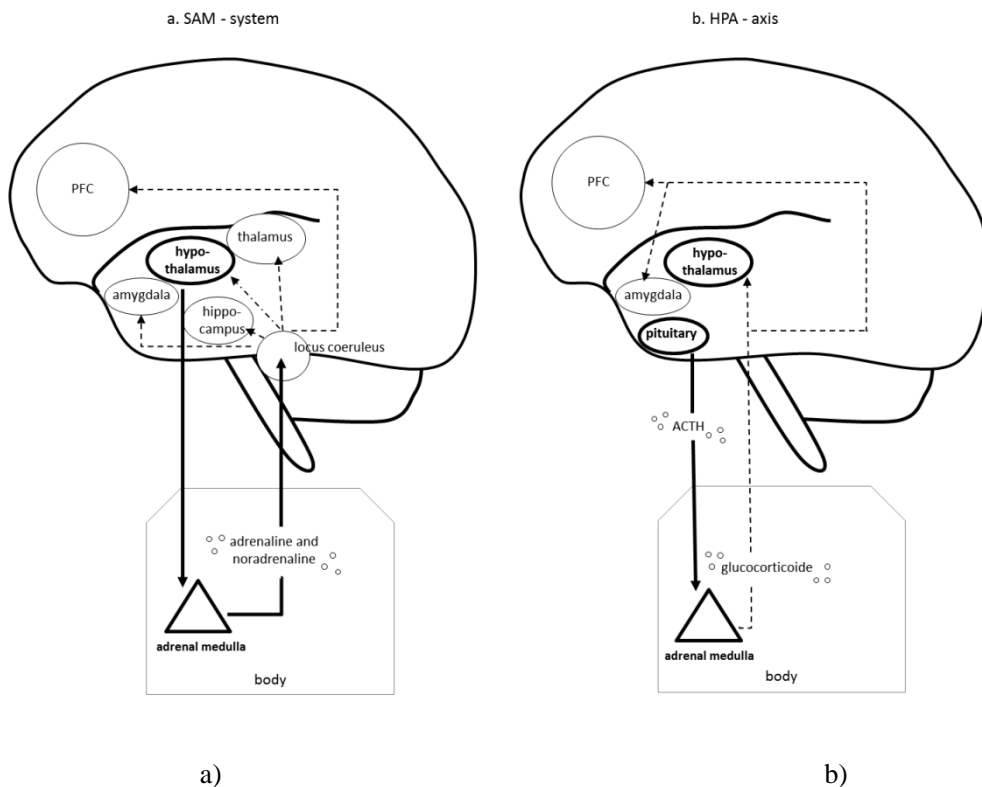
[a]SAM-system.
[b]HPA-axis.

Figure 7. Brain structures involved in and affected by (a) the SAM-system and (b) the HPA-axis. The accentuated structures demonstrate the brain areas which are directly involved. The hypothalamus (a) and ACTH released by the pituitary (b) trigger the adrenal medulla to release adrenaline and noradrenaline (a) or glucocorticoids (b), respectively. These neurotransmitters/hormones influence several brain areas, such as frontal lobe sections and limbic structures. These brain areas are also involved in decision-making processes. PFC = prefrontal cortex, ACTH = adrenocorticotropic hormone, SAM-System = sympathetic adrenomedullary system, HPA = hypothalamus pituitary adrenal axis.

In accordance with the density of glucocorticoid receptors in the brain, neuroimaging studies revealed that in these regions stress leads to metabolic changes.

Pruessner and colleagues (Pruessner et al., 2008; Pruessner, Champagne, Meaney, and Dagher, 2004) demonstrated an stress-related increase of activity in brain areas like the dlPFC, the ACC, the basal ganglia and the ventral striatum – brain areas which are especially involved in executive functions and decision making under risk.

Brain areas, which are mostly known to be involved in emotional processes (e.g., orbitofrontal cortex (OFC), hippocampus and hypothalamus), were less activated (Pruessner et al., 2008; Pruessner et al., 2004). For other limbic-related structures, like the amygdala, the thalamus, and the insular cortex, the results are not that clear. Other authors found either an increase or a decrease in the activation of these brain areas (Dedovic, Duchesne, Andrews, Engert, and Pruessner, 2009; Pruessner et al., 2004; Tillfors, Furmark, Marteinsdottir, and Fredrikson, 2002; Wang et al., 2005). A possible explanation for these mixed results may be the individual differences in stress responses (Kudielka, Hellhammer, and Wüst, 2009). For example, personality, early life stress or genetic factors can influence the processes of the HPA-axis. Furthermore, factors such as gender, age, use of oral contraceptive and chronic alcohol or nicotine consumption are likely to bias physiological stress responses and therefore have to be controlled in an experiment investigating stress effects (cf. Starcke and Brand, 2012). Given the results that stress influences brain areas which are also involved in decision-making performance (e.g., dlPFC, OFC and amygdala), it is not surprising that studies investigated the effects of stress on performance in decision-making tasks. Researchers use different laboratory stressors which simulate natural stressful situations in order to evoke a reliably stress reaction. Laboratory stressors comprise a physical challenge (e.g., heat, cold, pain, inhalation of CO_2), a cognitive demand (e.g., mental arithmetic, analytic tasks) or a social-evaluative threat (e.g., anticipation of a public speech, verbal interaction and direct or virtual observation of people while they are performing something; Starcke and Brand, 2012) as well as a combination of these methods (e.g., cognitive demand and social-evaluative threat, which is the most reliable method to induce stress reactions, Dickerson and Kemeny, 2004). The next section reviews studies investigating the influence of stress on decision making.

Influence of Stress on Decision Making under Ambiguity

In decisions under ambiguity stress might interfere with task-related emotions (somatic markers). This assumption was tested by Preston and colleagues (2007) using the IGT. To induce stress, the experimental group was told that they would have to deliver a public speech discussing what they like and dislike about their own physical appearance. They were informed that their speech would be taped and observed by other people. To measure stress reactions, all participants received electrodes on their body to measure the heart rate during the upcoming task. Furthermore, self-reports were used to measure the actual state and affect: The State Trait Anxiety Inventory (STAI; Spielberger, 1972) measuring acute anxiety reactions and the Positive and Negative Affect Schedule (PANAS; Watson, Clark, and Tellegen, 1988) measuring the current affect. All participants had to perform the IGT twice (first the original version, second the repeated version). Before performing the IGT the second time, participants in the experimental group were informed about the speech. They

were told that they would have to perform the IGT within the next 20 minutes and would subsequently have to deliver their speech. The physical data and self-report measures indicated that stress induction had been successful: In comparison to the control group participants of the experimental group showed higher increases in heart rate, were more anxious during the second IGT (STAI results) and demonstrated a trend to evolve less positive emotions (PANAS results) than participants of the control group. Concerning the decision-making performance participants of the experimental group learned the contingencies of the task more slowly than participants of the control group. Furthermore, an effect of gender was found: stressed men chose more often from disadvantageous card blocks than unstressed men, while stressed women decided more advantageously compared to unstressed women. From these results, the authors concluded that stress interferes with somatic markers, which are involved in IGT performance, and therefore lead to impaired decision making. However, these effects might be moderated by gender.

Two years later, these findings were supported by a study of van den Bos and colleagues (2009). Instead of heart rate, they measured concentration of cortisol in salivary as indicator of stress reactions. Thus, it was possible to identify whether subjects really reacted with stress hormone release and thereby classify them into stress responders (high cortisol) and non-responders (low cortisol).

To induce stress, the Trier Social Stress Test (TSST; Kirschbaum et al., 1993) was used in the stress group, while participants of the control group were listening to music and read in magazines. In the TSST, participants have to perform a public speech as well as an arithmetic task in front of a committee which behaves in a very distant and serious manner. The public speech is similar to a job interview. Participants have to promote their abilities which could be necessary for a certain job. The arithmetic task consists of counting downwards e.g., in steps of 13, starting with the number "1022". Meanwhile, the whole procedure is videotaped. Van den Bos and colleagues also found the effect of gender on the link between stress and IGT performance. Moreover, they found that male high cortisol responders took more cards from the disadvantageous decks and consequently lost more money, especially in the second part of the game, whereas female high cortisol responders tended to win more money in the second part of the task.

The authors concluded that the influence of stress, indicated by cortisol reactivity, leads in men and women to different performances in making decisions under ambiguity. High level of cortisol leads to impaired decision making in men, while in women high level of cortisol leads to less disadvantageous behavior than under low level of cortisol.

The conclusion one could possibly draw from these studies, is that stress seems to have a negative influence on decision making in ambiguous situations, particularly in men. Stressed male subjects chose more often the disadvantageous options compared to non-stressed male participants. In contrast, stressed women decided more advantageously compared to unstressed female participants. The next section addresses the influence of stress on decision making under risk.

Influence of Stress on Decision Making under Risk

Starcke and colleagues (2008) examined the effect of stress on decision making under risky conditions using the GDT. Like in Preston et al. (2007), the anticipation of a public

speech was used to elicit stress in members of the experimental group. After participants performed neuropsychological tasks they were informed that they would have to talk about their evaluation of their own cognitive abilities, thinking that they would be videotaped and observed by two psychologists. After this information they were required to perform the GDT. Afterwards, they were told that they do not have to do the speech. The stress level was assessed using questionnaires (PANAS and STAI) and salivary cortisol and alpha-amylase, an enzymatic marker of adrenaline and noradrenaline.

Here, stress induction was also successful: participants in the stress group indicated to feel more negative and anxious after preparing the speech, than the control subjects (who had to think about their last holidays) and they showed a significantly higher alpha-amylase increase and on a descriptive level a higher cortisol increase. The main result of the study was that stress had a negative effect on GDT performance. Subjects in the stress group made more choices for the risky alternatives (betting on one or two numbers).

Furthermore, a negative correlation between cortisol and decision-making performance was found, indicating that a higher increase of cortisol led to more disadvantageous decision making. However, in comparison to Preston and colleagues no effect of gender was found. The authors argued that this could be due to the topic of the speech, which was selected to elicit stress in women and men equally.

However, Lighthall, Mather, and Gorlick (2009) found sex differences in risk-taking in the BART after the cold pressure test (CPT; Hines and Brown, 1936), in which participants have to submerge one hand into ice water for at least three minutes. Stressed men became more risk seeking, whereas stressed women became more risk avoidant. This pattern is comparable with the pattern found in studies of Preston et al. (2007) and van den Bos et al. (2009). Effects of stress on decisions making under risk were also examined by Putman and colleagues (Putman, Antypa, Crysovergi, and van der Does, 2010) in a modified version of the CGT also supposed to measure decision making under risk. The participants had to decide between two gambles: a control gamble with a 50:50 chance of winning, a fixed amount of money and an experimental gamble with varying chances of winning and losing and with varying amounts of gains and losses (for a detailed description of the standard version of the CGT, refer to the section "Evidence for emotional processes in decision making").

Additionally, another method of stress induction was used, namely, the direct oral application of cortisol. The authors were interested in how the gamble behavior would change when participants were stressed before solving the task. Therefore, the experimental group received a capsule containing 40 mg cortisol and the control group received a placebo capsule which was identical in appearance, thus resulting in a double-blind, placebo-controlled crossover design.

The analysis of salivary sample demonstrated a successful increase of cortisol in the experimental group compared to the control group. Looking at the results, it was shown that cortisol impairs decision making under risk, leading to risky decisions especially when this could result in a huge reward. Hence, these findings are in line with the aforementioned studies, showing that stress influences decision making in risky situations.

In summary, the used laboratory stressors led to increased heart rate and cortisol and alpha-amylase level as well as to an increase in anxiety and negative affect, which can be interpreted as reliable indicators for stress. Moreover, the mentioned studies consistently showed that stress has a significant effect on human decision making. Independent of whether subjects knew the exact consequences of their behavior (or at least could calculate them) or if

they just can make hunches and guesses about the outcome, they decide riskier when they are stressed. In many tasks, such as the IGT or the GDT, this represents more disadvantageous decisions. In other task, such as the BART, risk taking to a certain extent leads to more advantageous outcomes. Additionally, some studies (Lighthall et al., 2009; Preston et al., 2007; Van den Bos et al., 2009) found an effect of gender, indicating that in men stress leads to more risky decision making whereas in women stress results in less risky decision making. Thus, the influence of stress on the performance of a decision making task, depends on the individual stress reactions as well as various personality traits.

In conclusion, we have seen that an extreme form of emotional processing (stress) can have an immense effect on people's decision making, which supports the basic function of emotions for the decision-making process.

CONCLUSION

This chapter started with the description of 19th century developments in decision making research. In its beginning, the ideal way to make decisions was supposed to be making use of ones' cognitive abilities in order to logically calculate what the best decision will be. Influences of emotions were neglected or regarded to have a minor role in good decision making. The literature we reviewed in this chapter draws a different picture. The main conclusion is that making good decisions is a complex process in which not only cognitive processes, but also emotions are crucially involved. It seems that without a well-functioning emotional system we would not be capable of making good choices. Sometimes, it is even possible that our emotions guide us to good decisions without us knowing the reason for why we choose one or the other option. However, not only internal processes influence how we make our choices. A decision seems to be the result of an interaction between situational conditions, external influences and emotional and cognitive processes. Amounts of risk and ambiguity determine the reliance on intuitive and deliberate processes in decision making and can be differently affected by positive or negative emotions. Future research should address the interaction of external/situational factors, physiological processes and psychological functions in making decisions to better understand the mechanisms contributing to advantageous choices in several domains of life. One may expect that emotions contribute significantly to many of our real-life decisions, either directly or indirectly and in a conscious or unconscious way.

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PART III: EMOTIONS, MORALS AND VALUES

Chapter 12

EMOTIONS AND SELF-INTEGRITY

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ABSTRACT

The integrity of the self can be defined as the psychological experience that our actions are sensible and goal directed, that we are in control of them, that our behavior is morally adequate, that we are socially included, that our existence is coherent and continuous. Having self-integrity means dealing with our environment in a way that will lead to positive outcomes. States of self-integrity are therefore associated with positive and negative emotions. In this chapter we argue how threats to self-integrity are associated with negative emotions, whereas achievement of self-integrity in different domains is associated positive emotions. This perspective integrates existing accounts of how people deal with threats to the self in terms of cognitive dissonance, psychological reactance, and reactions to unfairness.

Happiness is when what you think, what you say, and what you do are in harmony.

Mahatma Ghandi

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INTODUCTION

The Role of Emotions in Protecting Self-Integrity

What does feeling uneasy after failing a test, eating at a fast-food restaurant, not being allowed to walk on the lawn in a park, or after not being invited to a party have to do with the self? The self is often described by its function of serving as a guide to interact with the environment in the most efficient manner (Epstein, 1973; Mead, 1934; Steele, 1988;). Frequently this is attributed to the self's capacity to regulate the pleasure/pain balance of the individual. From the *social psychological* approach we are taking here, we define the function of the self as maintaining the best ratio between the pleasure goals of the individual and the goal of being a valued interaction partner to relevant others.

A person's *self-integrity* is the experience of maintaining this ratio. Self-integrity is defined as perceiving the own person as adaptively and morally adequate in the sense of competence, coherence, control and free choice (Steele, 1988). In the following we will focus on *competence, consistency, freedom,* and *fairness* as principles related to self-integrity and describe the emotions that research has associated with psychological reactions aimed at the protection and maintenance of self-integrity.

Emotions are immediate responses to self-relevant situations, introducing motivational states that inform the organism about appropriate action tendency or direction (Schwarz, 1990). Events that are not relevant to our self-concept are unlikely to result in strong emotional responses, as described by Frijda (1986): "Emotions are elicited by significant events. Events are significant when they touch upon one or more of the concerns of the subject. Emotions thus result from the interaction of an event's actual or anticipated consequences and the subject's concerns." (p. 6).

However, not all affect is valid information concerning long-term goals of the individual. A distinction between immediate affect and expected affect made by Loewenstein and Lerner (2003) indicates that some affect can be misleading while some can be relevant.

Immediate affect is defined as emotions current at the time of decision-making and can therefore consist of emotions that bear no useful information in regard to the decision. Relying on immediate emotions could thus be misleading if they are taken as useful information for judgment (e.g., Leith and Baumeister, 1996). Expected emotions are defined as the predictions of future decision outcomes and are thought to be useful – if not always reliable (Gilbert and Ebert, 2002; Gilbert, Lieberman, Morewedge, and Wilson, 2004) – criteria that may be used to evaluate self-relevant information and decision alternatives.

Emotions Related to Self-Integrity

a. Competence

As described above, emotions serve as information for the individual. Immediate perceptions and lingering cognitions are translated into emotions as they are appraised in relation with the person and the circumstances. If the appraisal leads to a positive evaluation, positive emotion is experienced, if it leads to negative evaluation, negative emotion is experienced.

Depending on the positivity or negativity of the experienced emotion, different motives are activated. Positive emotions are experienced when a desired state is achieved for the individual. They are associated with doing well, having success, having resources to be creative and continuing on the behavioral course that one has been on. Accordingly positive mood and affect have been associated with more creativity (Ashby, Isen, and Turken, 1999; Hirt, Devers, and Mc Crea, 2008; Murray, Sujan, Hirt, and Sujan, 1990), more use of heuristics and less systematic information processing (Bless and Fiedler, 1995; Park and Banaji, 2000).

Negative emotions on the contrary signal that something is wrong and that change and adaptation are needed – they signal the individual a failure of adaptation to the situation, i.e. a situation and behavior that might threaten notions of one's competence in whatever area of behavior the emotion relates to. Negative emotions can signal danger indicating that one is not in a situation one is fully competent to handle.

In order to achieve a feeling of competence, either the behavior should be changed or a different perspective needs to taken. Feeling bad about a mediocre test score, can either lead to a more careful strategy of preparation in the future or to comparing the own performance to somebody scoring even lower (cf. social comparison, Festinger, 1954).

Which approach is taken in dealing with the negative emotion has been related to the causes the individual gives to the situation associated with the negative feeling. Accordingly, negative emotions are associated with more systematic information processing.

b. Consistency

Consistency in daily life relates to the radio weather forecast predicting cold weather and the actual feeling of cold air on your face as you leave the house, the arrival of a bus every morning at the same time and your colleagues greeting you as friendly as they have done the day before. Consistency helps us plan the future, and automatize some of our actions.

Overall, it makes a highly complex physical and social environment easier to handle. Inconsistency could mean the forecast predicting warm weather and the feeling of cold air, the bus not arriving at the stop this morning, and your colleagues giving you angry looks instead of greeting you. When things are inconsistent we experience a state of alarm and are motivated to find out why, or at least adapt our behavior to the unexpected new reality.

The consistency of the self operates according to the same mechanisms as consistency in our daily life, as we observe ourselves thinking, feeling, and acting. When doing something that is at odds with our internal convictions, or when we do something contradictory to a previously expressed opinion we experience cognitive dissonance (Festinger, 1957). We also feel inconsistent when we are engaging in behavior that is contradictory to our self-integrity in terms of competence (e.g. making a bad decision). Being consistent is important not only to be able to predict our own actions and desires and to ensure adherence to our long term goals.

This experience is characterized by emotional arousal (Croyle and Cooper, 1983): Participants who had received a tranquilizer, that was framed as a placebo, did not react with dissonance reduction effects after writing a counter-attitudinal essay (Cooper, Zanna, and Taves, 1978).

This result was interpreted as a result of them not experiencing the usual arousal associated with dissonance. It was concluded that this arousal is necessary for the motivation to engage in dissonance reduction.

It was further shown that this arousal has the qualities of negative affect: Participants who could misattribute dissonance arousal to a placebo pill which they expected to make them feel negatively tense, did not display dissonance reduction effects as Zanna, Higgins, and Taves (1976) could demonstrate. Participants who, however, expected the placebo to result in positive arousal, showed the usual dissonance reduction effects.

Dealing with cognitive dissonance apparently has to do with the handling of psychological discomfort, as it has been shown that (a) this discomfort is necessary for the experience of dissonance and the inclination to reduce it (Zanna et al., 1976), and that (b) this discomfort is alleviated when dissonance is reduced via cognitive strategies (Elliot and Devine, 1994). Hence the experience of inconsistency stands in direct relation with dissonance affect: The experience of negative dissonance affect is necessary to motivate people to engage in cognitive dissonance reduction processes.

c. Freedom

Having control over outcomes is crucial for the efficient interaction of an individual with the environment. Being able to e.g. control the temperature of a room by using a heater in the winter has immediate effects on wellbeing and in extreme cases, survival. Being able to exercise control is an important cognition of the self.

Therefore, information that threatens this cognition (i.e. information that control is limited or eliminated) should, as threat to integrity, lead to a state of alarm, an emotional state and motivational arousal directed at adjustments of behavior to ensure the regaining of control. The subjective sense of control is therefore important for psychological wellbeing. Loss of control is associated with negative emotion and depression, in the extreme form leading to the generalized notion of learned helplessness (Seligman, 1975).

Control over outcomes is very closely tied to the concept of *freedom*. Reactance theory in particular (Brehm, 1966) proposes the importance of individual freedom and behavioral choices. Freedom in the terms of reactance theory is defined as a person's belief to be able to engage in a certain behavior and to decide on the type of behavior, as well as how it is performed and when.

The theory proposes that when a person believes s/he is free to engage in a given behavior, s/he will experience psychological reactance if that freedom is eliminated or threatened. According to Brehm (1966), psychological reactance is defined as a motivational state directed toward the re-establishment of the threatened or eliminated freedoms. Reactance should therefore manifest itself in an increased desire to engage in the relevant behavior or actual attempts to engage in it.

Like dissonance, reactance is also described as a state of arousal that is experienced as an emotion. In our own research reactance was consistently associated with the emotions anger and unease (Graupmann, Jonas, Meier, Hawelka, and Aichhorn, 2012; Jonas, Graupmann, Niesta-Kayser, Zanna, Traut-Mattausch and Frey, 2009), whereas the absence of reactance was associated with positive emotions. The emotion accompanying feeling restricted and resisting that restriction leads to the motivated course of behavior interpreted as reactance.

d. Fairness

On the collective level, i.e. in a broader societal context, notions of legitimacy and personal control make perceptions of *fairness* an important variable for the idea of self-integrity.

