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The Influence of Member Status Differences and Task Type on Group Consensus and Member Position Change

Erich Kirchler
Johannes Kepler University
Linz, Austria

James H. Davis
University of Illinois
at Urbana-Champaign

Members of 3-person groups received feedback from a test of decision-making ability that created one of three task-relevant status distributions (conditional, 2-3-4; outstanding, 2-2-5; and equal, 3-3-3—where larger values indicate higher status) and reached consensus decisions on one intellective task (Mystery Problem) and two judgmental tasks (Personnel Selection and Allocation of Resources); the latter two have no correct answers and are particularly susceptible to normative factors. The particular social-decision scheme model (reformulated to allow for individual differences) that successfully predicted group decisions emphasized both task and status distribution: Intellective problem responses were predicted by a *truth-wins* model in the equal and conditional power conditions and a *power-wins* model in the outstanding power condition. Discussion-induced personal change (individual preferences before–after discussion) was highly dependent upon status level, except for the intellective task—for which change was independent of status, but greater in overall magnitude than for the other two tasks.

The recurring problem of how to accommodate individual differences in the study of small group performance research has both theoretical and empirical dimensions. The sheer number of different trait patterns that may arise among members, or the number of combinations whereby individuals can interact to reach a solution, decision, or opinion, offer serious difficulties for theory and data gathering alike. (See McGrath & Altman, 1966, for a discussion of this general pattern problem and its implications.)

One basis of intermember differences that is likely to be of special importance in task-oriented groups is the apparent degree of task-related expertise perceived by others. The more competent a person is perceived to be at a special task, the higher the position or status in a task-related group discussion. The notion of status is, of course, frequently used in a transituational sense (e.g., as derived from socioeconomic level, family name, occupation, etc.) in which the social rank imparted is more or less constant. One's imported status in this sense may influence the further evolution of personal status during interaction, but it is to some degree independent of the group. However, we are concerned here with a simpler, local conception of status specifically related to the task that confronts the group and do not mean to imply any larger sociological phenomenon. As in most experimentally composed groups, extraneous status variables or other individual difference influences are balanced or randomized out by design—a practice not limited, of course, to the laboratory (e.g., juries, representative community committees, etc.).

Individual status differences, such as those derived from local task expertise, may be particularly important in settings where groups must resolve differences of opinion or preference among their members before they can achieve consensus; interpersonal change and accommodation are thus highly salient and potentially resolvable by resorting to social criteria. On the other hand, status differences may be less important if the quality of group performance depends primarily upon discovering a "best" response alternative (i.e., a decision that is demonstrably correct, optimal, and so on). If status is in fact not closely correlated with the intellective demands of the task per se, then actual status patterns may be of little moment in groups that perform such tasks. In general, the influence of intermember status differences may be more pronounced in groups where normative pressures are likely to arise during interaction than in groups where informational influences (Deutsch & Gerard, 1955) predominate. (For a more detailed discussion of intellective and judgmental tasks, and the character of associated interaction, see Laughlin, 1980; Laughlin & Adamopoulos, 1982; Laughlin & Earley, 1982).

In addition to the accommodation of status differences by lower ranking members yielding to those of higher status, the situation (task-status pattern) may sometimes give rise to strategies that enable members of lesser status to escape direct yielding by equalizing the status inequities among members. More specifically, one strategy to reduce the power of high-status members might be for the weaker members to "combine statuses," until they are in some sense collectively able to compete.

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Correspondence concerning this article should be addressed to Erich Kirchler, Johannes Kepler Universität Linz, A-4040 Linz–Auhof, Austria.

For example, discussants motivated to appear capable and strong may react in part to some consensual decision situations as though they were in a negotiation situation. Such bargainers, seeking positive evaluations during interaction, may attempt to form subgroups after the fashion of coalitions, although there are no tangible assets to be overtly combined.