It has been theorized that among other reasons for why people prefer fair conditions over unfair conditions, it is having a guarantee to not be overreached and having the possibility to influence decisions and outcomes.

Based on social exchange theory (Thibaut and Kelley, 1959), it is assumed that people show cooperative behavior because they are motivated to gain access to resources (Thibaut and Walker, 1975). The level of cooperative behavior that people show in social contexts depends on the value of the resources they can obtain.

To maximize favorable outcomes people are interested in having control over the decisions leading to relevant outcomes. Therefore people favor conditions of fair resource allocations (e.g. unbiased, rule-based procedures) because they guarantee decision control and long-term favorable outcomes (Brett and Goldberg, 1983).

Additionally, fair treatment provides self-relevant information about a person's standing in social contexts (Blader and Tyler, 2005). In particular, being treated unfairly goes along with the perception of not being a valued member of the group and of having a low status.

Overall, perceptions of fair conditions are related to positive reactions and the maintenance of self-integrity, whereas unfairness is associated with negative reactions, the violations of expected social standards, and threats to self-integrity (Colquitt, Conlon, Wesson, Porter and Ng, 2001; Gonzalez and Tyler, 2007). Accordingly, fair conditions provoke positive emotions such as pride of being an important member of a high status group or happiness about being able to achieve – or at least influence – desired outcomes. In contrast, perceptions of unfairness provoke negative emotions such as anger, disappointment, fear, sadness, guilt, and shame (e.g., Mikula, Scherer andAthenstaedt, 1998; Weiss, Suckow and Cropanzano, 1999). For example, breaching existing rules like an established and accepted decision making procedure results in anger for those who are affected by the injustice. If peoples' interests are not considered during procedures or outcomes, this will result in disappointment (Bembenek, Beike and Schroeder, 2007). Concerning unfair interpersonal treatment like a disrespectful treatment, people report feelings of anger, bitterness, enragement and revange (Bies and Tripp, 1996; Mikula et al., 1998).

CONCLUSION

Assimilation and Adaptation in Response to Emotion

Relating the self-concept, i.e. a person's definition of the own person physically, psychologically and socially in distinction from others to a scientific theory Epstein (1973) pointed out that like scientists we try to maintain the contents of our self-theory.

However, when the empirical evidence that threatens the validity and applicability of our theory becomes too overwhelming, we integrate the new findings and if need be even change basic postulates of our theory, to keep it functional. This suggests that the Popperian philosophy of science (Popper, 1935) can be applied to how we deal with self-knowledge: On the one hand we strive for verification of our self-theory, on the other hand we are led to falsify and thereby improve it to integrate new empirical evidence. This verification process is by and large fueled by the emotional quality of being confronted with information that affirms or threatens our idea of self-integrity.

Positive emotions validate our postulates and lead to a motivation to maintain or expand the existing cognitive and behavioral repertoire. Negative emotions signal that adaptation of the circumstances or assimilation of the own self-system is required to uphold efficient interaction with the social and physical environment.

In closing in this chapter we argue that people aim to maintain self-integrity and that different threats to the self like the perception of incompetence, inconsistency, restricted freedom, or unfair treatment are associated with negative emotions. These negative emotions help us to defend our self-integrity by signaling the need to adjust our cognitions or behavior. In contrast, positive emotions signal that our self-integrity is not on the brink of threat and therefore support the maintenance of an optimally adapted self.

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Chapter 13

MORAL EMOTIONS AND PROSOCIAL BEHAVIOUR: IT MAY BE TIME TO CHANGE OUR VIEW OF SHAME AND GUILT

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ABSTRACT

From the eighteenth century onwards, moral emotions are perceived as a specific group of emotions that generate prosocial behaviours. Yet, a stream of recent empirical research demonstrates that moral emotions may not always have positive interpersonal consequences. The current chapter focuses upon two exemplary moral emotions, namely shame and guilt, to question the definition of moral emotions. In emotion literature, shame has been understood as a negative feeling with negative interpersonal consequences such as withdrawal and avoidance behaviour. This negative view of shame seems in direct contrast with the view of shame as a moral emotion that motivates prosocial behaviour, and with empirical findings. I present a new view of shame, one in which this moral emotion is focused upon dealing with a damaged self. As a consequence, shame motivates performance and approach behaviours to restore this damaged self, and withdrawal or avoidance behaviour when it is too risky or too dangerous to restore the damaged self. The existing image of guilt in emotion literature is one of a negative emotion with very positive interpersonal consequences. On the contrary, with empirical studies I demonstrate that guilt can have many negative interpersonal consequences, such as promoting prosocial behaviour towards the victim of one's actions at the expense of others around, and withdrawal behaviour. Together, these findings reveal that, even for such exemplary moral emotions as shame and guilt, subsequent behaviours can vary from antisocial to prosocial. Therefore, there might be nothing intrinsically moral about moral emotions.

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INTRODUCTION

Moral emotions play a pivotal role in our daily lives. They can influence how we interact with other people (Haidt, 2003; Smith, 1759), and can have an impact on for example whether we listen to the advice of others, buy big birthday gifts for our friends and family, act socially towards strangers, or behave unethically in the workplace (e.g., De Hooge, 2012a, 2013; De Hooge, Verlegh, & Tzioti, 2013; Ketelaar & Au, 2003; Nelissen, Dijker, & De Vries, 2007). Indeed, a lot of theories and empirical research support the notion that moral emotions such as pride, gratitude, and guilt are the social mortars of human societies, motivating people to behave in socially good ways and to avoid "doing bad". However, the distinction between moral emotions and "normal" (or non-moral) emotions is not well-defined. For instance, non-moral emotions may motivate people in some situations to behave in socially appropriate ways, but this does not make them moral. Also, moral emotions may sometimes provoke unethical or anti-social behaviours, which suggests that these emotions should not be defined as moral emotions. The current chapter discusses the idea of moral emotions and aims to provide some provocative thoughts on the definition of moral emotions. I will start with the typical view on moral emotions, and reveal how these emotions are thought to motivate prosocial behaviours. Then, I will focus on the two most exemplary moral emotions: shame and guilt. Emotion literature on these specific emotions does not always converge with the view of shame and guilt as moral emotions, and recent empirical research shows that shame and guilt may motivate both prosocial and anti-social behaviours. Together, the research on these two examples suggests that our view and definition of moral emotions may need some reconsideration.

MORAL EMOTIONS

Already in 1759, Adam Smith talked about how moral sentiments play a role in people's lives. Smith explained that moral emotions motivate people to focus not only on their own well-being, but also on the well-being of other people and on how one's own behaviours can affect the well-being of others. Later on, multiple researchers theorized about moral emotions, and nowadays most researchers agree that moral emotions originate in social relationships and concern the evaluations of one's own and others' behaviours (Emde & Oppenheim, 1995; Tangney & Fischer, 1995). Moral emotions are linked to the interests or welfare of other people and of society as a whole (Haidt, 2003), and help us understand why people adhere to their moral standards (Tangney, Stuewig, & Mashek, 2007a). Examples of such emotions are not only the self-conscious emotions shame, guilt, embarrassment, and pride, but also elevation, gratitude, moral anger, remorse, regret, and compassion (Haidt, 2003; Zeelenberg, Breugelmans, & De Hooge, 2012).

Moral emotions thus motivate people to pay attention to others in their surroundings, but how do they motivate prosocial behaviour? Moral emotions are thought to provide the

motivational force – the power and energy – to do good and to avoid doing bad things (Kroll & Egan, 2004), such as engaging in risky, aggressive, delinquent, or criminal behaviours (Stuewig & Tangney, 2007). People are often positioned in social dilemmas, situations where they have to choose between immediate self-interest (also called defection) and long-term group-interest (also called cooperation or prosocial behaviour) (Camerer, 2003). A choice for defection rewards people in the short run, but is costly for the group and for people themselves in the long run. For example, keeping quiet about having received too much change at the cash register is beneficial for the receiver, but may damage the cashier or the shop in the long run. On the contrary, cooperation or prosocial behaviour is costly for people themselves in the short run, but beneficial for the group and people's self-interest in the long run. Examples of these cooperative choices are paying taxes, or doing what one's partner prefers on a Saturday night. People's selfishness usually seduces them to choose the attractive immediate reward at the expense of long-term benefits. Moral emotions may provide a solution to this problem by acting as commitment devices (Frank, 1988, 2004). A choice for the defection option elicits unpleasant moral emotions such as shame, embarrassment, or guilt. As a consequence, this behavioural alternative becomes less attractive. People are aware of the fact that they will feel bad about choosing the immediate self-interest option, and that by choosing the cooperative or prosocial option they will avoid feeling bad. In this way moral emotions commit people to the long-term group interest, and motivate prosocial behaviours.

Recently, empirical support has been found for the suggestion that moral emotions elicit cooperative or prosocial behaviours. For example, Ketelaar and Au (2003) studied the effects of the moral emotion guilt on cooperation in social dilemma situations. They found that after recalling guilt experiences or after making unfair offers in first rounds of a social dilemma game, people acted more prosocially in subsequent social dilemma situations. These findings were replicated by Nelissen et al. (2007), who studied the influences of fear and guilt on cooperation in a one-shot give-some dilemma game. They hypothesized and found the moral emotion guilt to increase cooperation, but the non-moral emotion fear to decrease cooperation. Also, Miettinen and Suetens (2008) measured the experience of guilt in a prisoner's dilemma experiment that allowed for pre-play communication, and revealed that guilt was experienced strongest when players had initially agreed to cooperate (thus, when people behaved immoral by both lying and choosing egoistically).

In sum, both theories and empirical findings on moral emotions seem to suggest that moral emotions motivate people to care about and act in accordance with their own long-term self-interest and the well-being of others. This should then especially be the case for the two most well-known moral emotions, shame and guilt, which are closely tied to ethics of community and divinity (Tangney et al., 2007a). Both shame and guilt are categorized as moral emotions because they arise when people fail to meet the right, appropriate, or desirable standards (H. B. Lewis, 1971; Wong & Tsai, 2007), and they "help keep us on the moral path by avoiding temptation, inhibiting aggression, and doing the right thing" (Stuewig & Tangney, 2007, p. 372). Yet, as will be revealed below, the picture for these two moral emotions may not be as clear-cut as suggested.

SHAME

Shame is a very negative feeling that arises after a moral or social transgression or defeat (Barrett, 1995; Keltner & Buswell, 1996). Losing an important sports match, not keeping one's word, or making mistakes at a work task are some examples in which most people would experience shame. After such a mistake or transgression, people experience threats to their self-image (Gruenewald, Dickerson, & Kemeny, 2007; Tangney et al., 2007a), and they have the feeling that their whole self is flawed (Izard, 1977; H. B. Lewis, 1971; Sabini & Silver, 1997; Tangney, Stuewig, & Mashek, 2007b). Ashamed people may feel worthless, powerless, inadequate, incompetent, and unworthy (Izard, 1991; M. Lewis, 1992; Tangney, 1999; Tangney et al., 2007b). In total, the experience may generate feelings of pain and discomfort (Gilbert, 1997; M. Lewis, 1992), and people may feel disgusted at themselves (Keltner & Harker, 1998).

When experiencing shame, people do not just suffer from a heightened self-awareness (Izard, 1991; Sabini & Silver, 1997). Shame also makes people more sensitive to the words and opinions of other people (Izard, 1991). For example, shame generates feelings of being small (Tangney, Miller, Flicker, & Barlow, 1996; Wicker, Payne, & Morgan, 1983) and inferior to others (Keltner & Harker, 1998; Nathanson, 1992), and it stimulates a focus on how one would appear to and be evaluated by others (Fessler, 2004; Gilbert, 2007; Tangney & Dearing, 2002). Thus, after losing an important sports match, shame may motivate people to worry about what team members and the audience of the sports match would think. Similarly, experiences of shame after making mistakes at work may motivate people to feel inferior to their colleagues. Shame also activates a bodily display that can easily be perceived by other people: ashamed people generally exhibit a gaze aversion, have their head tilted to the side or downwards, and show a slumped posture (Gilbert, 1997; Gruenewald et al., 2007; Keltner & Buswell, 1996; M. Lewis, 2003).

Finally, shame is thought to have very negative effects on intentions and behaviour. Shame would disrupt ongoing activities and motivate an inability to think clearly, to talk, or to act (Gilbert, 1997; M. Lewis, 1992). Also, there is an extensive amount of literature claiming that shame motivates people to withdraw and isolate themselves from other people (literally to hide or disappear), to reduce their social presence, and to inhibit social interactions (Barrett, 1995; Dickerson & Gruenewald, 2004; Ferguson & Stegge, 1995; Haidt, 2003; Keltner & Harker, 1998; H. B. Lewis, 1971; M. Lewis, 1992; Nathanson, 1992; Probyn, 2004; Tangney, 1991; Tangney & Dearing, 2002; Tangney et al., 2007b; Wong & Tsai, 2007; Wurmser, 1987). The function of these withdrawal behaviours would be showing appeasement: by withdrawing from social interactions, ashamed people signal to their group members that they are aware of their norm-violating behaviours and that they will conform to group standards (Gilbert, 1997; Izard, 1977; Mills, 2005; Nathanson, 1987).

Even though shame literature is fairly clear on the behavioural effects of shame, for at least two reasons the empirical support for these ideas is largely lacking. First, findings that suggest relationships between shame and withdrawal or avoidance behaviours primarily stem from research on chronic shame or shame-proneness (e.g., Gilbert, Pehl, & Allan, 1994; Harder, Cutler, & Rockart, 1992; Tangney, 1990; Thompson, Altmann, & Davidson, 2004). Shame-proneness is the general tendency of people to experience shame (Harder et al., 1992; Tangney, 1990). Research on the correlates of shame-proneness compellingly shows that

people who are likely to experience shame, or who experience shame very frequently, are also prone to feelings of inferiority, anxiety, lessened empathy, shyness, interpersonal distrust, and depression (Gilbert et al., 1994; Harder et al., 1992; Tangney and Dearing, 2002). Nevertheless, these findings of shame-proneness as a trait cannot be generalized to experiences of the emotion shame as a state. For instance, while shame-proneness has been empirically related to depression and social dysfunction, experiences of shame have only been related to feelings of inferiority and anger at self and others (Allan, Gilbert, & Goss, 1994). Also, Rüsch et al. (2007) showed that shame-proneness is negatively related to self-efficacy and empowerment, and positively related to psychopathology, while experiences of shame are merely related to state anxiety.

Second, the few existing studies on the effects of state experiences of shame report inconclusive evidence. For example, Scherer and Wallbott (1994) found that shame was characterized by stronger withdrawal tendencies compared to other emotions such as joy, anger, disgust, sadness, and fear, but Wicker et al. (1983) showed that shame experiences received neutral ratings on an item ranging from *wanting to hide* to *making restitutions*. Frijda, Kuipers, and Ter Schure (1989) even found that shame activated *both* a stronger desire to disappear from view and a stronger desire to undo the situation compared to guilt and regret. Finally, possible empirical evidence indicating that shame might motivate prosocial behaviour instead of withdrawal behaviour has sometimes been interpreted differently. For instance, after having found that children experiencing shame showed both a tendency to withdraw and a tendency to repair the situation, M. Lewis (1992) interpreted the withdrawal tendency as an indication of shame feelings and the repair tendency as an indication of guilt feelings. Past research has also found shame-experiencing participants to indicate a higher tendency to make amends than to withdraw (Tangney et al., 1996). Comparing these findings with participants remembering a guilt experience, however, lead the researchers to the conclusion that shame motivates more withdrawal behaviour than guilt.

In summary, even though there are many theories on the behavioural effects of shame, empirical evidence is scarce. While theories on moral emotions suggest that shame would motivate prosocial behaviour, shame theories suggest that shame would motivate withdrawal behaviours. What behaviours do actually follow from shame? And how can these different theories be reconciled? Recently, my co-authors and I developed a more elaborate view on shame that might provide an answer to these questions.

A NEW VIEW ON SHAME

Our approach is based on the assumption that emotions signal changes in people's environment on which people have to react (Frijda, 1986; Zeelenberg, Nelissen, Breugelmans, & Pieters, 2008; Zeelenberg & Pieters, 2006). In general, people have different goals that they want to reach in their lives. Whenever the environment changes with respect to one of these goals, emotions may arise that indicate whether the goal is approached or not. Because different changes need different reactions, specific emotions have been designed that indicate different changes and thus motivate different behaviours to deal with these changes.

Importantly, the behaviour that is activated by the emotion may address the change immediately (and solve the problem if there was a problem present), or may occur in

situations that are actually unrelated to the change or problem at hand (Lerner & Keltner, 2001; Zeelenberg et al., 2008; Zeelenberg & Pieters, 2006). Emotion influences on behaviour are labelled integral or endogenous when the activated behaviour addresses the change or problem immediately. In this situation, the emotion experience is relevant to the decision at hand, and the emotion is thus an integral part of the goal setting and goal striving process. For example, feelings of happiness after having discovered that one is pregnant may motivate people to buy baby clothes. Likewise, feelings of disgust when receiving a plate with terrible looking food in a restaurant may motivate people to avoid that restaurant in the future. But, the happiness over being pregnant may also influence people to donate more money to a charity, and the disgust may activate people to avoid seeing horror movies after the dinner. In these cases, the impact of the emotion is not directly related to the inducing situation or to the motivations that were relevant then. Such influences of emotions are labelled incidental or exogenous influences, and are influences that are not related to the current decision. They are external to the actual goal setting and goal striving process. By and large, emotion research has most often studied exogenous effects of emotions, because these show the fallibilities of humans. Indeed, when reviewing the empirical research that has been done on shame, one may discover that these studies mostly focus upon exogenous influences of shame. But to understand the functioning of emotions, and in our case to understand shame, one also needs to focus upon endogenous influences.

In the case of shame, the signal that is provided concerns a damaged self (H. B. Lewis, 1971). One of the fundamental goals that people have in life is gaining and keeping a positive self (Alexander & Knight, 1971; Schlenker & Leary, 1982). People compare themselves to others, make self-serving attributions, and react defensively or act assertively to achieve and maintain a positive self (Gibbons, 1990). When this positive self is threatened, feelings of shame arise that indicate that the self is threatened, and that something should be done about this problem. We suggest that shame first and foremost motivates behaviours that are aimed at restoring the positive self (De Hooge, Zeelenberg, & Breugelmans, 2010). These behaviours may be labelled approach behaviours, and the specific approach behaviour depends upon the situation. For example, losing a sports match may motivate people to restore their positive self by exercising harder, and making mistakes at work may motivate people to restore their positive self by accepting new and challenging work tasks. Indeed, our studies revealed that shame motivated participants to prefer and engage in new performance tasks, such as giving a second presentation when they previously had failed at giving a good presentation (De Hooge et al., 2010).

Yet, there are situations where trying to restore the self may be impossible or too risky. In those situations, ashamed people will prefer to protect their self from more possible damage, instead of trying to restore their self in ways that may hurt the self even more. For example, if there is no time to practice before the next sports match, or if there are only top-level work tasks to fulfil, people will probably not enter those performance situations in order to avoid further losses. In support of this view, our studies found shame to activate both a motive to restore the self, and a motive to protect the self (De Hooge et al., 2010). The activation of those two motives can change over time: the restore motive of shame is initially strongest, but when restoring the self appears to be too difficult or risky in a particular situation, the restore motive diminishes in strength and approach behaviours become less apparent (De Hooge, Zeelenberg, & Breugelmans, 2011). In contrast, protecting the self does not involve risky endeavors, which means that the protect motive does not depend on the situation.

Consequently, in situations where restoring the self is too risky or difficult, the relative strength of the restore and protect motives change, and withdrawal behaviours become more apparent.

What about prosocial behaviour and the view of shame as a moral emotion? As one might remember, shame not only makes people sensitive to what they think about themselves, but also more sensitive to the opinions and evaluations of other people (Izard, 1991). This suggests that when people experience shame, they not only may want to restore their own self, but also the view that others have of them (their social self) (De Hooge et al., 2010). One way to restore the social self is by acting prosocially towards others. But after a shame event not everybody may have a negative view of the actor. For instance, the audience of the lost sports match and team members may have a negative view of the actor, but people encountered in the train back home may not know anything about the shame event. Also, colleagues may have a negative evaluation after the failed work task, but one's family may not know about the failed work task and thus may not have a changed image. Therefore, only the evaluation that the audience of a shame event has needs to be improved. In other words, shame might motivate people to prefer to interact with others who know about the shame event, and to act prosocially towards those others (endogenous influences of shame). When ashamed people interact with others who know nothing about the shame event, no social selves need to be improved, and thus shame may not motivate prosocial behaviour (exogenous influences of shame). In support of this reasoning, we found that when participants experiencing shame could choose between being alone and being together with the audience of their shame events, they preferred being together with the audience above being alone (De Hooge, Breugelmans, & Zeelenberg, 2013). In addition, shame motivated prosocial behaviour in both social dilemma situations and on an everyday measure of cooperation only towards audiences of shame events (endogenous influences of shame) and not towards people who knew nothing about the shame event (exogenous influences of shame) (De Hooge, Breugelmans, & Zeelenberg, 2008). Further support for this view has recently been provided by studies on group-based shame feelings (Gausel, Leach, Vignoles, & Brown, 2012).

To summarize, the moral emotion shame seems to be completely focused upon dealing with a damaged self. It activates performance behaviours to restore this damaged self, and prosocial behaviour to restore the damaged image that the audience of a shame event may have. When these approach behaviours are too risky or impossible, shame converts to withdrawal behaviour to protect the damaged self from further possible harm. Together, these two shame motives (restoring the self and protecting the self) may explain how shame theories and moral emotion theories can have developed such seemingly opposing images of shame. Our view on shame also clarifies why this emotion, even though it is considered to be a moral emotion, not always activates prosocial behaviour and sometimes even motivates withdrawal behaviour.