Rubin and Brown (1975), summarizing research findings on coalitions formed after initial perceptions of power structures and resources, have reported that weaker parties are more likely to ally with other weaker members than with stronger participants in order to create a winning coalition. (Also, see Kahan & Rapoport, 1984; Murnighan, 1978). Of course, the distribution of tangible resources in a bargaining/negotiation setting is somewhat different from the primarily consensual performance situation of interest here. Nonetheless, such findings are suggestive and lead us to the question of whether or not task-relevant status differences among members could act in approximately similar ways, although it is difficult to imagine status "values" to be strictly additive after the fashion of member resources in bargaining and coalition studies.

In summary, we propose to investigate how the *distribution* of individual status differences can influence group decision making and explore the role that task structure or type plays in the process. However, before we can consider these interrelationships further within an explicit context, we must discuss the question of theory. What sort of theory or amendments to existing theory would enable us to include information about the distribution of task-relevant individual differences?

Theory

Most formal models of group performance (e.g., Davis, 1973; Gelfand & Solomon, 1973; Lorge & Solomon, 1955; Smoke & Zajonc, 1962; Stasser & Davis, 1981) make little provision for intermember differences. Rather, they regard members' inputs as representing undifferentiated, unweighted "votes" or contributions to the consensus process that produces the decision, solution, or opinion. One exception to this theoretical custom results from the work of Penrod and Hastie (1979, 1980). They have summarized the overall effects of individual differences in inclination to change positions in a rather general way by defining a "stubbornness" parameter for individual group members. Representative parameter values are obtained by sampling from a specified theoretical distribution, with the result reflecting possible consequences of differential intermember position change for final decision outcomes. (See Hastie, Penrod, & Pennington, 1983, for a detailed discussion of the most recent version, JUS, of the DICE computer simulation model, which was originally designed to describe jury verdicts.)

Another approach to the problem (Davis, 1980), although it also focuses on overall group outcome predictions, specifies differential sampling rates for members drawn from *different populations.* If individual decision preferences are differently distributed in each of the population sets from which group members are drawn, then sampling from each with different probabilities would allow individual differences to be reflected in the group decision distribution predicted by social decision scheme theory (Davis, 1973). Like the Penrod–Hastie approach, this strategy has proved useful for systematically including individual differences in overall predictions when *general simulations of particular systems* were the targets of study (e.g., jury verdicts in criminal trials). However, different theoretical strategies seem necessary to address adequately the notion of task-relevant status differences within the decision-making groups discussed earlier.

Distinguishable Members

A quite different approach to incorporating individual differences is to acknowledge different types of members *within the group*—different *status types* in terms of this research. Most research on small groups treats individual members as indistinguishable from one another, although response alternatives are distinguishable. Theory has followed this trend. For example, social decision scheme theory (Davis, 1973) recognizes that there are $m = C(n + r - 1; r) = (n + r - 1)!/r!(n - 1)!$ ways that r *indistinguishable* group members can array themselves over the n *distinguishable* decision alternatives; the ith array of member decision preferences (or distinguishable distribution) occurs with probability π_i, $i = 1, 2, \ldots, m$. The group probability distribution, $P = (P_1, P_2, \ldots, P_n)$, over the n decision alternatives is then given by

$$P = \pi\mathbf{D}, \tag{1}$$

where π is the probability vector, $\pi = (\pi_1, \pi_2, \ldots, \pi_m)$, and

$$\pi_i = \binom{r}{r_1, r_2, \ldots, r_n} p_1^{r_1} p_2^{r_2} \cdots p_n^{r_n}, \tag{2}$$

a multinomial probability. The stochastic matrix, $\mathbf{D}$, is $m \times n$, with entries $[d_{ij}]$ of conditional probabilities specifying the probability of a group choosing the jth decision alternative given the ith array of member preferences. The key term for substantive *theoretical* purposes, of course, has been the social decision scheme matrix, D; that array is responsible either for summarizing the observed social consensus process or for translating a priori hypotheses into explicit predictions, such as majority rules, truth wins, averaging, or the considerably less familiar social decision processes that have sometimes been observed in practice (e.g., see Davis, Holt, Spitzer, & Stasser, 1981).

Now, however, suppose *both* decision alternatives and individual status types are distinguishable. In this case, there are $m = n^r$ ways for r persons to array themselves over the n mutually exclusive and exhaustive decision alternatives. (Recall that $m = C(n + r - 1; r)$ when the r members are *indistinguishable,* and $C(n + r - 1; r) < n^r$.) In the present application, it is necessary to account for each of the distinguishable members by virtue of their being *separate status types* when calculating the probability of each distribution. Thus, the probability, π_i, of the ith distribution of distinguishable members is now given by

$$\pi_i = p_{11}^a p_{12}^a \cdots p_{rn}^a = \Pi p_{kj}^a, \tag{3}$$

where $k = 1, 2, \ldots, r$ persons; $j = 1, 2, \ldots, n$ alternatives; $a = 1$, if alternative j is chosen, and 0 otherwise; and $\sum_{i=1}^{m} \pi_i = 1.00$. The parameter π_i may sometimes be estimated directly by counting the relative frequency of observed arrays, but such direct methods are rarely possible in practice. Rather, the π_i must typically be estimated indirectly by substituting the observed proportions of individual preferences for each decision alternative (which are available in most research settings) for the corresponding parameters in Equation 2 or 3 as appropriate.

In the case at hand, the group probability distribution, P, is given as before by Equation 1, namely $\pi\mathbf{D}$, where π is defined by Equation 3, and the $m \times n$ matrix $\mathbf{D}$ of conditional probabilities is defined as in past applications (e.g., Davis, 1973; Stasser & Davis, 1981), except that now $m = n^r$ is relatively larger than previous applications in which $m = C(n + r - 1; r)$, as the r members, like the n alternatives, are distinguishable. (Recall that members are distinguishable by virtue of being different status types.)

Overview

The primary goal of this study was to investigate how status differences among discussants, together with the type of task, influence the social decision schemes that guide consensus and, ultimately, group performance. Three-person groups worked on an intellective task (a problem with a verifiable solution) and two judgmental tasks (no verifiable solution)—one involving personnel selection and one requiring the allocation of resources. (See Brandstätter & Schuler, 1978, and Laughlin & Adamopoulos, 1982, for more comprehensive discussions of such tasks.) There were two response alternatives for each task. Thus, for the special case at hand, $m = 2^3 = 8$. Intermember status was manipulated by giving prearranged feedback about discussants' earlier performance on a decision-making test (Wiggins, Dill, & Schwartz, 1965) to create three different internal status distributions: (a) equal status; (b) two equal and the third with much higher status; and (c) all differ slightly in status.

If a task has a demonstrably correct solution, persuasive arguments should dominate the social decision process; an individual proposing a correct solution should convince the others irrespective of the status levels involved—essentially a "truth-wins" social decision scheme. If no demonstrably correct response is involved, and no status differences are engaged, then the decision that satisfies the most members should be adopted—a "majority-wins" process. However, if status differences are salient, the member with outstanding status should determine the outcome—a "power-wins" scheme; but, if status differences are small, a coalition of the weaker may determine the decision.

Method

Subjects

The 372 subjects, all male undergraduates fulfilling a course requirement at the University of Illinois, Urbana-Champaign, were divided into 3-person groups. Data from nine of the 3-person groups were excluded, either because subjects doubted feedback validity or substantial age differences among members created potentially competing status discrepancies. Thus, 103 groups of 3 and 36 individuals yielded a total sample of 345.

Tasks

The *Mystery Problem,* which was taken from Shaw (1963), called for subjects to ascertain whether the death of two persons constituted murder, or was due to accident or suicide. In the *Personnel Task* they had to decide which of two job candidates to employ in a bank. The *Allocation Task* required that a choice be made as to which of two research projects was to be supported: either a child rehabilitation project or a mental health program for older adults. Groups and individuals indicated their preferences for one of two response alternatives, A_1 or A_2.