GUILT

Just like shame, guilt may be one of the most well-known moral emotions. The view on guilt that exists in emotion literature is fairly straightforward, and seems to converge with the

view of guilt as a moral emotion. Guilt arises from a wrongdoing, such as a moral transgression, a violation of internal standards, or a betrayal of trust (Barrett, 1995; Izard, 1991). The two most common causes of guilt feelings are neglecting partners in close relationships, and failing to live up to commitments or obligations to others (Baumeister, Reis, & Delespaul, 1995). In all those cases, the actor has hurt another person (the victim) intentionally or unintentionally (Fessler & Haley, 2003; Izard, 1977; Tangney, 1991). For instance, forgetting the birthday of one's sister or cheating on one's partner are situations in which most people would experience guilt feelings. When experiencing guilt, people often feel tense, remorse, and regret for what they have done (Ferguson, Stegge, & Damhuis, 1991; H. B. Lewis, 1971; Tangney et al., 2007b), and they have the tendency to perceive themselves as being a bad person (H. B. Lewis, 1987). Actors are preoccupied with the bad behaviour, and experience a lot of cognitive rumination (Baumeister, Stillwell, & Heatherton, 1994; Izard, 1991). In contrast with shame, guilt thus focuses upon a specific behaviour and does not generalize to a negative image of the whole self (Barrett, 1995; H. B. Lewis, 1971; Tangney et al., 2007b).

Even though guilt is a very negative feeling, the consequences of this emotion are thought to be very positive. Guilt theories presume that this emotion stimulates better perspective taking and feelings of empathy (Leith & Baumeister, 1998; Tangney & Dearing, 2002). There is also a large amount of literature suggesting that guilt motivates people to make amends and repair their actions, to confess and apologize, and to improve their social relationships by staying actively engaged in social situations (Baumeister et al., 1994; Baumeister, Stillwell, & Heatherton, 1995; Barrett, 1995; Ferguson & Stegge, 1995; Fessler, 2007; Haidt, 2003; Izard, 1991; Keltner & Harker, 1998; H. B. Lewis, 1971; M. Lewis, 1992; Tangney et al., 2007b; Thrane, 1979; Wong & Tsai, 2007). The function of this reparative behaviour is to preserve and strengthen the hurt relationship with the victim in particular and social relationships in general, by making up the past transgression and by stimulating more appropriate behavior in the future (Amodio, Devine, & Harmon-Jones, 2007; Baumeister et al., 1994). On a more general level, guilt is thought to enforce the communal norms of mutual concern and nurturance by evoking feelings of caring and commitment (Leith & Baumeister, 1998). There is no known bodily expression for guilt.

The idea that guilt has positive consequences is also supported by empirical research. For example, guilt has been found to motivate a heightened sense of personal responsibility, compliance, and forgiveness, and to generate more constructive strategies to cope with anger (Freedman, Wallington, & Bless, 1967; McCullough, Worthington, & Rachal, 1997; Strelan, 2007; Tangney, Wagner, Fletcher, & Gramzow, 1992). In different studies, guilt has been related to reparative intentions (Schmader & Lickel, 2006; Tangney, 1993): guilt-experiencing participants have been found to report higher desires to make amends, to apologize, and to undo their actions than shame-experiencing participants (Roseman, Wiest, & Swartz, 1994; Tangney et al., 1996). Finally, as discussed previously, a recent series of studies on prosocial behavior in dyadic relationships has found guilt to motivate prosocial behavior in social dilemma games (De Hooge, Zeelenberg, & Breugelmans, 2007; Ketelaar & Au, 2003; Miettinen & Suetens, 2008; Nelissen et al., 2007). Importantly, cross-cultural studies have shown that these characteristics of guilt are quite similar across a wide array of cultures (Breugelmans & Poortinga, 2006; Fontaine et al., 2006), which is testimony to the universal moral character of guilt.

All in all, guilt appears to be a good and moral emotion. Both guilt theories and theories on guilt as a moral emotion suggest that guilt would have positive effects for the well-being of others, and empirical research indicates that guilt produces beneficial consequences for people in one's social surroundings. This image of guilt is nicely summarized as guilt being "an adaptive emotion, benefiting individuals and their relationships in a variety of ways" (Tangney et al., 2007b, p. 26). But can we consider guilt to be as positive and social as is currently assumed? My co-authors and I suggest that this view on guilt may be too positive, and that associated with its prosocial corollary a less prosocial side of guilt can be found.

A NEW VIEW ON GUILT

As stated previously, every emotion provides a specific signal that indicates the progress towards people's goals (Frijda, 1986; Zeelenberg et al., 2008). Usually, people experience guilt when they feel responsible for damage to a (close) relationship with another person (Baumeister et al., 1994). The central signal of guilt thus concerns the negative impact of people's actions on their relationship with a specific other (the victim) (H. B. Lewis, 1971). As a consequence, people are preoccupied with the damaged relationship, and they intend to repair the situation and make up with the victim as soon as possible. Every action undertaken to improve the relationship with the victim in such a dyadic situation (i.e., situations where the actor is together only with the victim) can be interpreted as prosocial behaviour because it displays "helping another person at some sacrifice to oneself" (Penner, Dovidio, Piliavin, & Schroeder, 2005, p. 369). Empirical research indeed reveals that when guilt-experiencing people are together only with the victim, they engage in behaviours that improve the outcomes of the victim at the expense of their own outcomes, such as giving money or buying presents (De Hooge 2013; De Hooge et al., 2007; Ketelaar & Au, 2003; Nelissen et al., 2007).

But in their daily lives, people are not just together with the victim. Instead, they often interact with multiple other people at the same time. For example, after having forgotten their sister's birthday, people will probably still interact with other family members. Also, after having cheated on their partner, people may continue talking to and mingling with colleagues and friends. Theories on moral emotions mostly assume that moral emotions such as guilt improve the well-being of others in people's social surroundings, suggesting that guilt would motivate prosocial behaviour towards all those others (Frank, 1988; 2004; Haidt, 2003; Smith, 1759). Likewise, guilt theories suggest that the function of guilt is to protect and enhance social relationships in general, which implies that this emotion would have positive consequences for everybody in the actor's surroundings (Baumeister et al., 1994; Tangney et al., 2007a, 2007b). In three different ways, my co-authors and I have recently shown that this is not the case.

First, guilt may have negative consequences for others in people's surroundings by motivating reparative behaviours towards the victim at the expense of others present (so-called third parties) (De Hooge, Nelissen, Breugelmans, & Zeelenberg, 2011). When people experience guilt, they are preoccupied with repairing the damage caused to the victim. As a result, guilt-experiencing people temporarily pay less attention to or even neglect the well-being of third parties. This can have important consequences for the well-being of those third parties: in situations where guilt-experiencing people interact with multiple others at the same

time, they will try to improve the well-being of the victim, at the expense of third parties present. Why would this occur? Behaviour can be considered in terms of limited resources such as time, energy, or money. When providing resources to one person, this comes at the expense of another, be it oneself or other people. While prosocial behaviour would mean at the expense of oneself (Penner et al., 2005), guilt motivates providing resources to the victim at the expense of third parties. For example, people may make up with their sister by spending more time with her; time that is created by canceling appointments with others. Or people may try to make amends with their deceived partner by putting more energy into that relationship and less energy into relationships with friends. Thus, guilt does not so much evoke a disregard for people's personal well-being (as is often assumed), but rather a neglect of the well-being of non-victimized others. We tested this theory in situations where guilt-experiencing participants interacted with two different partners, the victim and a non-victim, at the same time. Participants decided how to divide resources between themselves, the victim, and the non-victim, without the victim or the non-victim having any influence on the division. In line with our reasoning, guilt motivated participants to spend more resources (such as money or time) on the victim, but less resources on non-victims compared to a neutral emotional state and compared to shame. Interestingly, guilt-experiencing participants did not differ from participants in neutral states in how much resources they kept for themselves (De Hooge et al., 2011).

Second, guilt may have negative consequences for social relationships by motivating withdrawal behaviour (De Hooge et al., 2013). According to most guilt theories, one of the positive consequences of guilt is that this emotion would motivate people to interact with others (Baumeister et al., 1994, 1995; Tangney & Dearing, 2002; Tangney et al., 2007a;), and would "keep people constructively engaged in the interpersonal situation at hand" (Tangney, 1995, p. 119). However, one may question whether this would really be the case. Up until now, empirical research on guilt has focused upon how guilt-feeling people behave when they find themselves within a social situation. This research has shown that guilt can motivate prosocial behaviour towards the victim, sometimes with negative consequences for others (De Hooge et al., 2007, 2011; Ketelaar & Au, 2003). Yet in daily life people often can choose whether they prefer to enter a social situation in the first place. Following the reasoning that guilt motivates a preoccupation with making amends with the victim, it would only seem logical to suggest that guilt motivates a preference for being together with the victim (in order to create chances to make up), but not a preference for being together with non-victims (in order to solve the problem with the victim before entering new situations in which new problems might arise). Indeed, in multiple experiments we found that guilt-experiencing participants preferred being together with the victim when given a choice between being together with the victim and being alone. In contrast, when given a choice between being together with a non-victim and being alone, the majority of guilt-experiencing participants preferred being alone (De Hooge et al., 2013).

Finally, guilt may even have negative consequences for the well-being of victims, because this emotion is less relationship-oriented than originally thought (De Hooge, 2012b). Guilt signals that the relationship with the victim has been hurt, and that actions should be undertaken to change the relationship with the victim. Thus far, we have assumed that these actions should be focused upon the well-being of the victim (e.g., Baumeister et al., 1994, 1995; Izard, 1977; Tangney et al., 2007a), but this might not necessarily be the case. In fact, I claim that *any* reparative action that is aimed at solving the harm done to the victim might

reduce guilt feelings, even when these changes for example do not improve the well-being of the victim, or are not undertaken by the actor. For instance, in daily life third parties may undertake reparative actions as well: the actor's mother may buy a more expensive birthday present for the actor's sister than she would normally do in order to address the forgotten birthday. Or friends may spend a lot of time with the partner when they find out that the partner has been cheated upon. My hypothesis is that such reparative actions undertaken by third parties may reduce actors' guilt feelings and reparative tendencies (De Hooge, 2012b). After all, reparative actions undertaken by third parties are also aimed at fulfilling guilt's signal of changing the guilt-causing situation. In order to test this hypothesis, I ran two studies that focus upon guilt feelings, repair intentions, and prosocial behaviour after third parties have undertaken reparative actions. If the hypothesis is correct, then reparative actions of a third party would reduce participants' guilt feelings, reparative intentions, and prosocial behavior compared to a guilt situation in which no reparation by a third party had taken place.

Study 1

Method. Thirty-three students from Erasmus University (15 males, M_{age} = 22.28) were randomly assigned to the No-repair or the Other-repair condition. All participants read the following scenario:

> Imagine together with your friend Bart you take a course, for which you have to write a thesis. Unfortunately, due to many events you are not able to write the thesis on time. Bart does finish the thesis on time, but gets ill two days before the deadline and asks you to hand in the thesis for him. You agree, and then you realize that this is your final chance: you can copy Bart's thesis. You make some textual changes, and hand in both Bart's thesis and your (copied) thesis. A couple of weeks later the teacher contacts you and Bart. He has noticed the similarities in your theses and accuses both of you of plagiarism. As a consequence, you and Bart will be expelled from the course.

As an emotion manipulation check, participants then indicated (0 = not at all, 10 = very strongly) how much guilt, pride, anger, shame, happiness, regret, relief, and fear they would feel in the described situation. In the Other-repair condition, participants then read: "To discuss the matter, you, Bart, and the teacher have a meeting. At the meeting, a friend of you both, Tim, is also present. Tim explains that he has seen you copying Bart's thesis without Bart's knowledge. The teacher then decides to drop the charges for Bart. Bart is evaluated as if nothing has happened, and he passes the course." They also answered the emotion manipulation checks again.

Next, all participants read: "A week after the event with the thesis it is the birthday of Bart." As a dependent measure for prosocial behaviour, participants indicated how many euros they would spend on the birthday of Bart. In addition, to measure the motivation underlying their prosocial behaviour, participants indicated for multiple offered reasons (1 = not at all, 7 = completely) to what degree it reflected their reason to buy that present for Bart. These motivations included three items, namely "I wanted to make up with Bart", "I wanted to improve the situation for Bart", and "I wanted to apologize in that way to Bart", to measure

Repair motivation (α = .90). Finally, participants indicated with the emotion manipulation check how they would feel after having given the present.

Table 1. Guilt feelings, Repair motivation, and Prosocial behaviour Means (and Standard Deviations) as a Function of Repair in Study 1

	Repair condition		
	No-repair *M* (*SD*)		Other-repair *M* (*SD*)
Guilt feelings			
before repair	8.53 (2.38)	=	7.63 (3.52)
after repair			5.19 (4.20)
after birthday	7.24 (2.33)	>	3.94 (3.61)
Repair motivation	5.18 (1.39)	>	3.53 (1.87)
Prosocial behaviour	34.12 (28.24)	>	16.56 (11.65)

Note. Guilt feelings could range from 0 (not at all) to 10 (very strongly), motivation scores could range from 1 (not at all) to 7 (completely). Prosocial behaviour reflected the amount in euros spent on the birthday present. There were no significant differences between means separated by an "=" mark, with *t* < 1. Means separated by a ">" or "<" mark differed significantly with all *t*s > 2.46, all *p*s < .02.

Results - Guilt feelings. I hypothesized that repair done by a third party would decrease guilt feelings, repair motivations, and prosocial behaviour compared to a situation without repair done by a third party (see Table 1 for results). Directly after the transgression, participants reported more guilt (*M* = 8.09, *SD* = 2.97) than the other emotions, all *t*s(32) > 4.70, all *p*s < .01. There were no differences in reported guilt between the two conditions at this point, *t*(31) < 1. Supporting the hypotheses, after receiving information about the repair actions, guilt feelings decreased in the Other-repair condition, *t*(15) = 2.32, *p* = .04. After Bart's birthday the Repair condition also differed from the No-repair condition in guilt: No-repair participants reported more guilt feelings than Other-repair participants, *t*(31) = 3.14, *p* < .01.

Results - Repair motivation and Prosocial behaviour. Tim's repair behaviour influenced repair motivations and prosocial behaviour. Other-repair participants were less motivated to repair than No-repair participants, *t*(31) = 2.88, *p* < .01. Also, Other-repair participants spent less on Bart's birthday than No-repair participants, *t*(31) = 2.31, *p* = .03. These findings suggest that behaviours by third parties may influence one's guilt feelings, reparative intentions, and prosocial behaviour. Yet, one may question whether the findings are dependent on the scenario that was used in this study. Therefore, I conducted a second study that made use of a different scenario, and that included a control condition.

Study 2

Method. Seventy six students from Erasmus University (32 males, M_{age} = 21.24) were randomly assigned to the conditions of a 2 (Transgression: Transgression vs. Control) × 2 (Repair: No-repair vs. Other-repair) between-subjects design with Repair motivation and Prosocial behaviour as dependent variables. Participants in the Transgression condition read:

Imagine you are in a hurry because you want to get a special offer at a shop just before closing time. You do not have a means of transportation but you know that your friend Robert has a bicycle. This bicycle is very special to him because it is the last present given to him by his grandmother before she died. Nevertheless, he lets you use the bicycle. You cycle to the shop and get the special offer. When you leave the shop you find out that the bicycle is stolen; you forgot to lock it. You inform Robert about this and he is very sad.

Participants in the Control conditions read: after leaving the shop "you give the bicycle back to Robert. The following day you hear that the bicycle of Robert is stolen: he loaned it to Dylan who forgot to lock it. Robert is very sad about this". Mind that the outcomes in the Transgression and the Control conditions were exactly the same, but that the person responsible for these outcomes differed. Participants then answered the emotion manipulation check of Study 1.

In the Other-repair condition, participants next read: "Afterwards your friend, Tim, hears about the event. He works in a bicycle shed and there recognizes the bicycle of Robert, which he offers to Robert. Robert is glad that he got his bicycle back." They then answered the emotion manipulation checks. Subsequently, all participants answered the birthday scenario, the motivation items, and the emotion manipulation check of Study 1. In the Transgression conditions, participants also indicated whether they thought, after Robert's birthday, that everything was solved and whether they had the feeling that they had made up for everything (0 = not at all, 10 = very strongly).

Table 2. Guilt feelings, Repair motivation, and Prosocial behaviour Means (and Standard Deviations) as a Function of Transgression and Repair in Study 2

| | Transgression condition | | | |
| | Transgression | | Control | |
	No-repair M (SD)	Other-repair M (SD)	No-repair M (SD)	Other-repair M (SD)
Guilt feelings				
before repair	8.78 (2.39) =	8.84 (1.21)	0.58 (1.92) =	1.80 (3.37)
after repair		4.58 (2.91)		0.30 (1.13)
After birthday	5.61 (3.13) >	2.00 (2.57)	0.05 (0.23) =	0.15 (0.49)
Repair motivation	4.04 (1.93) >	2.11 (1.71)	1.70 (0.94) =	1.83 (1.52)
Prosocial behaviour	57.06 (60.98) >	19.73 (13.59)	18.42 (9.13) =	20.28 (25.98)
Thoughts after behaviour				
Think everything resolved	2.00 (1.09) <	4.00 (2.08)		
Feel everything made up for	2.50 (1.34) <	4.58 (2.01)		

Note. (Guilt) feelings and thoughts could range from 0 (not at all) to 10 (very strongly), motivation scores could range from 1 (not at all) to 7 (completely), and Prosocial behaviour was measured in euros. There were no significant differences between means separated by an "=" mark, with all ts < 1.63, all ps > .11, and the means separated by a ">" or "<" mark differed significantly with all ts > 2.62, all ps < .02.

Results - Guilt feelings. I hypothesized that the repair done by a third party would decrease guilt feelings, repair motivations, and prosocial behaviour (see Table 2 for results). The findings supported the hypotheses. Directly after the transgression, participants in the

Transgression conditions felt more guilt than participants in the Control conditions, $t(74) =$ 13.91, $p < .01$, and felt more guilt than other emotions, all $ts(36) > 3.20$, all $ps < .01$. There was no difference in reported guilt between the two transgression conditions at this point, $t(72) < 1$. However, after receiving information on Tim's repair behaviour, guilt decreased in the Other-repair transgression condition, $t(18) = 6.62$, $p < .01$. After Robert's birthday, Other-repair transgression participants reported less guilt than No-repair transgression participants, $(72) = 5.42$, $p < .01$. There were no differences between Control conditions on guilt at all three moments, all $ts(72) < 1.61$, all $ps > .11$.

Results - Repair motivation and Prosocial behaviour. Importantly, Tim's repair behaviour influenced repair motivations and prosocial behaviour. A 2 (Transgression: Transgression vs. Control) × 2 (Repair: No-repair vs. Other-repair) ANOVA with Repair motivation as dependent variable showed main effects of Transgression, $F(1, 72) = 13.22$, $p < .01$, $\eta_p^2 = .16$, and of Repair, $F(1, 72) = 6.30$, $p = .01$, $\eta_p^2 = .08$. More importantly, the results showed a two-way interaction, $F(1, 72) = 8.28$, $p < .01$, $\eta_p^2 = .10$. Replicating previous guilt research, No-repair transgression participants had a higher repair motivation than No-repair control participants, $t(72) = 4.55$, $p < .01$. However, Other-repair transgression participants had a lower repair motivation than No-repair transgression participants, $t(72) = 3.76$, $p < .01$, and did not differ from Other-repair control participants, $t(72) < 1$. There was no difference between control conditions, $t(72) < 1$.

Similar results were found for prosocial behaviour: A 2 (Transgression: Transgression vs. Control) × 2 (Repair: No-repair vs. Other-repair) ANOVA with Prosocial behaviour as dependent variable showed main effects of Transgression, $F(1, 72) = 6.13$, $p = .02$, $\eta_p^2 = .08$, and of Repair, $F(1, 72) = 5.31$, $p = .02$, $\eta_p^2 = .07$. More importantly, the results showed a two-way interaction, $F(1, 72) = 6.48$, $p = .01$, $\eta_p^2 = .08$. No-repair transgression participants spent more on the birthday than No-repair control participants, $t(72) = 3.51$, $p < .01$. However, Other-repair transgression participants spent less than No-repair transgression participants, $t(72) = 3.39$, $p < .01$, and did not differ from Other-repair control participants, $t(72) < 1$. There was no difference between control conditions, $t(72) < 1$. Finally, participants in the transgression conditions also differed on whether they thought everything was solved after the birthday and whether they had the feeling that they had made up for everything. Other-repair transgression participants thought more that everything was solved than No-repair transgression participants, $t(72) = 3.41$, $p < .01$, and had more the feeling that they had made up for everything, $t(72) = 3.75$, $p < .01$.

In summary, the findings of these two studies suggest that guilt feelings, repair intentions, and prosocial behaviour can be influenced by actions of other people. As soon as another person undertakes some reparative actions that might address the guilt-causing situation, people feel less guilt, and have a lower tendency to act prosocially towards the victim. This suggests that guilt, or the regulation of one's guilt feelings, is not focused upon the well-being of the victim but rather upon the reparative actions that have been undertaken. Together with the recent findings that guilt may promote prosocial behaviour towards the victim at the expense of others around (De Hooge et al., 2011), and that guilt may promote withdrawal behaviour (De Hooge et al., 2013), these results suggest that guilt is not such a positive and moral emotion as suggested by guilt theories or by moral emotion theories.

CONCLUSION

Shame and guilt play a central role in people's lives, influencing how people feel, what they think, and how they behave. In addition, the present chapter shows us that shame and guilt can influence how people deal with their social relationships. These behavioural consequences, however, might differ from existing views on shame and guilt. After reviewing all recent research on shame and guilt, it appears that it might be time to move towards a new view of shame and of guilt. For shame, the view of it being a very ugly emotion might change into something more positive. It now appears that the negative feelings that accompany this emotion motivate people to undertake actions to restore their damaged self. As a consequence, shame can activate performance behaviours, motivate people to enter social situations, and stimulate people to act prosocially towards the audience of a shame event (De Hooge et al., 2008, 2010, 2011, 2013). This more positive view is more in line with the idea of shame as a moral emotion, and helps us understand the function of this emotion. For guilt, the view of it being a very adaptive emotion with positive consequences might change into something more negative or more realistic. We now know that guilt is less focused upon the well-being of others in general and of the victim in particular. As a result, guilt feelings can motivate prosocial behaviour towards the victim at the expense of others around, can stimulate people to avoid new social situations, and can be regulated by reparative actions of others (De Hooge, 2012b; De Hooge et al., 2011, 2013). This more negative view suggests that the exemplary moral emotion does not always motivate prosocial behaviour, and might generate a discussion concerning the definition of moral emotions.

The present chapter not only has implications for the view on shame and guilt. It also reveals that a distinction between exogenous and endogenous influences of emotions is essential in emotion research. Previous research has made this distinction theoretically (Zeelenberg & Pieters, 2006), but most scholars do not take this distinction into account when empirically studying the effects of emotions. Accordingly, they may find different or even contrasting results depending on the used methods, and subsequently may draw incorrect conclusions about the effects, goal or function of an emotion.

Furthermore, the current chapter shows us that emotions can best be studied in multiple-person situations. Surprisingly, most, if not all, research concerning the behavioural effects of emotions has focused upon emotions in intrapersonal or dyadic settings (e.g., De Hooge et al., 2007; Ketelaar & Au, 2003; Lerner & Keltner, 2001; Nelissen et al., 2007; Van Kleef, De Dreu, & Manstead, 2004). While research on intrapersonal and dyadic situations provides useful insights into the understanding of emotions, it might not necessarily capture a complete picture of how emotions relate to (prosocial) behaviour. Using the emotion guilt as a case in point, the present chapter revealed that a wider range of behavioural responses to emotions may be uncovered if researchers start looking beyond dyadic interactions to multiple-person interactions. In contrast with the view of guilt as an adaptive emotion with many positive consequences (Baumeister et al., 1994; Haidt, 2003; Ketelaar & Au, 2003; Smith, 1759; Tangney et al., 2007a), three different lines of research conducted in multiple-person situations demonstrated that guilt might be less moral or prosocial than is currently assumed. On a more general level, the three lines of research show that a focus on multiple-person situations in emotion research might have important implications for the understanding of the role of emotions in social behaviour.

More generally, I believe that the study of guilt in multiple-person situations can also expand social psychological research. Social psychological concepts such as negotiations, social influence, attitudes, nonverbal communication, and social comparisons are often studied in situations where the participant is alone, interacts with one other person, or interacts with a group as a whole. These settings are also used in related research areas such as consumer behaviour, advertising, or communication research (e.g., Luce, 1998; O'Guinn & Faber, 1989; Van Swol, 2009). The studies highlight for example if and when people listen to advice (from family members or salespeople), donate money to charities, help others in need, or indulge in eating delights. Yet, these decisions and behaviours nearly constantly occur in the presence of multiple other people, and it might be the case that the presence and behaviours of those others also exert an influence. Future research is needed to uncover the role of third parties in these social psychological concepts.

The finding that behaviours by other parties may influence people's feelings and social behaviours brings about broad practical implications. For example, advertisers, governments, and companies often make use of emotion appeals and of Cialdini's social proof principle exclaiming that many others (consumers, donors, neighbours) have already engaged in the social behaviour. Similarly to third parties repairing transgressions in guilt situations, perceiving other people acting in for example charity friendly or environmentally friendly behaviours might convey the message that the actor's own reparative actions are no longer necessary. Thus, researchers and marketers should be more careful in their attempts to motivate people towards such social behaviours.

The final question that can be raised after reviewing the literature on shame and guilt is: to what degree are moral emotions really moral? When can emotions be defined as moral emotions, and when should a moral emotion no longer be perceived as a moral emotion? In my opinion, the central question should not focus upon the division of emotions into moral emotions and non-moral emotions, but should address the question whether moral emotions are of a special kind or not. Do moral emotions require special theory to understand them, or do they behave like any other emotion that can be understood with general emotion theory? The review of two moral emotions, namely shame and guilt, revealed that even these two exemplary moral emotions motivate prosocial behaviour in some situations, and anti-social or immoral behaviour in other situations. It was possible to understand these emotions and predict their influences on behaviour by applying general emotion theory. This seems to suggest that there might be nothing intrinsically moral about moral emotions. In other words, there might be nothing in an emotion itself that can qualify it as moral, but rather the behavioural consequences of emotions should be qualified as moral or immoral. And for every emotion, I can state: a thorough understanding of the central signal and the motivational function of an emotion is necessary to be able to specify which particular moral behaviours will be observed.

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Chapter 14

"EMOTIONAL" ROBOTS AND AGENTS – IMPLEMENTATION OF EMOTIONS IN ARTIFICIAL ENTITIES

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ABSTRACT

The chapter summarizes research on emotions in the context of robot and virtual agent development. First, several motives and reasons for the implementation of emotions in artificial entities are presented. Then, a choice of robot and agent systems that model emotion based on various theories and assumptions are described. However, the common practice to implement emotions is also critically reflected against the background of theories on the relation of emotions and facial expressions. Based on this, alternative approaches are presented which implement a theory of mind module instead of emotions. In a second part, humans' emotional reactions to systems with implemented emotions and corresponding facial expressions are described.

INTRODUCTION

Virtual agents and robots have been suggested to be able to serve as helpful assistants and companions for various areas of life (Cassell et al., 2001). Indeed, we nowadays observe that virtual agents are used to embody navigation systems, are presented in information kiosks in institutions and universities and that chat-bots are used on e-commerce sites in the Internet (e.g. Anna, Ikea's automated online assistant). Robots, for instance, can be found in households where they assist as vacuum cleaners and even in homes for the elderly animal shaped robots are tested as potential companions. Embodied conversational agents and interactive robots are expected to on the one hand yield human computer interaction more natural and intuitive and on the other hand to "manipulate" (in a positive sense) the users'

moods and emotions - e.g. by calming them down, elicit positive emotions or alerting the user when necessary. Jeffery (2001) even states that in future, computers and robots will serve as life-long companions: "In the future, every human could have a computer that would act as her personal tutor throughout her life. The computer would help the infant learn to read and write and to count and perform arithmetics. It would provide the child with instruction in science and mathematics, history and geography, language and literature, music and art. It would teach the student the fundamentals of her chosen subjects, and, as she learns ever more about her subjects, it would learn with her. Throughout her life, whether at university, at work or in leisure time, the computer would act as the human's research assistant, sifting through the information available on the subjects that interest her and providing her with whatever it considers most important. ... A computer could be provided with such emotions that it would want nothing more than to discover knowledge for itself and communicate that knowledge to its human companion. It could even be provided with emotions compatible with those of its human companion, and, in particular, with curiosity for those subjects that interest her" (pp. 234f.).

Although this vision predicts that artificial entities will have emotions and will need them in order to be able to interact with its human user, scientific literature and films illustrate examples of nearly perfectly human-like robots who live in a social world full of emotions that they do not understand (see the replicants in Blade Runner, Sonny in "I, robot", David in A.I., Lt. Commander Data in "Star Trek"). In real life, researchers have long promoted the notion that an artificial entity which is developed to interact with human beings has to have emotions in order to be able to interact and cooperate properly with humans. A pioneer in this area is Rosalind Picard who suggests that implementing emotions in machines will increase the understanding between them and render the computer/machine able to act in a way that the user is not frustrated (Picard, 1997; 2002). Her main goal is to use an emotion system to make the artificial entity aware of human emotions in order to be able to show adequate reactions, she is however, sceptical whether the computer has to experience and "feel" the emotions in order to be able to use them in a beneficial way. Therefore she summarizes her goal as follows: "I am trying to build emotionally intelligent systems, and I will see how far I can go without giving them emotions" (Picard, 2002, p. 233). Similarly, numerous researchers try to implement emotion systems in robots and agents to increase their "believability". Also, other advantages are listed: Leite et al. (2008) summarize that emotions are useful for human robot interaction because they facilitate the interaction, provide feedback to the user (e.g. indicating the robot's internal state), and can function as a control mechanism that drives the robot's behavior and reflects how it is affected by different variables over time. Breazeal and Brooks (2005) even more broadly state that if a robot has emotion-inspired abilities, the following advantages can be expected: intelligent behavior in a complex, unpredictable environment, sense and recognize affect and emotion, express affect and internal state in familiar human terms, respond to humans with social adaptedness.

In the following, we will first more systematically describe reasons and motives for implementing emotions in artificial agents. Then, we will describe several computational models of emotion and the robotic or agent system that they were implemented in. In a conclusion it will be discussed whether it is reasonable to implement emotions when the ultimate goal is to improve the interaction between humans and machines. Subsequently, alternatives are presented which suggest implementing a theory of mind instead of emotions.

In a second part, we will present the results of several studies which analyze the emotional effects of a robot's facial expressions.

WHY IMPLEMENTING EMOTIONS?

The implementation of emotions in artificial entities started when scholars discussed the failure of traditional artificial intelligence (AI) research in the sense of the implementation of cognition. First attempts to implement emotions stem from the research realm of the so called "nouvelle AI" or behavior based AI, which propagates situated interaction with the environment (Brooks, 1986; 1991, vgl. Petta, 2002; Pfeifer, 1996; Fong, Nourbakhsh & Dautenhahn, 2002). As motives for the implementation of emotions Wehrle (1998) distinguishes a) the science perspective, b) the engineering perspective and c) the human-computer-interaction (HCI) perspective.

a) Science Perspective: Sciences (psychology, neuroscience, cognitive science, biology) use the implementation to formalize, operationalize, and test theories. For example Cañamero (2002a) states: "We believe […] that expressive robots can be very valuable tools to help human emotion researchers test and compare their theories, carry out experiments, and in general think in different ways about issues relevant to emotion and emotional/social interactions" (p. 75). Especially Sloman (2002) who propagates the usefulness of implementing emotions for the goal of gaining knowledge on the nature of emotions stresses that the three approaches have to be differentiated: "There are some people who built architectures, and there's this box labeled "emotions". (…) I think anyone who puts in a box labeled "emotions" may be doing something useful for the engineering goals, but he has totally got it wrong as regards the modeling of human emotional systems" (p. 142). A comprehensive overview on computational models of emotions and their impact on emotion psychology is given by Ruebenstrunk (1998).

b) Most robot researchers will probably subscribe to the *engineering perspective* which focusses on the improvement of the system's performance: "It seems likely that here the motive behind modeling an emotional agent is an indirect one. The engineer is primarily interested in constructing a useful artifact. In adopting some real or hypothesized natural principles the engineer hopes to increase the system performance in terms of task achievement and costs. The extent to which the principles that inspired the system eventually get into the system or the form and adequacy of the translation is of no significance" (Wehrle, 1998, p. 1). In this sense, suggestions from emotion research are used to lend autonomy to the systems: "Emotions – at least a subset of them – are one of the mechanisms found in biological agents to better deal with such environments, enhancing their autonomy and adaptation" (Cañamero, 2002b, p. 115). The approach is biomimetic in that it "takes inspiration from mechanisms existing in natural systems" (p. 115). Illustrating the "engineering" versus the "scientific" perspective Pfeifer (1996) describes that a robot that has to pick up ping pong balls is perfect in the sense of the engineering perspective when it draws in all balls like a giant vacuum cleaner. Seen from the "cognitive science" perspective the robot is only useful when it recognizes the balls and carefully picks them up.

c) Wehrle (1998) refers to the *HCI perspective* as an applied area in which interaction plays an important role: "Modeling emotions in a system that interacts with humans is a

special case of engineering where human behavior and affectivity plays a significant role. (...) In adopting some real or hypothesized natural principles the engineer hopes to increase the system performance in terms of acceptance and usability with respect to the user" (p. 2). A natural modeling is not seen as necessary: "Again, it seems likely that such a system does not necessarily need to represent emotion constructs in any form to generate the desired behavior" (p. 2). Researchers who implement emotions motivated by the HCI perspective use them to guarantee consistency and believability and to enable a better understanding of the human user by the robot (Ortony, 2002; Picard, 2002). Picard (2002) states as ultimate goal of the implementations: "making machines less frustrating to interact with". Breazeal (2004) postulates that emotions are not only helpful for the robot (as the engineering perspective suggests) but also for the human user: "This helps the person form a useful mental model for the robot, making the robot's behavior more understandable and predictable. (…) It also makes the interaction more intuitive, natural and enjoyable for the person, and sustains their interest in the encounter" (p. 8).

While with regard to robots different motives for implementing emotions can be found, the implementation of emotions in agents is first and foremost motivated by the HCI perspective. Here, Marsella and Gratch (2003, p.1) argue: "It is our view that emotion plays a central role in pulling all the agent's capabilities together into a believable virtual human. Thus the agent's planning, natural language generation, physical behavior, etc. must be consistent with its emotional state". Similarly, De Rosis, de Carolis, Carofiglio und Pizzutilo (2004) state: "To behave believably, our agent should show some form of emotional intelligence. This implies, according to Picard (...) recognizing and expressing emotions, regulating them, and utilizing them to optimize the dialog" (p. 273). Indeed, unlike for robots, the engineering perspective is not applicable for agents: Since agents do not have a physical embodiment and therefore do not interact with their environment via sensory input and motoric output, emotions cannot be directly functional in the sense they are for humans or robots.

EMOTIONAL SYSTEMS AND SPECIFIC IMPLEMENTATIONS

By now, numerous robot and agent systems have been presented that include emotional modeling. A comprehensive overview is given by Marsella, Gratch, and Petta (2010). They distinguish between appraisal models (models by Frijda; Ortony, Clore and Collins; Lazarus; Scherer), dimensional models (Mehrabian), anatomical models (Damasio; LeDoux) and rational models (Sloman). Most computational models used one or more appraisal theories. From the 16 computational models the authors describe seven will be mentioned here. The authors suggest that appraisal theories are most popular since they focus on the connection between emotion and cognition. Emotions are seen to develop from "patterns of individual judgment concerning the relationship between events and an individual's beliefs, desires and intentions" (p. 9).

One of the first systems that were presented is the Affective Reasoner (AR) by Elliott (1997; Elliott & Brzezinski, 1998). It largely relies on the model by Ortony, Clore, and Collins (1988) that is especially popular with artificial agent researchers and has been termed "OCC-Model". The popularity might be due to the explicit reference to AI research: "we

would like to lay the foundation for a computationally tractable model of emotion. In other words, we would like an account of emotion that could in principle be used in an Artificial Intelligence (AI) system that would, for example, be able to reason about emotion" (p. 2). Elliott presents schematic faces which can speak, support emotional displays with music, and use speech recognition. Each agent has individual goals, principles, preferences, and moods so that individual appraisal is possible. Also, reasoning about the interlocutor's emotional state is possible. Elliott (2002) states that he is not interested in using the implementation to learn something on the nature of emotions or human beings but to use emotional models to achieve more "elegance" and consistency in the agent's behavior. Elliott's model has been used in the pedagogical agent Steve (Rickel & Johnson, 1999; 2000) and the agents Cosmo and Herman the bug (Lester, Towns, & Fitzgerald, 1999) which should enable "a new form of pedagogical agent that is sensitive to students' emotive state and can reason about affective aspects of problem-solving contexts" (Elliott, Rickel, & Lester, 1999, p. 1). Especially the ability to reason about the other's emotions is seen as important in pedagogical contexts: "A pedagogical agent must be sensitive to the student's emotions. For example, the agent must recognize a student's frustration so as to intervene with assistance and encouragement before the student loses interest" (Elliott, Rickel, & Lester, 1997, p. 1).

One of the most elaborated computational models has been developed by Gratch and Marsella (2001, 2004; Marsella & Gratch, 2009) over several years. The EMA system was based on the system Emile (Gratch, 2000) which models appraisal processes of emerging emotions and relies on the theory of Lazarus (1991; Smith & Lazarus, 1990), and the IPD system (Marsella et al., 2000) which models the influence of emotions on behavior (i.e. expressions). It models the relation of cognition and emotion and the emergence of emotions depending on goals. For each goal a "construal frame" is developed which tests whether the goal is reached: "Each frame describes the appraised situation in terms of a number of specific features, including the point of view from which the appraisal is formed, the desirability of the situation, whether the situation has come to pass or is only a possibility and whether the situation merits praise or blame" (Gratch & Marsella, 2001, p.279). The model is developed to explain both fast, automatic emotion responses and slower, deliberative responses (Marsella & Gratch, 2009). Based on the fact that agents have beliefs, desires, plans, and intentions the authors specify which appraisal patterns (in terms of values for expectedness, likelihood, desirability, controllability, and causal attribution of a specific event) lead to which emotion (see table 1).

Table 1. Mapping from appraisal pattern to emotion label (by Marsella & Gratch, 2009)

Appraisal pattern for proposition "p"	Emotion
Expectedness(self, p) = low	Surprise
Desirability(self, p) > 0 & Likelihood(self, p) < 1.0	Hope
Desirability(self, p) > 0 & Likelihood(self, p) = 1.0	Joy
Desirability(self, p) < 0 & Likelihood(self, p) < 1.0	Fear
Desirability(self, p) < 0 & Likelihood(self, p) = 1.0	Sadness
Desirability(self, p) < 0 & Causal attribution(self, p)=other & Controllability(self, p) ≠ low	Anger
Desirability(other) < 0, causal attribution(p)=self	Guilt

Additionally, coping strategies are considered within an appraisal-coping-reappraisal loop (Marsella & Gratch, 2003; 2009). Taken all together, the authors present a comprehensive approach which should enable agents to show reasonable and believable behavior: "To effectively convey nonverbal behavior, emotion, and personality, they must draw heavily on psychology and communication. It is our view that emotion plays a central role in pulling all the agent's capabilities together into a believable virtual human. Thus the agent's planning, natural language generation, physical behavior, etc. must be consistent with its emotional state" (Gratch & Marsella, 2004; p. 1).

Another sophisticated approach which is suggested to be beneficial for both agent and robot systems is presented by Petta (2002). He focuses on the functional aspect of emotions (Keltner & Gross, 1999) and stresses that emotions can be seen as the true steering force for human beings: "One aspect of emotions that is of particular interest to us as agent engineers is the fact that emotions and affect provide a glimpse of what could be termed as being *really* at work in the control of natural beings" (p. 251). Following Lazarus (1991) and Frijda (1986) he suggests that emotions do not emerge from reflex-like stimulus-reaction-patterns and therefore, that emotions cannot be mapped directly to behavioral tendencies. He presents the architecture TABASCO (tractable appraisal-based architecture framework for situated cognizers) for software agents in situated virtual environments. Here, also appraisal processes as well as coping play a central role. A system in which at least parts of the architecture have been implemented is "Invisible Person" (Petta, 1999), an installation in a museum in Vienna that has the ultimate goal to entertain the user.

Another system is WASABI ([W]ASABI [A]ffect [S]imulation for [A]gents with [B]elievable [I]nteractivity; Becker, Kopp, & Wachsmuth, 2004; Becker-Asano & Wachsmuth, 2010). The implementation is largely based on Mehrabian's (1995) dimensional approach. Reasoning capabilities are combined with simulated embodiment to achieve the simulation of primary and secondary emotions. The emotions are located in the PAD space (Pleasure, Arousal, Dominance; Russell & Mehrabian, 1977). The system consists of three agents who communicate via messages with each other: the emotion agent contains emotion dynamics, the BDI-agent has beliefs, desires, and intentions and does the reasoning necessary for secondary emotions and the visualization agent (Max) who is the interface to the user and shows behavior that is based on the other agents.

One of the latest developments is the PEACTIDM system (Marinier, Laird, & Lewis, 2009) which is a unified computational model including an abstract cognitive theory of behavior control and an appraisal theory. PEACTIDM stands for Perceive, Encode, Attend, Comprehend, Tasking, Intend, Decode and Motor, eight abstract functional operations (Newell, 1990) supposed to be building blocks of immediate behavior. Another current system of a different nature is Thespian (Si, Marsella, & Pynadath, 2008) which has been developed for interactive narratives in which a user can interact with virtual characters. The authors describe the system as a "model [that] is built using social agents within the Thespian framework for interactive narratives. Thespian agents are decision-theoretic goal-driven agents with modeling of theory of mind" (p. 13). Dias, Mascarenhas, and Paiva (2011) present the system FAtiMA (Fearnot AffecTIve Mind Architecture) (that is also based on appraisal theories. The model has been developed in the FearNot! project (Aylett, Paiva, & Vala, 2007) in which a computer application was developed that generates dramatic episodes in the context of bullying behavior.

In a different research community, another sophisticated approach is presented by Cynthia Breazeal and colleagues (Breazeal, 2000; 2002a,b; 2004; Breazeal et al., 2004a, b) who focus on architectures for robots (and therefore are not mentioned in the overview of Marsella et al., 2010). She developed the robots Kismet and Leonardo which are meant to be social machines which learn during the interaction with humans. Kismet was developed as a robotic testbed for studying social learning during infant-caretaker interactions. Kismet is able to express emotions by means of gesture, posture, voice, and facial expressions. Kismet has motivations, drives, and the need to interact (Breazeal, 2004). Emotions control behavior and expressions of the robot: joy and interest will lead the robot to approach a situation; fear, anger, and disgust lead to withdrawal. Emotions and expressions are mapped to a three dimensional space of valence, arousal, and stance (see Russell, 1997). The authors theoretically draw on basic emotions (Ekman, 1992; Izard, 1977) which are complemented by a simple appraisal model based on Damasio (1994; see Breazeal et al., 2004a). Breazeal (2004) sums up the numerous functions of the implemented emotions: "The emotion system is responsible for perceiving and recognizing internal and external events with affective value, assessing and signaling this value to other systems, regulating and biasing the cognitive system to promote appropriate and flexible decision making, and communicating the robot's internal state to others to socially regulate their behavior in a beneficial relation to the robot" (p. 4).