Procedure

After subjects were welcomed to a study of group performance, they completed several items from the Goyer (1970) Organization of Ideas Test (Form S), the validity of which had been discussed and strongly emphasized. Next, subjects completed each task privately. Following feedback about individual performance on the Goyer Test, at which time the validity and usefulness of the test were again emphasized, groups of 3 were randomly assembled for discussion. The (preplanned) test performance of its members (actually assigned at random) was announced to each group at large, prior to beginning work. The feedback scores were given in "points," and the intermember distribution within each group conformed to one of three experimental conditions: *equal power* (3-3-3); *conditional power* (2-3-4); and *outstanding power* (2-2-5). Before group discussion began, each subject, using a scale of 11 categories, rated his partners on 10 adjectives (indicating friendliness and dominance), thus yielding information on the efficacy of the status manipulation.

The mystery and personnel tasks were always given first (equally often in both orders), and the allocation task was always administered last to allow additional emphasis of intermember status differences. Before discussing the allocation task, each group member was allowed to draw as many lottery tickets from an urn as he had scored points on the Goyer Test. The purpose of the lottery was to reemphasize status differences that might otherwise decay over three tasks. Subjects could unseal the tickets only at the end of the experiment; 86% were blank, but 14% won \$1. At the end of the discussion, subjects were paid the amount they had won. All subjects again completed the three tasks (in private), were completely debriefed, thanked for their participation, and dismissed.

Results

Manipulation Check: Differences in Perceived Expertise

In order to check the manipulation of perceived differences in expertise status, we averaged discussion partners' prediscussion ratings (0 = *not at all,* 10 = *extremely*) of each other on socially descriptive adjectives to yield an *expected dominance* score (from: powerful, a leader, intelligent, persuasive, capable, dependable, and narrow-minded), and an *expected friendliness* score (from: friendly, sympathetic, and interesting). An analysis of variance showed the assigned expertise-status level (feedback of 2, 3, 4, or 5 points) to have been a significant influence, $F(3, 610) = 13.36$, $p < .001$, on average dominance ratings received ($M = 5.41$, 5.70, 5.92, and 6.00, respectively). All pair-wise comparisons were significant by Duncan's test ($p < .05$), except for the 4-point and 5-point assignments. No significant differences, $F(3, 510) < 1.00$, were observed in the average perception of friendliness.

Subsequently, expected dominance was analyzed within groups. In the conditional power group (2-3-4), the subjects scoring lowest expected the partner scoring 4 to be more dominant, $M = 5.91$, than the partner scoring 3, $M = 4.71$, $t(47) = 3.14$, $p < .01$. The subjects scoring 3 differentiated between expected dominance of partners scoring 4, $M = 5.91$, and 2, $M =$

Table 1
Plausible Social Decision Scheme Matrices for Each Status Distribution (Experimental Condition)

Experimental condition	Member preference distribution[a]		Social decision schemes: Power wins		Coalition of weak parties wins		Majority wins		Truth wins	
	A_1	A_2	A_1	A_2	A_1	A_2	A_1	A_2	A_1	A_2[b]
Conditional power (2-3-4)	(2, 3, 4;	—)	1.00	.00	1.00	.00	1.00	.00	1.00	.00
	(3, 4;	2)	1.00	.00	.00	1.00	1.00	.00	.00	1.00
	(2, 4;	3)	1.00	.00	.00	1.00	1.00	.00	.00	1.00
	(2, 3;	4)	.00	1.00	1.00	.00	1.00	.00	.00	1.00
	(2 ;	3, 4)	.00	1.00	1.00	.00	.00	1.00	.00	1.00
	(3 ;	2, 4)	.00	1.00	1.00	.00	.00	1.00	.00	1.00
	(4 ;	2, 3)	1.00	.00	.00	1.00	.00	1.00	.00	1.00
	(— ;	2, 3, 4)	.00	1.00	.00	1.00	.00	1.00	.00	1.00
Outstanding power (2-2-5)	(2, 2, 5;	—)	1.00	.00	1.00	.00	1.00	.00	1.00	.00
	(2, 5;	2)	1.00	.00	.00	1.00	1.00	.00	.00	1.00
	(2, 2;	5)	.00	1.00	1.00	.00	1.00	.00	.00	1.00
	(2 ;	2, 5)	.00	1.00	1.00	.00	.00	1.00	.00	1.00
	(5 ;	2, 2)	1.00	.00	.00	1.00	.00	1.00	.00	1.00
	(—;	2, 2, 5)	.00	1.00	.00	1.00	.00	1.00	.00	1.00
Equal power (3-3-3)	(3, 3, 3;	—)					1.00	.00	1.00	.00
	(3, 3;	3)					1.00	.00	.00	1.00
	(3 ;	3, 3)					.00	1.00	.00	1.00
	(—;	3, 3, 3)					.00	1.00	.00	1.00

Note. Matrix entries are probabilities and should be interpreted as values very near 1.00 or .00.
[a] Numerical values indicate status (test feedback) of discussants. Note that both members and decision alternatives are distinguishable, unlike previous applications of social decision scheme models.
[b] Correct decision alternative is A_2 for the truth-wins social decision scheme.

5.35, $t(47) = 5.29$, $p < .01$. And, likewise, subjects scoring 4 expected the partner scoring 3, $M = 5.68$, to be more dominant than the partner scoring 2, $M = 5.45$, $t(47) = 2.78$, $p < .01$. In the outstanding power group (2-2-5), the partner scoring 5, $M = 6.00$, was expected to be more dominant than the partner scoring 2, $M = 5.49$, $t(31) = 5.40$, $p < .01$.

Social Decision Schemes

Predictions of three social decision schemes (informally labeled *power wins, majority wins,* and *coalition of weak parties* wins) were of particular interest for the Personnel Selection and Allocation tasks; an additional social decision scheme (informally labeled *truth wins*) was relevant for the Mystery Problem. These social decision schemes are idealized as theoretical matrices in Table 1. Other social decision processes, like proportionality, equiprobability, and plurality (see Davis, 1973, 1982), that have frequently been accurate summaries of the consensus process in other task/social contexts were not relevant to the present case, partly due to the fact that as group size, r, and number of decision alternatives, n, decrease, the number of distinctly different social decision schemes decreases rapidly. (However, it is when r and n are small that the manipulation of potentially important individual differences becomes practicable.)

Because it was possible in the context of this experiment both to solicit prediscussion, individual member responses and to observe group decisions, the social decision scheme matrix, $\mathbf{D}$, can be estimated directly by counting events within cells. Table 2 lists the observed matrices for each condition and each task. The entries in Table 2 may be compared by inspection with the theoretical idealizations in Table 1. Although theoretical matrix entries, $[d_{ij}]$, were above (Table 1) represented for convenience as [0, 1], these values should be regarded as probabilities very *near* but not equal to .00 or 1.00. The observed entries, $[\hat{d}_{ij}]$, are empirical estimates (relative frequencies). (See Kerr, Stasser, & Davis, 1979, for a discussion of *model testing,* in which sample values are used for testing hypothesized parameters, and *model fitting,* in which sample values are used as empirical estimates of parameters.)

The accuracy of each hypothesized social decision scheme in predicting the group decision distribution was assessed directly by comparing the obtained group decision distribution, $\hat{P} = (\hat{P}_1, \hat{P}_2)$, with theoretical distributions from $(P_1, P_2) = P = \pi\mathbf{D}$, where the matrix $\mathbf{D}$ is defined by the particular theoretical model as given in Table 1; and, the entries of the vector π, the probability distribution of all within-group decision distributions, are calculated from Equation 3, with sample estimates replacing the p_{ij}. (See Davis, 1973, 1980, for more details.) Results are given in Table 3. It appears that truth-wins best describes the Mystery Problem consensus process, across all conditions. Although predictions are actually significantly discrepant for the conditional power condition, the numerical values are nonetheless quite close to the observed decision distribution. Note that *nonsignificant* discrepancies between model predictions and observations provide support for theory, implying that a suitably conservative approach requires that the probability of a Type I error, α, be chosen *large.* Typically, as in the

Table 2
Observed Social Decision Scheme Matrices for Each Experimental Condition and Each Task