Another emotion architecture for robots is proposed by Cañamero (2002a, b). In one of her systems ("Abbots") she bases her work in the area of nouvelle (or embodied, situated) AI and focusses on the question how emotions affect the relation between agent and environment (instead of merely addressing communication with humans). Emotions are seen as a possibility to enable the agent to act autonomously and adapted. Therefore she argues that synthetic physiology is needed – "thus implying that emotions – natural and artificial – cannot exist without a body" (Cañamero, 2002b, p. 123). However, with regard to a humanoid robot ("Feelix") which was predominantly built to interact with humans she draws on a different theoretical background and suggests to implement a causal pattern which allows for the design of emotions that are believable.

Conclusions with Regard to the Implementation of Emotion Models

Altogether, the summary of the state of the art shows that most researchers in the area of robot and virtual agent development see the implementation of emotions as indispensable. However, the motives differ and include, on the one hand, the notion that artificial entities will only be believable when they convey expressions in an interaction which are controlled by an emotion model and on the other hand the believe that machines can only be functional when they are controlled by emotions. The latter has already been proposed by early AI researchers (see Marvin Minski's quote: "The question is not whether intelligent machines can have any emotions, but whether machines can be intelligent without any emotions" Minsky, 1986, p. 163; see Marsella & Gratch, 2004) and is especially propagated in the community of robot researchers.

With regard to the first motive and goal which is related to the wish to render artificial agents in human-computer interaction more believable, it has been suggested to critically

reflect on the utility of the approach (see Krämer, Iurgel, & Bente, 2005; Krämer, 2008). Within the HCI perspective, emotions are seen as necessary since they yield human-like emotional behavior that may motivate or affect the user and/or eventually permit empathic behavior of agents (see e.g., Elliott, Rickel, & Lester, 1999). Implementations thus are based on assumptions and knowledge derived from emotion research (e.g. Ortony, Clore, & Collins, 1988). Internal system states are implemented that relate to basic emotions (e.g. "delight" about correct input) and subsequently motivate a corresponding behavior (e.g. smiling, see e.g. Lester et al., 2000, and their emotive-kinesthetic behavior framework). These approaches are based on psychological theories that presume a direct link between emotion and nonverbal behavior (Tomkins, 1962; Ekman, 1997). Based on this, a considerable number of researchers hold the view that implementing emotions and motivation is essential – especially when attempting to influence the human user's emotion and motivation as e.g. in e-learning scenarios. In order to implement this "emotion view" one has to possess knowledge about various relations (see figure 1). It has to be known (a) what emotions emerge given a specific input or situation and (b) which nonverbal readouts result given a specific emotion. Finally – since the ultimate goal is to affect the users' emotion and behavior – one has to know (c) which state should be induced in the user and (d) by means of which cues this can be achieved.

Especially with regard to the first two aspects one has to fall back on knowledge derived from emotion research. But especially the knowledge concerning the relation of emotions and their behavioral readouts or "expressions" is ambiguous. The assumption that emotion and expression are directly linked and that emotional states involuntarily lead to expressions specific for the respective emotion (Tomkins, 1962; Ekman, 1997) has been challenged: Researchers of the social-communicative view (Chovil, 1991; Fridlund, 1991) argue that emotional nonverbal behaviors are not determined by emotional states but by social intentions. Referring to empirical findings and evolutionary psychology Fridlund (1991) argues in his behavioral ecology view that it is not functional to directly show one`s emotional states but to use one`s emotional displays independent from the actual emotional state in a socially reasonable and manipulative way (e.g. not to cry when one is saddest but to cry when assistance is most readily available). In sum, behavior (like e.g. facial displays) is seen to be motivated by social goals and intentions and the concept of emotion is explicitly rejected as not useful when discussing the determinants for facial displays and other "emotive" behaviors. It is crucial to note that certainly researchers have tried to resolve the debate by stating that both factors are important (see e.g. Hess, Banse, & Kappas, 1995). However, it is often overlooked that this statement eventually is equivalent to the emotion view (see e.g. the concept of display rules, Ekman, 1997), whereas Fridlund would explicitly reject this thesis as he more radically follows the view that emotion and facial displays do not necessarily have a connection.

Hence, this raises the question whether it is necessary to implement emotions when their relation to emotive behavior is still questioned and there is not enough secured knowledge concerning the aspects a and b mentioned above. Instead, it could be more effective to directly implement social motivations and intentions and focus on aspects (c) and (d): the intended effects on the user as well as the question by what cues these are achieved (see figure 2). Unlike robots who interact with a physical environment, rely on sensory feedback and thus might need emotional states (in terms of evaluative aspects of the relation between an artificial entity and its environment) in order to be able to act autonomously (see the

engineering perspective above or e.g. Dautenhahn & Christaller, 1997; for a critical discussion of that notion see Sloman, 2004), virtual agents "merely" interact within a social world. Hence, it can be argued whether they need emotions or whether the focus should rather be on the ultimate goal: satisfying the users' needs – which according to Fridlund (1991) should eventually be achievable even for entities which do not have emotions.
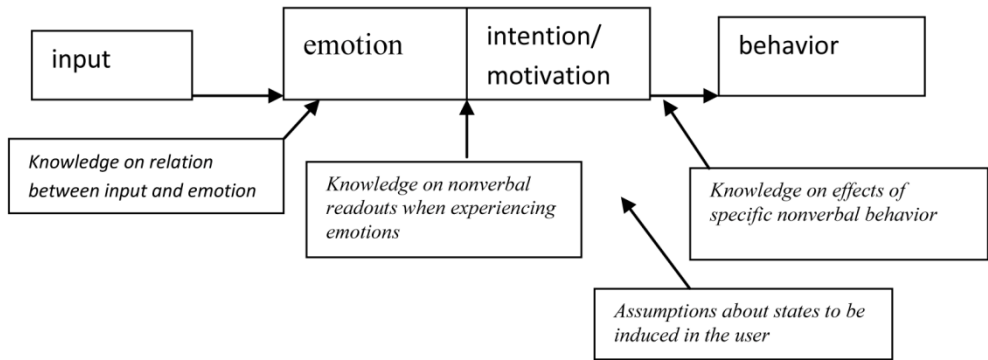
Figure 1. Architecture and necessary knowledge when implementing emotions (see Krämer et al., 2005).

With regard to embodied conversational agents the more relevant questions thus are: Which state should be induced in the user and by means of which cues can this be achieved (see figure 2)? It is suggested to control and motivate behavior according to the desired effects on the user (Krämer, Iurgel, & Bente, 2005). In consequence, a specific behavior is shown when it – based on the knowledge about its effects – promises to be effective in manipulating the user in a desired way. In case the desired state of the user and a nonverbal cue to achieve this state are known, the behavior can be chosen straightforward without the need to arouse an emotion within the agent: The agent e.g. does not have to be sad when an error occurred; he just has to communicate the error in a way that the user does not return the system angrily (e.g. by displaying regret). A corresponding set of rules can be implemented in a behavior planner.
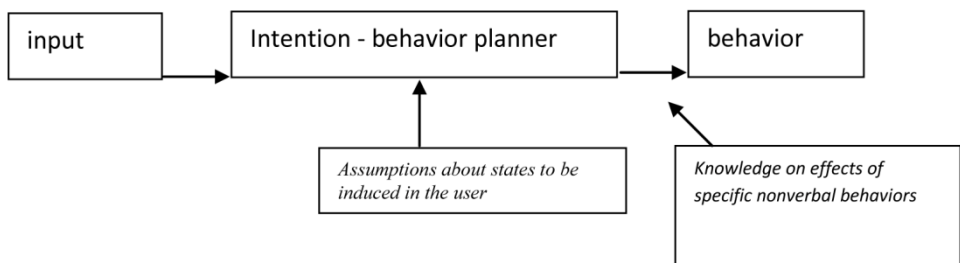
Figure 2. Alternative approach focusing on the state/emotion that is to be elicited in the user (see Krämer et al., 2005).

Following this approach, no emotions have to be implemented. Thus, one would not have to answer questions that need to be answered when following the "emotion view". These questions would be: a) Which emotion emerges given a specific situation? and b) Which behavior is shown given a specific emotion? - the latter being not only more difficult to answer but also more disputed. Instead, one is able to focus on the question that eventually has to be answered in both approaches: By means of which nonverbal cues are agents able to influence the emotions of the user? Hence, when the overall goal is to affect the users' mood (e.g. to calm the user down, to cheer him up, or to alert him) one would need a list of rules that links intentions (in terms of goals what to achieve concerning the users' feelings) with specific nonverbal behaviors. The latter are assigned to the intentions based on empirical findings (for an overview on socio-emotional effects of nonverbal behavior see Krämer, 2001). It nevertheless has to be mentioned that more research is needed to reveal the effects of nonverbal cues since especially with regard to subtle dynamics the level of knowledge is rather poor.

In sum, it has been argued that it is not compulsory to implement emotions in order to affect the users' emotions (which is stated as the ultimate goal in the HCI motivated approaches). Instead, the direct implementation of intentions and social goals has been proposed as alternative approach. For agents that merely interact with a social but not with a physical environment the implementation of a general goal and corresponding behavior would be more important than to implement evaluation and emotional states. Similar arguments are put forward by scholars of the "communicative approach" (see Marsella, Gratch, & Petta, 2010, p. 13): "Communicative theories emphasize the social-communicative function of displays and sometimes argue for a disassociation between internal emotional processes and emotion displays which need not be selected on the basis of an internal emotional state (Gratch, 2008, e.g., see Fridlund, 1997). Computational models inspired by communicative theories often embrace this disassociation and dispense with the need for an internal emotional model and focusing on machinery that decides when an emotional display will have a desirable effect on a human user". Indeed, several researchers already predominantly focus on the functions and effects of nonverbal communication regardless of emotive states (mostly in the realm of linguistic or discourse supporting aspects, see Bickmore, 2004; Cassell & Bickmore, 2001; Cassell et al., 1999).

Another alternative is to implement a so called *Theory of Mind* (ToM) instead of emotion models. The theory of mind is a human ability that enables the individual to impute mental states to oneself and others and to detect states, beliefs, intention, guessing, pretending, purpose, etc. (Premack & Woodruff, 1978; Whiten, 1991). Put more simply, the Theory of Mind is the "ability, to put oneself into someone else's shoes, to imagine their thoughts and feelings" (Baron-Cohen, 2009, pp. 68-69).

Also, ToM is a prerequisite for communication and interaction. Humans usually perceive and decode others' emotions during the negotiation which influences their behavior. Recent research suggests that the implementation of a ToM in general is desirable, because it increases performance (Harbers, van den Bosch, & Meyer, 2009). Therefore, there are several systems which implement a theory of mind in agents (Peters, 2006; Marsella & Pynandath, 2005). The multi-agent simulation tool PsychSim provides one of the most elaborated approaches to the implementation of ToM (Marsella, Pynadath, & Read, 2004; Marsella & Pynadath, 2005). Each agent has a mental model which contains his states, goals, and beliefs

about himself and others. These mental models also include possible actions and their effects and policies for behavior.

The agent also has representations of the other agent's goals, states, and actions which are termed beliefs. Beliefs show an assumption of a complete mental mind of the other agent, with goals, actions, and states. PsychSim is able to not only represent the first-order beliefs of the agent, but also the second-order beliefs, which are the beliefs an agent has about the other agent's beliefs about him. Therefore, modeling typical communication problems and misunderstandings is possible e.g. in the context of school bullying (Marsella & Pynadath, 2005) or AIDS prevention (Klatt, Marsella, & Krämer, 2011).

EMOTIONAL EFFECTS OF ROBOTS AND AGENTS

Besides the implementation of emotions one can also focus on the emotional effects of robots and virtual agents. Here, after a brief overview on general emotional effects we will focus on literature from the robot research community on specific reactions depending on the robot's facial expressions or nonverbal behavior. That artificial entities can influence the participants' mood has anecdotally been shown e.g. by Gratch and Marsella (2001) who observed that during a virtual mission rehearsal exercise soldiers reacted agitated and troubled when they could not calm down a virtual woman whose son had been injured. Also, more controlled experimental studies demonstrate emotional reactions: Virtual persons evoke less anger and a more positive mood when bad news are delivered compared to conventional text- or audiobased systems (Krämer, Tietz & Bente, 2003). Further studies have shown that robots can evoke empathic reactions when they are shown to be tortured (von der Pütten et al., 2011). Moreover, first longterm studies with robot companions show that emotional attachments with robots who are employed as household assistants can happen (Von der Pütten, Krämer, & Eimler, 2011).

With regard to the specific effects of facial expressions it has long been shown that participants are able to correctly interpret facial expressions (Breazeal, 2003). Hegel, Eyssel, and Wrede (2010) present results on the robot Flobi and show that facial displays of happiness, anger, sadness, and surprise are readable while the fear display was slightly less recognizable. However, when a realistic android and a real human face are compared, it is demonstrated that expressions by the android were more ambiguous than those by the human (Becker-Asano & Ishiguro, 2011). Here, also, fearful was the expression which had worst recognition rates. In addition, Cañamero and Fredslund (2001) who implemented basic emotions and corresponding facial expressions in the lego robot "Feelix" showed that recognition rates of emotional expressions in the free test was especially good for children.

There are, however, only a few studies that analyse emotional effects beyond the recognition of facial expressions: Leite, Pereira, Martinho, and Paiva (2008) demonstrate that a robot (iCat) with an emotion module that is based on the work of Scherer (2000) and that manipulates eyes, mouth and ears leads to a better understanding of the game that robot and participant play together compared to a robot without or with random facial expressions.

Also, a few studies have been conducted on the effects of a robot's nonverbal behavior and postures. Beck, Cañamero, and Bard (2010) use the research robot NAO in order to evaluate the effects of the robot's head position on the interpretation of valence, arousal and

stance. From the fact that participants were better than chance in interpreting the postures the authors conclude that body language is appropriate for a robot to express emotion and that facial expressions are not necessarily needed. Moreover, Eimler, Krämer, and von der Pütten (2011) showed that non-humanoid robots can also convey emotions: Participants attribute emotions to the robot rabbit Nabaztag depending on the specific ear position.

CONCLUSION

The overview should – on the one hand – have made clear which advantages the implementation of emotion in an artificial entity has. On the other hand, it was discussed whether it is reasonable to implement emotions when the ultimate goal is to facilitate interaction of humans and artificial entities. In this case, it was suggested to consider the implementation of a theory of mind as an alternative. In sum, it can be stated that with regard to the implementation of emotions as well as with regard to the implementation of a theory of mind there are several elaborated and sophisticated approaches (for a more detailed critique on the systems see Marsella et al., 2010). However, more work is needed that should at best rely on interdisciplinary cooperation between computer scientists and psychologists or other emotion researchers. In order to conduct research, now several research platforms like iCat (Philips) or Nao (Aldebaran Robotics) are available which allow researchers from manifold disciplines to implement theories and conduct user studies. What is also necessary in order to achieve the ultimate goal of a better understanding between humans and artificial entities is to make progress in the area of automated recognition of emotions. Here, efforts have been made for years but so far no system is able to reliably recognize human emotions. Therefore, more efforts in all research areas of artificial entities' emotions are needed in order to in future enable robots and virtual agents to more naturally interact with humans. Future research will show whether emotions (and not, for instance, theory of mind) will be most fruitful to achieve this goal. Also, whether the implementations will really be similar to human emotions will be a question for the realm of philosophy. They will have to tackle the question if John Searle's (2002) assumption "You don't get emotions by manipulating 0s and 1s." is true or not.

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PART IV: EMOTIONS AND MUSIC

Chapter 15

MUSIC: THE LANGUAGE OF EMOTION

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ABSTRACT

Music has a universal appeal that is often attributed to its ability to make us feel a certain way, and to change how we are currently feeling. In fact, music is often said to be the language of emotion. Although the body of research on music and emotions has grown rapidly over the past two decades, many issues remain the subject of debate. How is emotion conveyed through musical features? Do listeners actually experience emotions in response to music, or are they simply perceiving emotions? Which particular emotions does music convey? What factors influence whether we like a particular piece of music? Can research on music and emotions inform us about emotions in general? How do experience and learning affect the perception of musical emotions? In this chapter, we provide an overview of research that addresses these and other related questions, with an emphasis on recent findings.

1. INTRODUCTION

People listen to music because of the way it makes them feel, and because it can change how they are currently feeling (Juslin & Laukka, 2004; Lonsdale & North, 2011). Indeed, many people consider music to be the language of emotion because it has the power to move us to tears of sorrow or joy. Music is also used widely as a therapeutic tool to improve physical, mental, and emotional health and wellbeing (MacDonald, Kreutz, & Mitchell, 2012); it is an integral part of significant life events such as ritual ceremonies, weddings, and funerals; and it promotes infants' emotional attachment to their caregivers (Dissanayake, 2000; Trainor, 1996; Trehub & Trainor, 1998).

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In the past two decades, research on links between music and emotion has become increasingly common. The present chapter provides a summary of the most important topics in the field, focusing primarily on recent publications. More thorough reviews can be found in several chapters and books dedicated to the topic (e.g., Gabrielsson, 2009; Hunter & Schellenberg, 2010; Juslin, 2009a, 2009b, 2011; Juslin & Sloboda, 2001, 2010; Koelsch, 2010; Trainor & Schmidt, 2003). Increasing scholarly interest in associations between music and emotion has the potential to reveal why music is so appealing to listeners regardless of age, gender, and culture, and why music is such a fundamental and universal human behavior.

How does music convey emotions? In section 2, we discuss musical cues that are associated with specific emotions. We begin by identifying domain-general acoustic cues that are used to express emotions in music as well as in speech. We go on to discuss cues to emotion that are specific to particular musical cultures. Despite nearly universal agreement that music is capable of conveying emotions, some scholars doubt that music actually induces emotional responses, arguing instead that musical emotions are perceived but not felt. In section 3, we discuss the available evidence concerning whether listeners actually feel emotions in response to music.

Others propose that listeners respond emotionally to music, but that music-induced emotions differ from everyday emotions such as happiness, fear, anger, and sadness. In section 4, we explore the types of emotions that music induces, including an examination of particularly strong and positive responses to music (i.e., chills, section 4.1), as well as a discussion of the most fundamental emotional response to music—liking or disliking—and a look at why individuals like music that conveys sadness, a negative emotion (section 4.2). Section 5 examines what research on music and emotions reveals about the structure of emotions in general. Finally, section 6 discusses the impact of different types of experience on the perception of musical emotions, including the effects of informal music-listening experiences (section 6.1), the perception of emotion in music from foreign cultures (section 6.2), and the effects of formal music lessons (section 6.3).

2. MUSICAL CUES TO EMOTION

One major focus of research on music and emotion examines how particular emotions are conveyed through musical features. Music varies on a number of different dimensions, from basic acoustic aspects to more complex features that are specific to music. For example, music uses domain-general cues such as loudness, average pitch level (e.g., high like a flute or low like a tuba), timbre (i.e., what makes a flute and a clarinet sound different), and tempo (how fast or slow the musical beat is, similar to speech rate). Music also varies on dimensions that have no counterparts with speech or other aspects of audition. For example, Western music varies in *mode*, which refers to particular patterns of pitch relations. Historically, the most common mode in Western music is the major mode, the collection of pitches used in songs such as *Twinkle Twinkle Little Star*, *Joy to the World*, and The Beatles' *Hey Jude*. The minor mode is also common, used in songs like *The Cat Came Back*, *We Three Kings*, and Madonna's *Hung Up*.

In the component-process theory of emotion, Scherer (1985) proposes that different emotions activate the sympathetic nervous system, which in turn affects vocal musculature

and production. More specifically, happiness, disgust, sadness, fear, and anger influence basic acoustic aspects of the human voice such as mean fundamental frequency, intensity (loudness), and speech rate. A meta-analysis conducted by Juslin and Laukka (2003) confirmed that a number of basic acoustic cues to emotion are common to the expression of emotion in both speech and music. For example, faster rates of speaking and faster tempi in music are associated with high-arousal emotions such as happiness and anger, whereas slow speech rate and tempo are markers of low-arousal emotions such as sadness and tenderness. Other arousal-related associations are observed for intensity/loudness (loud = high arousal, soft = low arousal) and voice quality or timbre (sharp-sounding with more high-frequency energy = high arousal, dull-sounding with less high-frequency energy = low arousal). Acoustic features that distinguish positively from negatively valenced emotions are based on regularity in terms of intensity, frequency, and duration, with positive emotions more regular than negative emotions. Other research confirms that tempo is a particularly important cue to emotion in music (e.g., Gagnon & Peretz, 2003; Hevner, 1935, 1936, 1937; Juslin, 1997b; Juslin & Lindström, 2010), and that low pitch levels are predictive of a reduction in felt pleasantness, particularly among women (Jacquet, Danuser, & Gomez, 2012). Among men, low pitch also predicts an increase in arousal levels (Jacquet et al., 2012). Presumably, low pitch is associated with threatening behavior. More generally, these findings suggest that emotions expressed in music often mimic the way that emotions are expressed in speech.

Some cues to emotions expressed musically, however, have no parallels with speech (Juslin & Laukka, 2003). For example, articulation provides a cue to arousal, such that *staccato* (i.e., short note durations with spaces of silence in between successive notes, or choppy sounding) is associated with high-arousal emotions, whereas *legato* (i.e., longer note durations with no silence between successive notes, or smooth sounding) is associated with low-arousal emotions. Mode is also a particularly strong cue to valence, with major mode associated with positive emotions (especially happiness) and minor mode associated with negative emotions (especially sadness; Gagnon & Peretz, 2003; Hevner, 1935, 1936, 1937; see Gabrielsson & Juslin, 2003 and Juslin & Laukka, 2004 for reviews). Particularly strong emotional responses often coincide with specific musical features (Sloboda, 1991). For example, tears occur most often during melodic appoggiaturas (i.e., when an unexpected, non-stable note on a strong beat is followed by a stable note), whereas chills (or thrills) are elicited commonly by unexpected harmonic progressions.