Experimental conditon	Member preference distribution[a]		Task								
			Personnel Selection			Mystery Problem			Allocation		
	A_1	A_2	A_1	A_2	*N*	A_1	A_2	*N*	A_1	A_2[b]	*N*
Conditional power (2-3-4)	(2, 3, 4;	—)	1.00	.00	12	1.00	.00	2	1.00	.00	12
	(3, 4;	2)	1.00	.00	7	.11	.89	9	.83	.17	12
	(2, 4;	3)	1.00	.00	4	.33	.67	3	.80	.20	5
	(2, 3;	4)	.40	.60	5	.00	1.00	6	.86	.14	7
	(2 ;	3, 4)	.25	.75	4	.00	1.00	6	.20	.80	5
	(3 ;	2, 4)	.00	1.00	7	.00	1.00	4	1.00	.00	2
	(4 ;	2, 3)	.50	.50	2	.17	.83	6	.67	.33	3
	(— ;	2, 3, 4)	.00	1.00	7	.00	1.00	12	.00	1.00	2
					(48)			(48)			(48)
Outstanding power (2-2-5)	(2, 2, 5;	—)	1.00	.00	3	.25	.75	4	1.00	.00	16
	(2, 5;	2)	1.00	.00	10	.25	.75	8	1.00	.00	6
	(2, 2;	5)	1.00	.00	2	.00	1.00	3	.50	.50	2
	(2 ;	2, 5)	.00	1.00	7	.00	1.00	9	.00	1.00	2
	(5 ;	2, 2)	.80	.20	5	.00	1.00	2	.75	.25	4
	(— ;	2, 2, 5)	.00	1.00	5	.00	1.00	6	.00	1.00	2
					(32)			(32)			(32)
Equal power (3-3-3)	(3, 3, 3;	—)	1.00	.00	5	—	—	0	1.00	.00	9
	(3, 3;	3)	1.00	.00	14	.17	.83	6	.89	.11	9
	(3 ;	3, 3)	.00	1.00	2	.00	1.00	11	.20	.80	5
	(— ;	3, 3, 3)	.00	1.00	2	.00	1.00	6	—	—	0
					(23)			(23)			(23)

Note. Entries are relative frequencies with which the *i*th (row) distribution of members' preferences resulted in the group choosing the *j*th (column) alternative.
[a] Numerical values indicate status (test feedback) of discussants. Note that both members and decision alternatives are distinguishable, unlike previous applications of social decision scheme models.
[b] Correct decision alternative is A_2.

case at hand, $\alpha = .20$. In contrast, a commendably conservative testing of *null* hypotheses, where the theorist's self-interest lies in *rejecting* the hypothesis, implies that α be chosen small, usually $\alpha = .05$ or smaller.

For the Personnel Selection and Allocation tasks, a majority-wins social decision scheme (the only applicable scheme of those considered) gives an excellent description if members' statuses are equivalent (equal power condition). Power-wins provides the best description for *both* tasks in the outstanding power condition, as evidenced by inspection and indexed by the relative magnitude of the chi-square value associated with each model. However, despite a larger chi-square value, the majority-wins model also cannot be confidently rejected for the Allocation task. The theoretical situation is somewhat mixed in the conditional power condition, where the majority-wins model is clearly the only close account of decisions for the Allocation task, but no single model is clearly superior for the Personnel Selection task. In general, such results are intuitively compelling and seem generally consistent with theoretical notions discussed earlier. The incorporation of individual status differences of this sort into social decision scheme theory appears to offer clear conceptual advantages.

Because the number of possible initial distributions is limited, owing to small *r* and *n*, "room" for different social decision schemes to make different predictions is rather limited. Thus, consideration of overall distributions might be usefully supplemented by the separate comparison of observed with expected outcomes for each initial distribution of members. That is, observed and theoretical values were compared for each row of the social decision scheme matrices described earlier (Tables 1 and 2). For example, in the conditional power condition (2-3-4), the observed frequency of all three discussants having chosen the same alternative in the Personnel Selection task is $(1)(12) + (1)(7) = 19$. The observed frequency of a discussant scoring 2 having chosen a different alternative than the two other discussants is $(0)(7) + (.25)(4) = 1.00$; the respective alternative predicted by the power-wins model is $(0)(0)(7) + (0)(.25)(4) = .00$. Because many model predictions were very near 0 or 1, goodness-of-fit tests were calculated on combined categories (rows). Outcomes of these assessments are given in Table 4.