The various ways in which music communicates emotion are complex. Cues to musical emotions are probabilistic rather than deterministic (Juslin, 1997a; Juslin & Laukka, 2003), and listeners rely on configurations of musical cues to perceive emotion. Different cues also interact in their influence on emotion judgments (Juslin & Lindström, 2010; Schellenberg, Krysciak, & Campbell, 2000), and some particular cues are more important for some musical emotions than for others (Juslin & Lindström, 2010).

Finally, culture-specific cues, such as mode in Western music, must be learned. Many years ago, Meyer (1956) argued that expectations provide the basis for the perception of emotion and meaning in music. He suggested that the interplay between tension and relaxation, produced by unexpected and expected musical events, respectively, gives rise to emotional expression. Huron (2006) later built on these ideas in his Imagination-Tension-Prediction-Response-Appraisal (ITPRA) theory. Importantly, these theories suggest that structures common to a listener's musical culture must be learned—either explicitly or implicitly—in order to experience these types of expectations, which implies that the

perception of emotion in music depends partly on culturally formed musical knowledge. In section 6 of the present chapter, we discuss the effects of informal and formal experience on the perception of musical emotions.

3. DO LISTENERS ACTUALLY EXPERIENCE EMOTIONS IN RESPONSE TO MUSIC?

One debate in research on music and emotion centers on whether music can *induce* emotions in listeners in addition to simply *conveying* emotion. The *cognitivist* position (e.g., Kivy, 1980, 1990, 2001; Konečni, 2008; Meyer, 1956) maintains that music does not induce emotions because true emotional responding requires cognitive appraisal. Rather, music is evaluated in terms of simple liking or disliking without inducing more specific emotions such as happiness or sadness. Clearly, scary-sounding music does not induce fear of the actual piece of music in the same way that a large, approaching predatory animal would itself be the object of fear.

By contrast, the *emotivist* position (e.g., Goldstein, 1980; Sloboda, 1991) assumes that cognitive appraisals are not necessary for emotion induction, and that music is capable of eliciting true and specific emotions in listeners. Juslin and Västfjäll (2008) proposed six mechanisms—other than cognitive appraisal—by which music induces emotions in listeners: (1) *brain stem reflexes* occur when a sudden loud or unexpected sound causes a startle response, (2) *evaluative conditioning* arises when a piece of music is associated with an emotional event or object, (3) *emotional contagion* occurs when the emotion expressed by the music becomes internalized, (4) *visual imagery* evoked by music may have emotional connotations, (5) music may remind the listener of *episodic memories*—memories from an individual's past—that are emotionally charged, and (6) the fulfillment or violation of *musical expectancies* induces emotions. Other mechanisms include *exposure*, when liking for a piece of music increases with familiarity but decreases with over-exposure (Moors & Kuppens, 2008; Schellenberg, 2008), *semantic associations* evoked by music that have emotional undertones (Fritz & Koelsch, 2008), and *rhythmic entrainment* to a musical beat (or meter) that influences physical responses such as heart rate and other changes in arousal level that are associated with emotional responding (Agostino, Peryer, & Meck, 2008; Alcorta, Sosis, & Finkel, 2008; Bharucha & Curtis, 2008; Madison, 2008; Scherer & Zentner, 2008).

Evidence consistent with the view that music actually induces emotions comes from a variety of sources. Simply asking listeners to report their emotional reactions to music is the most common and direct source. Self-reports reveal that listeners experience particularly strong emotions in response to music, especially positive emotions such as happiness, joy, elation, and even euphoria or ecstasy (Gabrielsson, 2001). Juslin and Laukka (2004) conducted a questionnaire study that included both open-ended and multiple-choice questions. All of their participants claimed that they actually experience (rather than just perceive) emotions in response to music, at least in some instances. Again, the most commonly reported emotions were positive (e.g., happy, relaxed, moved), and motivations for listening to music frequently involved emotional states (e.g., "to express, release, and influence emotions"). Self-report methods have been criticized, however, because listeners

may find it difficult to remember specific emotional responses to music, or because they may confuse perceived and felt emotions when they are required to describe these responses retrospectively.

To overcome the problem of asking participants to remember their emotional responses to music, Juslin, Liljeström, Västfjäll, Barradas, and Silva (2008) conducted an experience-sampling study of emotional reactions in everyday life when music was present or absent. The participants were provided with small computers that beeped at different times throughout the day, with each beep prompting them to provide information about their situation and emotional state. When music was present (approximately 1/3 of the time), listeners reported that it tended to influence their emotional state, usually in a positive direction. Comparisons between situations with or without music revealed that positive emotions were more common when music was present, whereas negative emotions were more common when music was absent. Although the experience-sampling method assumes that (1) individuals are aware of their emotional states, (2) they can report these accurately, and (3) they can distinguish felt from perceived emotions, these findings provide highly suggestive evidence that music does in fact induce emotions in listeners, and that it does so frequently in everyday life.

Additional evidence in support of the emotivist position comes from studies of physiological responses during music listening that are known to be markers of emotional responding (see Hodges, 2010 for a review). Emotionally evocative music causes changes in heart rate, blood pressure, skin conductance, body temperature, and respiration that differ from measurements taken during listening to non-emotional music (e.g., Rickard, 2004) or sitting in silence (e.g., Khalfa, Peretz, Blondin, & Manon, 2002; Krumhansl, 1997; Nyklíček, Thayer, & Van Doornen, 1997). One problem with physiological responses is that they cannot differentiate clearly between different felt emotions. Rather, physiological responses are better measures of activation levels (i.e., arousal) than they are of positive or negative responding (i.e., valence; Khalfa et al., 2002; Nyklíček et al., 1997). Moreover, physiological responses such as respiratory rate tend to become synchronized with tempo (i.e., the speed of the beat or pulse) of the music (Etzel, Johnsen, Dickerson, Tranel, & Adolphs, 2006). Although faster tempo is associated with increased levels of arousal (Husain, Thompson, & Schellenberg, 2002), in principle tempo could influence physiological responses that are independent of felt emotions. In at least one study, however, differences in physiological responses to happy- and sad-sounding music could not be explained solely by manipulations of tempo or rhythm (Khalfa, Roy, Rainville, Dalla Bella, & Peretz, 2008).

Although most physiological measures are better indicators of arousal than of valence, expressive behaviours such as smiling and brow furrowing appear to differentiate between positive and negative emotions. For example, when facial electromyography is used to measure activity of the zygomatic (smiling), corrugator (brow furrowing), and orbicularis oculi (eye closing) muscles, both zygomatic and corrugator activity differentiate listening to positively compared to negatively valenced music, independently of arousal (Witvliet & Vrana, 2007). Specifically, pleasant-sounding music produces more smiling, whereas unpleasant-sounding music produces more brow furrowing. By contrast, orbicularis oculi activity and heart rate are associated primarily with arousal. In a study that collected self-report data in combination with physiological measures and expressive motor behaviors (Lundqvist, Carlsson, Hilmersson & Juslin, 2009), happy-sounding music elicited higher ratings of felt happiness compared to sad-sounding music, as well as lower ratings of felt

sadness, more smiling, greater skin conductance, and lower finger temperature. Convergence across measures suggests strongly that listeners are experiencing emotions in response to music, rather than simply perceiving the emotions music conveys.

Emotionally evocative music also activates brain regions that are involved in emotion and reward processing, including limbic and paralimbic areas (see Koelsch, 2010; Peretz, 2010 for reviews). Specifically, changes in activity have been reported in the amygdala, hippocampus, ventral striatum (including the nucleus accumbens, the so-called pleasure centre of the brain), parahippocampal gyrus, orbitofrontal cortex, temporal poles, ventral tegmental area, insula, and anterior cingulate cortex (e.g., Blood & Zatorre, 2001; Blood, Zatorre, Bermudez, & Evans, 1999; Brown, Martinez, & Parsons, 2004; Koelsch, Fritz, Cramon, Müller, & Friederici, 2006; Menon & Levitin, 2005; Mitterschiffthaler, Fu, Dalton, Andrew, & Williams, 2007; Salimpoor, Benovoy, Larcher, Dagher, & Zatorre, 2011; Trost, Ethofer, Zentner, & Vuilleumier, 2012). Such changes in activity have been observed in response to happy- compared to sad-sounding music (Mitterschiffthaler et al., 2007), to consonant or pleasant-sounding music compared to dissonant or unpleasant-sounding music (Blood et al., 1999; Koelsch et al., 2006; Menon & Levitin, 2005), to unfamiliar but well-liked music (Brown et al., 2004), and to intensely positive musical experiences (i.e., chills; Blood & Zatorre, 2001; Salimpoor et al., 2011).

One goal of future research could be to identify which brain structures are involved in particular emotional responses instead of simply distinguishing between positive or negative responding. In one instance, the left striatum and insula were activated during positive, high-arousal emotions, whereas the right striatum and orbitofrontal cortex were activated during positive, low-arousal emotions (Trost et al., 2012). As with the physiological measures, then, the neurological measures are more successful at measuring changes in arousal than in valence.

Although the available evidence indicates that music evokes emotional responding in listeners, it should be noted that musical emotions are usually more strongly perceived than felt (Evans & Schubert, 2008; Hunter, Schellenberg, & Schimmack, 2010; Schubert 2007a, 2007b; Zentner, Grandjean, & Scherer, 2008; for a discussion see Gabrielsson, 2002). Thus, even if listeners are capable of perceiving the intended emotion, they may not always experience the same emotion. In line with this view, Hunter et al. (2010) reported that felt emotions in response to music are mediated by perceived emotions. In other words, when listeners respond emotionally to music, they typically do so after perceiving the conveyed emotion. Moreover, although perceived and felt emotions tend to be highly associated, they are not identical (Evans & Schubert, 2008; Hunter et al., 2010; Kallinen & Ravaja, 2006), and the emotion conveyed by music may differ quantitatively and qualitatively from the emotion that is felt. For example, several studies have found that fear and anger are often confused in perception studies (Gabrielsson & Juslin, 1996; Krumhansl, 1997; Terwogt & van Grinsven, 1991), perhaps because listeners confuse the conveyed emotion of anger with the felt emotion of fear.

In sum, there is ample evidence that music has the capacity to induce emotions in listeners, who report experiencing emotions while they listen to music, and who exhibit physiological, behavioral, and neuropsychological reactions that are markers of emotional responding. Nevertheless, further research could clarify several issues. First, the physiological, behavioral, and neuropsychological correlates of particular emotions remain underspecified, and it is poorly understood which responses reflect the induction of a specific

emotion (e.g., joy) rather than, for example, the simple experience of pleasure or liking, the listener's arousal level, or the influence of a musical dimension (e.g., fast tempo) that is not necessarily accompanied by emotional responding. Second, responses should be compared across contexts in which emotions are actually felt or only perceived. A more nuanced understanding of emotional responding to music could help to clarify the nature of particularly complex responses, such as when listeners respond positively to sad-sounding music.

4. WHICH EMOTIONS DOES MUSIC INDUCE?

A related debate centers on the nature of emotions that music evokes. Some researchers (e.g., Konečni, 2008; Scherer, 2004; Zentner et al., 2008) claim that music induces *aesthetic* emotions, such as feelings of wonder, transcendence, nostalgia, power, and tension, which differ from everyday or *utilitarian* emotions, such as happiness, sadness, anger, and fear. Scherer (2004) argues that the major difference between these two classes of emotions is that utilitarian emotions involve goal-relevant and coping-related cognitive appraisals, whereas aesthetic emotions involve subjective pleasure in response to the physical qualities of the stimulus itself. In other words, aesthetic emotions lack direct personal relevance insofar as they do not motivate adaptive action tendencies such as fleeing during the experience of fear.

Zentner et al. (2008) conducted a series of self-report studies designed to examine the most common emotions that are experienced (as opposed to perceived) during music listening. Factor-analytic approaches uncovered nine dimensions: wonder, transcendence, tenderness, nostalgia, peacefulness, power, joyful activation, tension, and sadness. Notably, these "music-specific" emotions differed markedly from basic or discrete emotions (e.g., interest, joy, surprise, sadness, anger, disgust, contempt, fear, shame, and guilt). Moreover, the music-specific approach provided a better account of variance in listeners' self-reports compared to models of discrete emotions or a commonly used model of emotions that relies on two bipolar dimensions (i.e., high to low arousal, positive to negative valence).

Nevertheless, the conclusion that musical emotions are domain-specific may be premature. Although individuals with a variety of music preferences (i.e., classical, jazz, pop/rock, Latin American, techno) were included in Zentner et al.'s (2008) initial samples, the samples used to test the nine-factor model were comprised largely of listeners who preferred classical music. This sampling bias is problematic because emotions that were experienced in response to music differed according to the genre of music that listeners preferred. For example, feelings of amazement (part of the dimension termed *wonder*) and peacefulness were frequent only among fans of classical music. In general, emotions that music induces may depend largely on the particular genre (e.g., anger in heavy metal music, sadness in blues, joy in upbeat pop; for preliminary evidence see Eerola, 2011). Individual differences in personality are also associated with preferences for specific musical genres (e.g., Rentfrow, Goldberg, & Zilca, 2011; Rentfrow & Gosling, 2003, 2006; Zweigenhaft, 2008) precisely because different genres express and induce different emotions. Individuals who prefer pop, rap, and dance music tend to be high in extraversion (Rawlings & Ciancarelli, 1997; Rentfrow & Gosling, 2003), and extraversion is associated with the propensity to experience positive affect (e.g., Costa & McCrae, 1980; McCrae & Costa,

1991). Thus, extraverts may seek out music that is high in arousal and positive in valence. In short, firm conclusions about emotions evoked frequently by music require representative samples of the general population rather than restricted groups of individuals who prefer one particular genre.

In Juslin et al.'s (2008) experience-sampling study, college students were asked about their current emotional state using a predetermined set of 14 emotion terms that included basic (utilitarian) as well as aesthetic emotions. Negative basic emotions such as shame/guilt and disgust/contempt were almost never experienced in response to music, but they were experienced rarely in nonmusical contexts as well. In any event, listeners experienced basic emotions in response to music in addition to aesthetic emotions. Importantly, positive emotions such as calm/contentment, happiness/elation, and nostalgia/longing tended to be experienced more frequently in musical contexts, whereas negative emotions such as boredom/indifference, anger/irritation, and anxiety/fear tended to be experienced more frequently in nonmusical contexts. In other words, music may induce a wide variety of basic *and* aesthetic emotions, and music's widespread appeal may be related to the fact that such emotions are typically positive.

4.1. Chills

Music-induced chills (or thrills; Goldstein, 1980) are perhaps the strongest emotional responses to music. Chills refer to a tingling sensation or shivers, usually felt in the back of the neck or upper back and sometimes accompanied by piloerection (goosebumps). In Goldstein's (1980) study, about half of the sample claimed to experience chills in response to music, although subsequent research indicated that chills may be more common among musicians than nonmusicians (Sloboda, 1991). The tendency to experience chills is also a marker of openness-to-experience (McCrae, 2007; Silvia & Nusbaum, 2011), a personality trait associated with aesthetic appreciation and intellectual curiosity. Although chills can be elicited by a variety of stimuli (e.g., pictures or art, non-musical sounds or speech, tactile stimulation, gustatory stimulation, imagination or memories), chills in response to music tend to be experienced as especially pleasant (Goldstein, 1980; Grewe, Katzur, Kopiez, & Altenmüller, 2010). Huron (2006) argues that chills occur when a surprising stimulus is initially and automatically perceived as a potential threat, which leads to piloerection similar to what is experienced in contexts that evoke a fight response. When a musical stimulus is subsequently appraised as nonthreatening, pleasure arises.

Among musicians, chills tend to coincide with particular musical features, specifically unexpected harmonies (Sloboda, 1991). When nonmusicians *and* musicians are studied, chills often coincide with unexpected musical events or sudden musical changes, including unexpected harmonies as well as sudden changes in loudness, shifts between solo instrument and orchestral textures, and sustained high pitches (e.g., Grewe, Nagel, Kopiez, & Altenmüller, 2007; Guhn, Hamm, & Zentner, 2007; Panksepp, 1995). On a more global level, slow-tempo pieces are more likely than fast-tempo pieces to elicit chills (Guhn et al., 2007), and chills are more likely to occur in response to emotionally evocative music compared to relaxing or arousing music, or to emotionally evocative films (Rickard, 2004).

Chills tend to coincide most reliably with increases in skin conductance (e.g., Craig, 2005; Grewe et al., 2010; Grewe, Kopiez, & Altenmüller, 2009; Guhn et al. 2007; Rickard,

2004; Salimpoor et al., 2011; Salimpoor, Benovoy, Longo, Cooperstock, & Zatorre, 2009; but see Blood & Zatorre, 2001), although there is also evidence of increases in heart rate and respiration rate, and of decreases in temperature and amplitude of blood-volume pulse (e.g., Blood & Zatorre, 2001; Grewe et al., 2009; Guhn et al., 2007; Salimpoor et al., 2011, 2009). The subjective experience of chills coincides with increased activity in the ventral striatum and dorsomedial midbrain, as well as with decreases in the amygdala, hippocampus, and ventromedial prefrontal cortex (Blood & Zatorre, 2001). In short, intensely pleasurable musical experiences are associated with brain circuitry involved in reward and emotion processing.

Salimpoor et al. (2011) used PET, fMRI, and physiological measures to examine the role of dopamine in experiences of chills, as well as the time course of associated changes in brain activity. The participants were individuals who reported experiencing chills often and consistently in response to music. Music-induced chills coincided with dopamine release in the ventral and dorsal striatum, specifically in the right nucleus accumbens and the right caudate. Activity in the nucleus accumbens was highest during the actual chill experience, whereas activity in the caudate was highest during the anticipatory period leading up to the chill. Furthermore, self-reports of chill intensity and degree of pleasure were correlated with dopamine release in the nucleus accumbens. Because subjective pleasure continued to correlate positively with striatum activity when instances that included chills were excluded from the analyses, chills are not necessary for activation of critical brain areas. Rather, music-induced chills are indicators of intensely pleasant emotional responses, which recruit the brain's pleasure centers.

4.2. Liking Music

Most of the research on music and emotions has examined perceptions and feelings of happiness, sadness, and other specific emotions. A more basic response to music is simply whether listeners like it or not. In other words, emotional responding to music occurs on two levels: one concerning the specific emotion music conveys and/or evokes such as happiness or sadness, the other relating to the listener's evaluation (Hunter & Schellenberg, 2010). Evaluations occur in response to individual pieces of music as well as to entire genres. Most of the research concerning evaluative responses examines preferences for specific genres of music (e.g., classical, alternative, jazz) and how these are related to other individual-difference variables (for a review see Rentfrow & McDonald, 2010). Our focus here is on liking unfamiliar *pieces* of music. In studies of liking unfamiliar pieces, the influence of pre-existing genre preferences can be minimized by including music stimuli from a wide variety of genres, or by using stimuli from a single genre. The issue of liking music has important ramifications for music cognition because listeners remember music they like better than music they dislike or respond to neutrally (Stalinski & Schellenberg, 2012).

One variable that plays an important role is familiarity. Listeners often like music they have heard before. Listeners also grow to dislike music they have heard repeatedly, or too often in a short timeframe. Such increases and decreases in liking music as a function of exposure were documented by Szpunar, Schellenberg, and Pliner (2004). In an initial exposure phase, their listeners heard six different excerpts, each from a recording of a different concerto (i.e., an orchestral piece with a lead instrument). The excerpts were heard

twice, eight times, or 32 times, with two excerpts assigned to each exposure frequency. To ensure that participants listened to each presentation of each excerpt, they were asked to identify the lead instrument (e.g., piano, violin, and so on). In the next phase, they heard 12 excerpts (6 from the exposure phase, 6 new) and made liking judgments. Liking was higher for excerpts heard 8 times compared to those heard twice in the exposure phase, and for excerpts heard twice compared to novel excerpts. Excerpts heard 32 times were liked no better than novel excerpts. Because the different excerpts were assigned randomly to the different exposure frequencies, differences in inherent likeability did not affect the results. Another group of listeners was tested similarly except that during the exposure phase, they heard the excerpts presented softly in one ear while they listened closely to a narrated story in the other ear. These listeners showed monotonic increases in liking as a function of exposure frequency. In other words, decreases in liking for music as a consequence of over-exposure were evident only when listeners were required to listen intently to the music.

In a follow-up study (Hunter & Schellenberg, 2011), participants were tested identically in the focused-listening condition, but they also completed a questionnaire measuring individual differences on the "big five" personality dimensions. As in Szpunar et al. (2004), the same inverted-U shaped function was evident for listeners in general: increases in liking up to 8 exposures but decreases from 8 to 32 exposures. Tests of interactions with personality revealed that openness-to-experience moderated the association between liking and exposure frequency. Although listeners who scored low on openness showed the same response pattern as in the earlier study, listeners who scored high on openness liked novel excerpts equally to those they heard twice, followed by a monotonic decrease in liking with additional exposures. More generally, high-openness listeners showed elevated levels of liking novel music and a steeper decline in liking as a function of over-exposure.

In another study (Schellenberg, Peretz, & Vieillard, 2008), the music excerpts were obviously happy- or sad-sounding pieces of MIDI-generated piano music heard 0, 2, 8, or 32 times. As in Szpunar et al. (2004), exposure occurred during either focused or incidental listening, but listeners in the focused condition were required to identify whether each excerpt sounded happy or sad. For them, liking was again an inverted-U shaped function of exposure frequency, but liking peaked at 2 rather than 8 exposures, either because of the orienting task (identification of emotion vs lead-instrument) or the stimuli (MIDI-generated piano timbre vs real orchestras). As in the earlier study, liking increased monotonically as a function of exposure for listeners who heard the excerpts incidentally. A novel finding indicated that although the happy-sounding excerpts were preferred over the sad-sounding excerpts in the liking phase for focused listeners, this bias disappeared for listeners in the incidental condition.

When children are asked to rate how much they like music that expresses different emotions, they prefer pieces that express high-arousal emotions (happiness or fear) over those that express low-arousal emotions (peacefulness or sadness) while ignoring the distinction between positive (happiness and peacefulness) and negative (fear and sadness) valence (Hunter, Schellenberg, & Stalinski, 2011). Adults show the exact opposite pattern, preferring music that expresses positive rather than negative valence, while ignoring differences in arousal.

As noted, listening to music tends to evoke positive emotions more frequently than negative emotions (e.g., Gabrielsson, 2001; Juslin & Laukka, 2004; Juslin et al., 2008). It is also well documented that listeners tend to *prefer* happy- over sad-sounding music (Hunter,

Schellenberg, & Schimmack, 2008; Husain et al., 2002; Khalfa et al., 2008; Ladinig & Schellenberg, 2012; Schellenberg et al., 2008; Thompson, Schellenberg, & Husain, 2001; Vieillard et al., 2008). Nevertheless, people often choose to listen to sad-sounding music (e.g., Zentner et al., 2008), which they obviously enjoy (e.g., Garrido & Schubert, 2011; Kreutz, Ott, Teichmann, Osawa, & Vaitl, 2008; Vuoskoski & Eerola, 2012; Vuoskoski, Thompson, McIlwain, & Eerola, 2012). Because sadness is a negative emotional state, these findings beg the question of why people would want to listen to sad-sounding music.

The cognitivist perspective holds that listeners only perceive sadness but do not in fact experience the emotion while listening to sad-sounding music (Kivy, 1989; Konečni, 2008), which leaves them free to enjoy the music without any negative affect. A related proposal (Garrido & Schubert, 2011; Schubert, 1996) suggests that displeasure is inhibited in aesthetic contexts. According to this view, negative emotions conveyed by music may induce emotion but it is experienced as positive rather than negative. Listeners claim that music actually induces sadness at times (e.g., Juslin & Laukka, 2004; Juslin, Liljeström, Laukka, Västfjäll, & Lundqvist, 2011; Juslin et al., 2008; Vuoskoski et al., 2012), however, with converging evidence from measures of expressive behavior (e.g., Witvliet & Vrana, 2007) and neuroimaging studies (e.g., Mitterschiffthaler et al., 2007; Trost et al., 2012). Sad-sounding music has also been shown to produce "depressive realism", a state in which individuals rate their skills and traits in a more realistic manner than the positive bias that is usually present in non-depressive states (Brown & Mankowski, 1993). In one experiment, sad-sounding music was liked whereas scary-sounding music was disliked (Vuoskoski et al., 2012), which provides additional evidence that displeasure is experienced in response to music, contrary to Schubert's (1996) proposal.

Vuoskoski and Eerola (2012) examined whether sadness could be induced by sad-sounding music using indirect behavioral measures of emotional responding. One measure was a picture-judgment task in which participants rated ambiguous facial expressions on a number of affective dimensions. Sad-sounding music that participants selected (which tended to evoke sad autobiographical memories) induced sad feelings as indicated by heightened perception of sadness in the ambiguous faces, an affect-congruent bias that is also evident in nonmusical domains (Bouhuys, Bloem, & Groothuis, 1995; Parrott & Sabini, 1990). Experimenter-selected neutral music did not produce such biases, and only participants who scored high on an empathy scale showed signs of increased sadness in response to experimenter-selected, sad-sounding music. These results are in line with proposals that episodic memories play an important role in music-induced sadness, and that some individuals experience such sadness through an emotional-contagion mechanism (Juslin & Västfjäll, 2008).

Other research reveals that individuals with particular personality traits are more likely than other individuals to experience sadness and to enjoy sad-sounding music. For example, agreeableness and neuroticism are associated positively with sad responding to music; agreeableness is also associated positively with intensity of emotional responding (Ladinig & Schellenberg, 2012). Liking sad-sounding music tends to decrease among those who score high on extraversion (Ladinig & Schellenberg, 2012), but it increases among those who score high on openness-to-experience (Ladinig & Schellenberg, 2012; Vuoskoski et al., 2012), empathy (Garrido & Schubert, 2011; Vuoskoski et al., 2012), and absorption (i.e., the tendency to become deeply focused and engaged in mental imagery; Garrido & Schubert, 2011; Kreutz et al., 2008). Aesthetic sensitivity is one facet of openness-to-experience (Costa

& McCrae, 1992), whereas absorption is associated with involvement in the arts (Wild, Kuiken, & Schopflocher, 1995), both of which implicate aesthetic appreciation in the enjoyment of sad-sounding music. In addition, empathic individuals may be more likely to experience intense emotions conveyed by music, and the intensity of listeners' emotional response to a musical piece is associated positively with liking it (Ladinig & Schellenberg, 2012; Vuoskoski et al., 2012). Thus, individuals who are most likely to experience actual sadness in response to sad-sounding music may also tend to enjoy it the most.

Situational factors also play a role in liking sad-sounding music. When the typical preference for happy-sounding music was eliminated after participants completed a long and arduous task in the Schellenberg et al. (2008) study, the authors provided two possible explanations: (1) the task induced a negative mood in listeners, who therefore appreciated listening to mood-congruent music, or (2) sad-sounding music had a calming effect on the fatigued listeners. In a follow-up experiment, sad mood was induced by having participants describe feelings that they experienced in response to emotionally evocative pictures (Hunter, Schellenberg, & Griffith, 2011). This manipulation eliminated the preference for happy-sounding music, a finding consistent with the hypothesis that sad-sounding music is appreciated when listeners are in a mood-congruent (sad) mood. Another important situational factor involves the listening context. After repeated presentation of different pieces of happy-sounding music, music that conveys sadness evokes more intense feelings and it is appreciated more (Schellenberg, Corrigall, Ladinig, & Huron, 2012).

Huron (2011) proposes a neurochemical explanation—as yet untested empirically—for why sad-sounding music can be experienced as enjoyable. He argues that music induces sadness through a number of different mechanisms, including empathy (e.g., identifying with and feeling the emotions of the composer or performer that are conveyed through musical features), learned associations between particular musical features and emotions, and cognitive ruminations about sad life events that are triggered by sad-sounding music. Thus, according to Huron, genuine sadness is evoked by music. Because the peptide hormone *prolactin* is released during states of sadness (Turner et al., 2002), and because this hormone is thought to induce feelings of comfort, consolation, and tranquility, Huron proposes that the enjoyable effects of sad-sounding music are a consequence of the positive effects of prolactin. He argues that the brain is "tricked" into thinking it is experiencing true psychic pain, as in an unfulfilled life goal. In this way, sad-sounding music's effect on prolactin is akin to the way that opiates mimic endorphin release, producing pleasure.

Enjoyment of sad-sounding music may also be a consequence of the fact that music is relatively unique in its ability to evoke paradoxical feelings. For example, sad-sounding music is enjoyed significantly more than recalling sad events (Vuoskoski & Eerola, 2012). In other words, sad-sounding music may induce *mixed* emotions in listeners rather than negative emotions alone.

In line with this view, sad-sounding music induces sadness but also positive emotions such as nostalgia, peacefulness, and wonder (Vuoskoski et al., 2012). Furthermore, Eerola and Vuoskoski (2011) found that sad but not happy perceived emotion was correlated with ratings of beauty (see also Gabrielsson & Lindström, 1993). Thus, one reason why people like sad-sounding music is that they simultaneously experience positive emotions on the evaluative level, as well as negative emotions on the emotional-response level.

5. MUSICAL EMOTION RESEARCH
AND THE STRUCTURE OF EMOTIONS

Evidence for mixed emotional responding to music has implications for structural models of emotion. The *circumplex model* (Russell, 1980, 2003; Russell & Carroll, 1999), used widely in research on music and emotion, proposes that different emotions can be mapped in two dimensions: arousal (low to high) and valence (negative to positive). Happiness, for example, is described as having higher than average arousal and positive valence, whereas sadness has low arousal and negative valence. One assumption of this model is that negative and positive valence lay at opposite ends of the same continuum and therefore cannot be felt at the same time. This assumption is closely related to the use of particular measurement techniques, such as bipolar scales that designate one end as negative and the other as positive. Bipolar scales allow for neutral feelings but prevent participants from reporting both positive and negative emotions. By contrast, the *evaluative space model* (Cacioppo & Berntson, 1994) proposes that positive and negative valence are activated independently rather than reciprocally, at least in some circumstances. In line with this view, studies have shown that mixed emotions occur in many non-musical situations (e.g., Diener & Iran-Nejad, 1986; Larsen, McGraw, & Cacioppo, 2001: Larsen, McGraw, Mellers, & Cacioppo, 2004; Larsen, Norris, McGraw, Hawkley, & Cacioppo, 2009; Schimmack, 2001).

Music may be an ideal stimulus to evoke mixed feelings because it has different dimensions that can vary independently. For example, in the case of tempo, fast tempi are associated with happiness whereas slow tempi are associated with sadness. In the case of mode, major modes are associated with happiness whereas minor modes are associated with sadness. Thus, unambiguously happy-sounding music is major and fast, whereas sad-sounding music is minor and slow. But what about pieces of music with conflicting emotional cues, such as many pieces of dance music from recent years that tend to be fast and minor (Schellenberg & von Scheve, 2012)?

Evidence of mixed feelings can be found when each emotion is measured on a separate unipolar scale ranging from *none at all* to *extremely*. This is the approach taken in a series of studies that asked whether listeners feel and perceive mixed emotions when they hear music with conflicting cues to happiness and sadness (Hunter et al., 2008, 2010; Ladinig & Schellenberg, 2012). The general approach was to vary tempo and mode in a factorial design, such that the music stimuli had consistent cues to happiness (fast and major), consistent cues to sadness (slow and minor), or inconsistent cues (fast and minor or slow and major). Happiness and sadness were measured separately in response to each piece. As one would expect, perceived and felt happiness was highest in response to the fast and major pieces, lowest for slow and minor pieces, and intermediate for pieces with inconsistent cues. Sadness ratings showed the opposite pattern. A novel finding indicated that simultaneous happy *and* sad responding was greater in response to music with conflicting cues than for music that sounded clearly happy or sad. These patterns were evident whether the music stimuli were highly controlled pieces manipulated with MIDI (Hunter et al., 2010), or excerpts from actual recordings (Hunter et al., 2008; Ladinig & Schellenberg, 2012).

Subsequent research tested whether happiness and sadness are actually felt simultaneously rather than rapidly in succession (Larsen & Stastny, 2011). While listening to the excerpts used in earlier studies (Hunter et al., 2008; Ladinig & Schellenberg, 2012),

participants pressed one button when they felt sad, and another button when they felt happy. Although mixed emotions were relatively rare, they occurred simultaneously rather than in an alternating fashion. Moreover, Damasio et al. (2000) reported that emotional states of happiness and sadness were associated with qualitatively different patterns of brain activation, which implies that the neural substrates underlying these emotions differ and can therefore be activated independently (or at the same time). In sum, research on music and emotions has contributed to the debate among emotion researchers concerning whether valence should be measured on one or two dimensions, with the evidence siding firmly on the two-dimensional approach, which allows for mixed feelings.

6. INFLUENCES OF INFORMAL AND FORMAL MUSIC EXPERIENCE

Exposure to music can be informal or formal. *Informal* experience refers to simple exposure that occurs when people hear music in everyday life. Virtually all individuals with normal hearing have informal musical experience that they acquire through passive music listening, which can be focused (e.g., listening to music through headphones, attending a concert) or incidental (i.e., music heard in the background while doing something else). By contrast, *formal* experience is acquired by taking music lessons and studying music theory, such that musically trained individuals acquire explicit knowledge about musical scales, harmony, and other structural features of music.

Effects of informal exposure are typically examined developmentally. With increases in age, children have more music-listening experiences, which are accompanied by the development of general cognitive and perceptual skills (e.g., memory, attention) that play a role in children's responses when they are tested in the laboratory. Informal exposure to music can also be examined cross-culturally. Because musical systems differ across cultures, individuals from different cultures have different music-listening experiences. Finally, effects of music lessons are typically studied by comparing individuals with or without formal training in music.

6.1. Informal Experience and Development

Listening experiences shape children's capacity to perceive and experience musical emotions. As noted, the perception and induction of such emotions depends on listeners' sensitivity to the structural aspects of music (Meyer, 1956; Huron, 2006). Because these structural aspects differ across cultures and it takes many years to become fully enculturated, one might predict a long developmental trajectory (Hannon & Trainor, 2007). As we will see, however, infants and young children perceive musical emotions, although their responses depend on different cues to emotion than those that are important for older listeners. To date, studies have focused almost exclusively on children's ability to identify the emotions expressed by music, rather than on their actual emotional responses. Moreover, research has tended to examine the perception of basic emotions such as happiness and sadness, rather than aesthetic emotions such as wonder and awe.

It is well known that parents speak and sing to their infants in a manner that it is more musical than adult-directed speech and singing by using higher overall pitch, exaggerated pitch contours, and a slower rate (e.g., Fernald, 1991; Papoušek, 1992; Trainor, Clark, Huntley, & Adams, 1997). Communication of emotion and the promotion of infant-parent bonding appear to be central to this infant-directed mode of communicating (Dissanayake, 2000; Trainor, 1996; Trehub & Trainor, 1998), with infants preferring infant- over adult-directed speech and singing (Cooper & Aslin, 1990; Trainor, 1996; Werker & McLeod, 1989). Moreover, the emotional tone of infant-directed singing affects infants' behavior. Whereas lullabies cause them to focus on themselves as if preparing to sleep, playsongs cause them to attend closely to their caregiver (Rock, Trainor, & Addison, 1999). Although 5- to 9-month-olds associate happy-sounding music with a happy face, they do not appear to associate sad-sounding music with a sad face (Nawrot, 2003), possibly because of a general tendency to avoid displays of sadness.

Other research suggests that instrumental music influences infants' arousal level without inducing positive or negative valence. For example, although EEG reveals lateralization in brain activity among adult listeners in response to joyful- compared to sad- and fearful-sounding musical excerpts (Schmidt & Trainor, 2001), these effects are absent in infant listeners (Schmidt, Trainor & Santesso, 2003). Rather, brain-activation patterns suggest that music heightens arousal in 3-month-olds, has little effect for 6- to 9-month-olds, and lowers arousal in 12-month-olds. Future research could attempt to verify whether infants experience variations in valence in response to music in addition to variations in arousal.

Even though preschoolers can identify emotions conveyed by music in certain situations, the perception of emotions conveyed musically develops with age. Young children rely primarily on basic acoustic cues that are common to both vocal and musical expression of emotion. For example, 4- and 5-year-olds use tempo as a cue to emotion, associating a fast tempo with happiness and a slow tempo with sadness (Dalla Bella, Peretz, Rousseau, & Gosselin, 2001; Mote, 2011). Such associations are more reliable when the music is vocal rather than instrumental (Dolgin & Adelson, 1990). There is also a gender difference among 5- and 8-year-olds in the ability to identify emotions expressed musically, with girls outperforming boys (Hunter et al., 2011).

When children are asked to convey emotions by singing, they tend to use basic acoustic cues that are shared with vocally expressed emotions. For example, 4- to 12-year-olds use tempo (fast = happy, slow = sad), loudness (loud = happy, soft = sad), and pitch (high = happy, low = sad; e.g., Adachi & Trehub, 1998). Although children also tend to convey emotion through their facial expressions while they sing, both adults and 6- to 10-year-old children are more successful at perceiving children's intended emotion from auditory cues than from visual cues (Adachi & Trehub, 2000). By 8 to 10 years of age, children are *better* than adults at perceiving the intended emotion of same-age children's sung performances (Adachi & Trehub, 2000; Adachi, Trehub, & Abe, 2004). Perhaps adults perform relatively poorly on this task because they cannot help but attend to culture-specific cues in addition to culture-general cues, even though such cues are absent or unreliable in children's singing.

As children age and acquire more exposure to their culture's music, they become increasingly sensitive to the emotional connotations of culture-specific cues. For example, 6- to 8-year-olds associate the major mode with happiness and the minor mode with sadness, but younger children fail to do so (Dalla Bella et al., 2001; Gerardi & Gerken, 1995; Gregory, Worrall, & Sarge, 1996; but see Kastner & Crowder, 1990 for evidence of an earlier

emergence). Nevertheless, although 6- to 12-year-old children make use of culture-specific cues such as mode, they rely more heavily on temporal cues (which are not specific to Western music) when making judgments of happiness/sadness and of excitement/calmness (Kratus, 1993).

Specifically, rhythmic activity (i.e., the amount of activity regardless of the tempo; greater activity is associated with both happiness and excitement), meter (i.e., duple meter is associated with calmness, triple meter with excitement), and note articulation (i.e., staccato notes are associated with happiness, legato notes with sadness) are significant predictors of children's emotional judgments. In short, the temporal organization of music provides especially useful cues to emotions for children. Even when children have learned to associate particular features of their culture's music with specific emotions, universal cues to emotion often continue to take precedence.

In real music, emotion is expressed simultaneously through a variety of cues. When real music is used as stimuli, even 4-year-olds identify happiness expressed by melodies (Dolgin & Adelson, 1990) or excerpts from orchestral pieces (e.g., Cunningham & Sterling, 1988; Terwogt & van Grinsven, 1991). In an indirect test of children's emotion perception, Ziv and Goshen (2006) played a fast-major melody, a slow-minor melody, or no music while 5- to 6-year-olds listened to an emotionally neutral story. Because the emotion expressed by the music influenced children's interpretation of the emotional tone of the story, the results provide converging evidence that children have an implicit understanding of emotions expressed musically. Successful emotional identification, however, depends on the particular emotion that is examined. When researchers test the identification of happy-, sad-, angry-, and scary-sounding music, children and even adults often confuse fear and anger (e.g., Dolgin & Adelson, 1990; Terwogt & van Grinsven, 1991; Robazza, Macaluso, & D'Urso, 1994). Findings that children identify facial displays of happiness earlier in development compared to other emotions (e.g., Gao & Maurer, 2009, 2010), suggest that happiness is easy to identify across modalities.

In general, happiness and sadness may be better identified than anger and fear because of their uniqueness in terms of arousal and valence. Of the four emotions, happiness is the only one with positive valence, sadness is the only low-arousal emotion, whereas fear *and* anger are both high-arousal emotions with negative valence.

When Hunter et al. (2011) tested 5-, 8- and 11-year-olds' identification of four emotions with arousal and valence crossed in a factorial manner, children better identified high-arousal emotions (happiness or fear) than low-arousal emotions (peacefulness or sadness). Children are also easily influenced by conflicting emotions expressed by the semantic content of lyrics, failing to ignore the words when asked to judge the emotion conveyed by a singer's voice (Morton & Trehub, 2007).

The study of the development of sensitivity to emotions expressed musically leaves us with many unanswered questions that could be addressed in future research. For example, when and how do children actually experience emotions in response to music? Do young children experience complex aesthetic emotions, such as awe or wonder to certain musical pieces, and can they perceive and/or feel mixed musical emotions? And how does children's developing knowledge of musical structure affect their perception of musical emotions?

6.2. Informal Experience and Culture

The music of other cultures can sound strange, especially if it uses different tonal systems, metrical structures, and timbres. One might therefore expect music's expressed emotion to be lost on listeners raised in a different musical culture. Listeners are surprisingly accurate, however, at identifying the intended emotion conveyed in foreign, unfamiliar music. Balkwill and Thompson (1999) proposed the *cue redundancy model* to explain this phenomenon, suggesting that performers use both culture-specific cues as well as basic acoustic cues to express emotions in the music they play. Because no musical enculturation is required to decode basic acoustic cues, unfamiliar listeners are often able to perceive the intended emotional message in foreign music.

In one cross-cultural study, North American listeners could successfully identify happiness, sadness, and anger in Hindustani (Indian) ragas, but they had trouble identifying peacefulness (Balkwill & Thompson, 1999). A follow-up study confirmed that Japanese listeners perceive happiness, sadness, and anger in familiar music (traditional Japanese and Western music) as well as in unfamiliar music (Hindustani ragas; Balkwill, Thompson, & Matsunaga, 2004). Japanese adults and 8- to 10-year-old children can also identify whether Canadian 8- to 10-year-olds are trying to express happiness or sadness in their singing, with children actually outperforming adults on this task (Adachi et al., 2004). There is also remarkable agreement about the emotions expressed in traditional Greek music between foreign (Italian and British) and native (Greek) listeners, especially for particular emotions (Zacharopoulou & Kyriakidou, 2009). Specifically, happiness, sadness, and anger are more easily identified than fear. Even the Mafa tribe of Cameroon—with little or no exposure to Western music—can identify happiness, sadness, and fear expressed in Western music at above-chance levels (Fritz et al., 2009). Thus, listeners often perceive the intended emotion conveyed by music from a foreign culture by relying on general acoustic cues that are used across cultures.

6.3. Formal Music Training

Formal music training does not have a strong effect on the perception of emotion in music. For example, Hevner (1935) found that individuals who scored high on a measure of musical talent were only slightly better at associating major and minor modes with positive and negative affective terms, respectively. More recent results confirm that music training has little influence on the perception of emotion in music (Bigand, Vieillard, Madurell, Marozeau, & Dacquet, 2005; Ramos, Bueno, & Bigand, 2011; Robazza et al., 1994; Terwogt & van Grinsven, 1991). These results may not be surprising in light of the fact that much of emotion perception in music can be decoded from basic acoustic cues that are also present in vocal expressions of emotion. The effect of music training on decoding emotions in speech prosody is also inconsistent (Lima & Castro, 2011b; Thompson, Schellenberg, & Husain, 2004; Trimmer & Cuddy, 2008). Moreover, even though music training is associated with cognitive abilities (for a review see Schellenberg & Weiss, 2013), it has little or no association with emotional intelligence in adulthood (Resnicow, Salovey, & Repp, 2004; Schellenberg, 2011; Trimmer & Cuddy, 2008) or childhood (Schellenberg & Mankarious, 2012).

Some studies, however, have found a positive association between music training and the perception of emotions expressed musically, both in children (Yong & McBride-Chang, 2007) and adults (Lima & Castro, 2011a). One possibility is that effects of training are more likely to be evident in the perception of *subtle* musical emotions (Sloboda, 1985). In line with this view, compared to untrained listeners, musically trained individuals show higher liking for music that expresses mixed emotions (Ladinig & Schellenberg, 2012). Future research could examine further the effects of training on the perception of aesthetic compared to basic emotions, or on the perception of emotions in music with ambiguous cues.

CONCLUSION

The available evidence reveals that music is capable of conveying as well as inducing a wide range of emotions in listeners, including basic emotions (e.g., happiness and sadness) as well as more complex aesthetic emotions (e.g., wonder, transcendence, nostalgia). Music also evokes particularly strong and positive emotional responses such as chills, and it can elicit mixed emotional responding, including simultaneous perceptions and feelings of happiness and sadness, and positive evaluations of sad-sounding music. To communicate emotion, music often borrows cues from vocal expression of emotion, particularly temporal cues such as tempo. Other cues to emotion, such as mode, are culture-specific. Young children make use of basic acoustic cues in order to decode musical emotions, and they learn to use culture-specific cues as they gain more exposure to music. Basic acoustic cues are also used to decode emotions expressed in music from a foreign and unfamiliar culture. In fact, musical emotions tend to be understood readily by almost everyone whether or not they have formal training in music. The universality of emotional responding to music is consistent with the claim that music is the language of emotion.

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Chapter 16

EMOTIONS, MOODS AND MUSICAL PREFERENCES

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ABSTRACT

There appears to be some dispute in the literature about whether music induces emotions at all and whether musical emotions are comparable to emotions in general. However, a closer look reveals that divergent conclusions are often the result of different conceptions of emotions and different kinds of measures of emotional responses. This chapter begins by reviewing the evidence for the existence of musical emotions and summarizes the quite different mechanisms for inducing them. Then, the (still rather small) research concerning the relationship between musical emotions (and moods), both perceived and felt, and musical preferences is discussed. It is concluded that musical preferences are a result of the positive effects music can have, and the most important of these effects seems indeed to be to induce pleasant or desired moods and emotions in the listener.

INTRODUCTION

Ask an arbitrary person why he or she listens to music and chances are that the answer has to do with emotion (e.g., Behne, 1997; Juslin & Laukka, 2003, 2004; Laiho, 2004; Lonsdale & North, 2011; Saarikallio & Erkkilä, 2007; Sloboda & O'Neill, 2001; Zillman & Gan, 1997). If this function of music—that is, to induce, intensify, or change emotions, enjoy or comfort oneself, or relieve stress—is so important, music that evokes the sought-for emotions and moods should be preferred over music that does not. Indeed, there is evidence for this conclusion in the literature (e.g., Konečni, 2010; Schäfer & Sedlmeier, 2010); some theoretical accounts even argue that musical preference itself can be considered a kind of affective state (Scherer & Zentner, 2001). Yet the relationship between musical emotions and

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musical preferences is not so straightforward: Musical preferences have also often been related to other functions of music, as we will see below.

In this chapter, we first briefly review the evidence for musical emotions and how they are induced by music and then look at the connection between emotions and preferences. Finally, we will try to make the picture more comprehensive by integrating the effects of nonemotional functions of music on musical preferences. We would like to argue that listening to music is often a functional behavior: People use music to obtain effects by listening to a specific kind of music. As indicated on the left side of the flowchart in Figure 1, such desired effects are often changes in emotions or moods but can also be of some other kind. The choice of music is generally influenced by already existing knowledge about the functional effects of music, and by musical preferences. Yet there are also situations where some kind of music is listened to for the first time, possibly without specific expectations as to its functional effects. In any case, music might express some kind of emotion or mood, possibly as intended by the composer. This emotion is not necessarily felt by the listener even if it is perceived "correctly." But often, as we will see below, there is a substantial correspondence between perceived and felt emotion. Not so seldom, however, listeners might not think about which emotion music should express but feel some emotion nonetheless, which does not have to be the one originally intended (if at all). If the emotion felt is a pleasant experience to the listener, it is assumed to create and/or strengthen musical preference. The specific emotion or mood that is currently desired depends on the characteristics of the listener as well as the characteristics of the situation or context (for an overview, see North & Hargreaves, 2008). Therefore, listeners might systematically search for music that can evoke the sought-for emotion. If the selected piece of music then successfully evokes this emotion, the preference for it is likely to be strengthened even more.
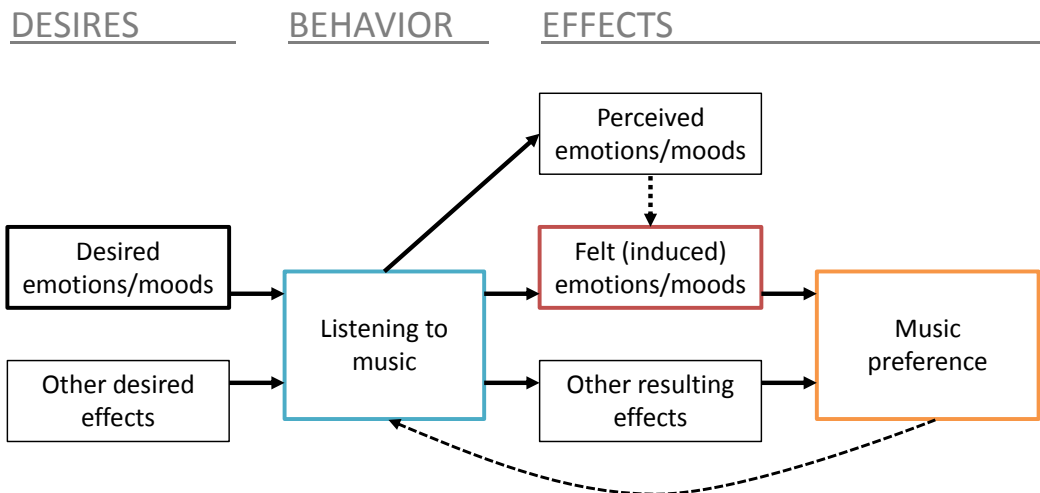
Figure 1. Flowchart of the connection between musical emotions and musical preferences.

Next, we go into more detail about the relationship between music and musical emotions and review the (small) body of research on the relationship between musical emotions and musical preferences. Finally, we conclude by connecting the effects of emotional and nonemotional functions of music to musical preference.

FROM MUSIC TO EMOTIONS AND MOODS

At first glance, there appears to be some dispute in the literature about whether music induces emotions at all and whether musical emotions are comparable to emotions in general (for an overview, see Hunter & Schellenberg, 2010). However, a closer look reveals that divergent conclusions are often the result of different conceptions of emotions and different kinds of measures of emotional responses. Here, we first discuss how musical emotions can be defined and measured. Then we survey the mechanisms that have been identified as evoking musical emotions and moods, and finally we briefly discuss the special relationship between perceived and felt emotions.

What is a Musical Emotion and How Can it be Measured?

Some researchers argue that music elicits emotions that are different from "normal" emotions (e.g., Konečni, 2003; Noy, 1993). For instance, Scherer (2003, see also Scherer & Zentner, 2008) distinguished between utilitarian emotions (e.g., anger or fear) and aesthetic emotions (e.g., awe or grandeur), with the latter being intrinsic to aesthetic stimuli, such as a given piece of music. Yet the majority of scholars seem to agree that music induced emotions do not have a special status (e.g., Peretz, 2001; Sloboda, 1992). For instance, in an extensive experience sampling study, Juslin, Liljeström, Västfjäll, Barradas, and Silva (2008) found that emotions induced by music were quite comparable to those induced by nonmusical stimuli, although overall, music evoked more positive emotions than other stimuli.

A further cause of disagreement seems to be the differentiation of emotions and moods, where the distinctions are often drawn along several criteria. The three most important differences seem to be that (1) an emotion is a more intense affective response than a mood (*intensity*); (2) emotions do not last as long as moods (*duration*); and (3) emotions have a clear object (e.g., a piece of music), whereas for moods the object is often less clear (*object relatedness*). There are cases (e.g., very short chills with a clear connection between affective reaction and a given piece of music—which is clearly an emotion and not a mood) that are easily classified, but in general, it is hard to define clear boundaries between emotions and moods according to these three criteria. Therefore, we argue that music can induce both emotions and moods, based on the mechanisms we present below.

Another problem that complicates research on musical emotions is that the dependent measures used are quite varied. Emotions can be measured by examining participants' subjective feelings with the help of self-reports (e.g., Behne 1997; Juslin & Laukka, 2003, 2004), by registering psychophysiological responses to music (e.g., Krumhansl, 1997; Salimpoor, Benovoy, Longo, Coooperstock, & Zatorre, 2009; Vaitl, Vehrs, & Sternagel, 1993), by looking at brain activations induced by music (e.g., Blood & Zatorre, 2001; Lindquist, Wager, Kober, Bliss-Moreau, & Barrett, 2012; Pereira, Teixeira, Figueiredo, Xavier, Castro, & Brattico, 2011), by observing people's overt expressions of emotion, such as crying, smiling, or furrowing their eyebrows when listening to music (e.g., Becker, 2004; Sloboda, 1991), or by registering music listeners' action tendencies, such as helping other people or buying specific products (e.g., Harrer & Harrer, 1977; North, Tarrant, & Hargreaves, 2004).

Finally, there is some dispute about the structure of emotions and the resulting theoretical models used in research on musical emotions that are partially inconsistent (see Hunter & Schellenberg, 2010). The most prominent models include (1) the *categorical model*, proposing basic emotions that build distinct, irreducible categories, (2) the *circumplex model of valence and arousal*, proposing that any emotion can be displayed in a two-dimensional space with valence and arousal as two orthogonal variables, and (3) the *mixed model of valence*, proposing that, besides "pure" emotions, there is a broad range of "mixed" emotions that are characterized by the *simultaneous* feeling of both positive and negative valence. Although each of these models has received considerable empirical support none of them is able to explain the whole range of musical emotions exhaustively.

Because of this diversity in models of the structure of emotions, postulated affective states, and kinds of measurement, it has been proposed that it is more promising to study musical emotions in terms of *how they are evoked* (Juslin & Västfjäll, 2008; Scherer & Zentner, 2001). We next summarize the hypothesized underlying mechanisms.

Mechanisms Inducing Musical Emotions

The most comprehensive overview of mechanisms for inducing musical emotions has been given by Juslin and Västfjäll (2008). Figure 2 shows these mechanisms arranged along two axes that indicate (a) how directly musical emotions are determined by music itself (y-axis) and (b) how much deliberation is involved in the respective cognitive processes (x-axis). Adding to the six mechanisms suggested by Juslin and Västfjäll, we included two potential processes that were also mentioned in the commentaries on Juslin and Västfjäll's target article (the shaded parts in Figure 2).

We very briefly describe each of the mechanisms, starting with the most "immediate" effects of music (see Juslin & Västfjäll, 2008, for ample references for each of the mechanisms). The term brain stem reflex refers to a process that induces emotions through the acoustical characteristics of the music: music as sound in the most basic sense. For instance, sounds that are loud, sudden, or dissonant might be taken by the brain stem to signal a potentially urgent and important event, thus inducing arousal, which in turn can trigger emotions such as anxiety. The process of emotional contagion refers to the internal mimicking of the perceived emotional expression of the music, by means of peripheral muscular feedback or more direct activation of the relevant representations in the brain, which leads to an induction of the same emotion. For instance, music with a sad expression (slow music with low pitch and low sound level) tends to induce sadness in a person who listens to that music. The third process that is very close to music itself is musical expectancy, which refers to expectancies about the regularities or "syntactical" relationships between different parts of the musical structure. These expectations are the result of extended (mostly implicit) learning processes. Musical expectancy as an emotion-evoking process was first suggested by Meyer (1956), who observed that mere arousal through an unfulfilled expectation or an unexpected event might not be enough to evoke an emotion—only if it is followed by a satisfying resolution of the tension will emotions potentially appear (see also Huron, 2006).
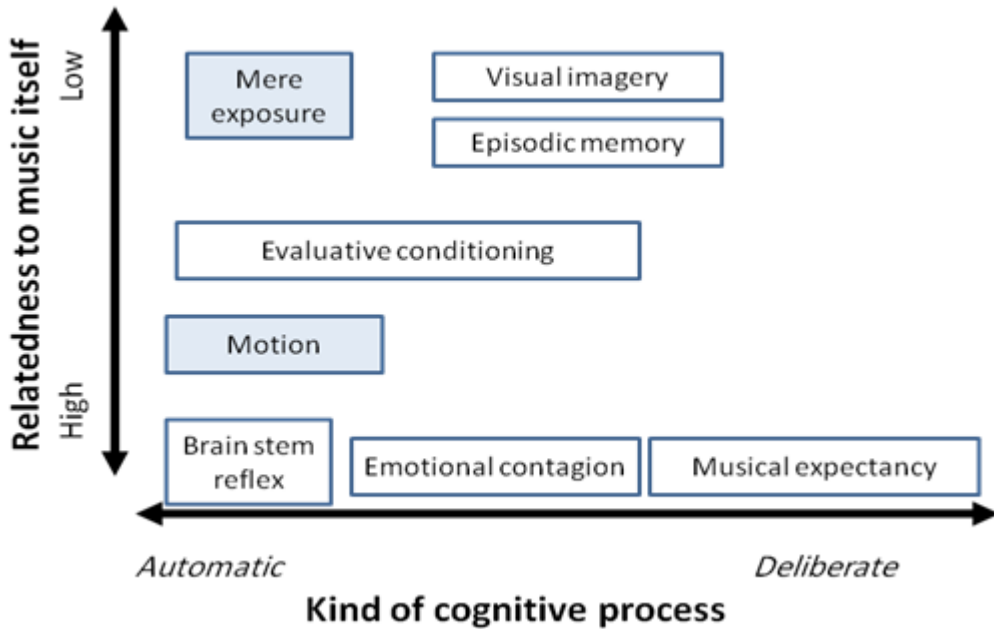
Figure 2. Mechanisms that have been suggested in the literature to induce musical emotions.

It has been argued that motion is also an emotion-inducing process triggered by music. Music can drive (possibly inhibited) movement that in turn may elicit emotions (e.g., Bharucha & Curtis, 2008). Frequently, musical emotions seem to be induced via evaluative conditioning. Juslin and Västfjäll (2008) described this process as arising from the repeated pairing of a positive or negative nonmusical stimulus with a given piece of music that eventually makes the music carry the respective emotion with it. This process may also work the other way: Emotionally evocative music may also condition neutral stimuli. For instance, music may play an important role in the evaluative conditioning of religious beliefs and symbols (e.g., Alcorta, Sosis, & Finkel, 2008) and in influencing film viewers' emotional experiences (e.g., Bezdek & Gerrig, 2008).

Now let us look at the mechanisms that might arguably have only a loose connection to music itself (and that can be triggered by many other kinds of stimuli, as well). Mere exposure and the resulting familiarity with music that is not totally disliked at the outset might be such a process that has an impact on the evaluative responses to music (Kreutz, Ott, Teichmann, Osawa, & Vaitl, 2008; Moors & Kuppens, 2008; Trehub, 2008), although it might not necessarily work in a monotonous way (increasingly positive evaluation) but might rather follow an inverted U shape. Finally, episodic memory and visual imagination are additional processes whereby music induces emotions. The episodic memory process is exemplified by the "Darling, they're playing our song" phenomenon and it has been suggested that music is especially effective in stimulating visual imagination (e.g., of a wonderful landscape) that in turn triggers emotions. Figure 2 illustrates that musical emotions are not a unitary concept and can be evoked by a wide variety of processes and mechanisms that range from fully automatic to quite deliberate and from very closely to quite loosely connected to music.

The Relationship between Perceived and Felt Emotion

In this chapter, we are interested in the emotions that are really felt by the listener, but the majority of research on musical emotions, so far, has dealt with the perception and not necessarily the feeling of emotion. Overall, listeners have been shown to be quite good at perceiving the emotions expressed in music (e.g., Vieillard, Peretz, Gosselin, & Khalfa, 2008); and recent research has convincingly shown that the emotions that are perceived when listening to music are also felt by the listener, albeit mostly to a somewhat lesser extent (e.g., Kallinen & Ravaja, 2006; Schubert, 2010; Zentner, Grandjean, & Scherer, 2008 – see also Figure 1).

FROM MUSICAL EMOTIONS TO PREFERENCES

So far, the relationship between musical emotions and musical preferences has not been extensively researched. However, the empirical results available indicate that felt emotions when listening to a given piece of music have an impact on musical preference. There is evidence that at least one mechanism that possibly has an effect on musical emotions, mere exposure (see Figure 2), also influences preferences (Finnäs, 1989; North & Hargreaves, 2008; Pereira et al., 2011; Peretz, Gaudrea, & Bonnel, 1998; Schubert, 2010), though it is not clear whether this relationship between repeated exposure (increasing familiarity) and increasing preference necessarily involves changes in felt emotional intensity (e.g., Witvliet & Vrana, 2007). Other studies that examined the relationship between musical emotions and musical preferences used either correlational designs that tended to examine more enduring preferences or experimental designs that predominantly dealt with situational preferences.

Correlational Evidence

There is convincing evidence that preferred music goes along with stronger emotional arousal than nonpreferred music (Panksepp, 1995; Salimpoor et al., 2009; Witvliet & Vrana, 2007). For instance, in their Study 1, Schäfer and Sedlmeier (2011) had their participants listen to 18 pieces of music and then rate both their subjective emotional arousal and their preference for each of the pieces. They found a strong relationship between the two kinds of ratings. These authors also found considerable correlations between the capability of people's favorite music to regulate moods and emotions and the strength of preference for this music (Schäfer & Sedlmeier, 2009, 2010). In another recent study, Schubert (2010) used pieces that his participants either loved or hated and found strong differences in the strength of the emotions felt as well as in preferences for the two kinds of music.

Experimental Evidence

In an early study, Konečni, Crozier, and Doob (1976) induced anger in some of their participants and observed that angry participants preferred rather simple music as compared

to participants who had not undergone an emotion-inducing procedure. This impact of anger on musical preference was replicated by Flath-Becker and Konečni (1984). In general, the experience of negative emotional states seems to sharply decrease listeners' preference for complex, novel, and loud music that contains complex rhythmic structures (Konečni, 2010). Music choice has also been found to depend on the sought-for mood. North and Hargreaves (2000) found that participants who rode an exercise bicycle tended to choose "high-arousal" music whereas those who relaxed preferred "low-arousal" music. Similar results were found by Lai (2004) and Dibben (2004). Knobloch and Zillmann (2002) placed participants in bad, neutral, and good moods and found that people in a bad mood preferred music that could be expected to improve their mood (highly energetic and joyful music) more than participants in neutral and good moods.

Whereas all the studies mentioned above examined music choice dependent on the prevalent emotion or mood, there are, to the best of our knowledge, only two studies that directly tested whether *increases* in emotional intensity induced by music also lead to *increases* in preference. Schäfer and Sedlmeier (2011, Study 2) manipulated music listeners' emotional arousal without them being aware of this manipulation, by having one group watch their faces in a mirror and the other not. For unknown pieces of music, higher induced arousal yielded higher preferences, if the music was not too complex. In another study, Sedlmeier, Weigelt, and Walther (2011), following research in the embodied cognition tradition, used three ways to induce positive and negative affect in their participants and examined musical preference ratings dependent on these manipulations. They had their participants (a) activate their "smiling muscles" or inhibit them (by holding a pen between the front teeth or with their lips, (b) perform vertical or horizontal head movements (nodding or shaking the head), and (c) flex or extend their arms (by having them press their hand on a table top from either below or above). During these kinds of movements participants listened to different kinds of "neutral" music that had been selected in a previous study. Consistently, higher preference ratings were obtained for the positively than the negatively associated muscle groups. Evaluative conditioning turned out to be the most plausible explanation for these results. Thus, it seems that evaluative conditioning might be a process that induces both musical emotions and musical preferences.

MUSICAL EMOTIONS AND MUSICAL PREFERENCES RECONSIDERED

In this chapter, we have provided evidence that music is a powerful means to induce emotions and that these emotions in turn are important in the development of musical preferences. Music elicits emotions by quite different mechanisms and at least two of the mechanisms, mere exposure and evaluative conditioning, might have a direct impact on both musical emotions and musical preferences. Yet as already mentioned in the Introduction, this is not the whole story.

Just as music will be liked more when it fulfills the listeners' expectation regarding the induction or change of specific emotions or moods, it will also be liked more when it fulfills other functions the listener desires (e.g., the expression of identity or values to others through music, intellectual stimulation, music as a means or as background for social activities, the regulation of physiological arousal, or music as background entertainment). There is a high

overall correlation ($r = .65$) between the degree to which music fulfills several functions and the strength of musical preference for people's favorite music (Schäfer & Sedlmeier, 2009). The strength of the relationships between different functions of music and musical preference seems, however, to be determined in part by learning and cultural processes (Schäfer, Tipandjan, & Sedlmeier, 2012). The active use of music to serve specific purposes is strongest during adolescence, and therefore it is not surprising that musical preferences that are established in that period of development remain quite stable for the rest of most people's lives (Holbrook & Schindler, 1989).

One could argue that what we have called "other functions" of music might also be related to pleasant emotions in the end. If one follows theories of motivation such as Klinger and Cox's (2004) theory of current concerns, other functions of music such as the expression of one's identity or intellectual stimulation may in the end only serve music listeners' motivation to increase their happiness and fulfillment, that is, to experience positive changes in emotions.

Finally, there are still no clear-cut definitions of many of the concepts used here, which makes the investigation of musical emotions and musical preferences quite challenging. Most importantly, "musical preference" is still a very cloudy term that has an evaluative and a behavioral component. While the behavioral component is easy to identify (a piece or genre of music is listened to more often than another), the evaluative component (the degree of pleasure) is very hard to grasp. First and foremost, this is because it seems to be very similar to the concept of valence, which has often been treated as one of the structural dimensions of emotions (see above). We suggest that musical preferences are of a long-lasting nature while valence judgments are rather short-term affective reactions. Moreover, musical preferences are stable patterns that develop idiosyncratically, depending on the personality of the listener and the sociocultural context. In sum, the available evidence suggests that musical preferences are a result of the positive effects music can have, and the most important of these effects seems to be to give us pleasant emotions.

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