Again, for the Mystery Problem, an intellective task, the truth-wins scheme fitted best, independently of status differences. For the Allocation task, the majority-wins model predicted well when status differences were small (conditional and equal power conditions), whereas the power-wins model was the least discrepant when status differences were large (outstanding power condition). The theoretical outcomes on the other judgmental task, Personnel Selection, were similar, although less consistent because the closest account was still given by the power-wins model in the conditional power condition.

It is perhaps worth noting that conjectures must remain ten-

Table 3
Obtained and Predicted Overall Decision Distributions of Group Decisions Within Each Experimental Condition for Each Task and Social Decision Scheme Model.

	Conditional power (2-3-4) (N = 48)			Outstanding power (2-2-5) (N = 32)			Equal power (3-3-3) (N = 23)		
Task and model	A_1	A_2	$\chi^2(1)$	A_1	A_2	$\chi^2(1)$	A_1	A_2	$\chi^2(1)$
Personnel Selection									
Observed	.56	.44		.59	.41		.83	.17	
PWS	.52	.48	.33	.56	.44	.13	—	—	
CWS	.58	.42	.09	.38	.62	6.53***	—	—	
MWS	.58	.42	.09	.47	.53	2.01*	.83	.17	.00
Mystery Problem									
Observed	.10	.90		.09	.91		.04	.96	
PWS	.42	.58	19.29***	.44	.56	15.37***	—	—	
CWS	.38	.62	15.02***	.50	.50	21.13***	—	—	
MWS	.42	.58	19.29***	.47	.53	18.07***	.26	.84	5.64***
TWS	.04	.96	4.70***	.13	.87	.29	.00	1.00	—
Allocation									
Observed	.77	.23		.81	.19		.78	.22	
PWS	.67	.33	2.34*	.78	.22	.24	—	—	
CWS	.54	.46	10.15***	.63	.37	4.89***	—	—	
MWS	.75	.25	.11	.72	.28	.89	.78	.22	.00

Note. The truth-wins social decision scheme (TWS) is only applicable for the Mystery Problem; power wins (PWS) and coalition-of-weak-parties-wins (CWS) social decisions schemes are not applicable for the condition (3-3-3). MWS = majority-wins social decision scheme.
* $p < .20$. ** $p < .10$. *** $p < .05$.

tative concerning *relative* differences in goodness-of-fit between two models that both yield statistically acceptable predictions for the same data set, although numerical discrepancies differ in magnitude. For the case at hand, there apparently exists no generally accepted means for testing statistically the *relative* goodness-of-fit of two or more models under such conditions.

Individual Change in Decision Preference

Status level and task. Up to this point, we have devoted attention to the group level of behavior. Individual decision preferences have been primarily regarded as input to discussion or, equivalently, as estimates of parameters in group-decision models. In any event, our concern has focused on the aggregation or combination of individual choices to achieve a consensus decision. Now, however, we address directly those individual changes in decision preference that can be attributed to discussion.

Recall that all group members responded to each task both before and after group discussion. The proportion of respondents who changed their personal preference is given in Table 5

Table 4
Goodness-of-Fit Tests for Obtained and Predicted Row-Wise Combined Frequency Distributions of Group Decisions Within Each Experimental Condition, and Percentage of Overlap Between Observed and Predicted Frequencies.

	Conditional power (2-3-4)		Outstanding power (2-5-5)		Equal power (3-3-3)	
Task and model	$\chi^2(3)$	% overlap	$\chi^2(2)$	% overlap	$\chi^2(1)$	% overlap
Personnel Selection						
PWS	1.38	92	1.29	91	—	—
CWS	22.38***	48	19.29***	31	—	—
MWS	2.30	90	2.29	87	.00	100
Mystery Problem						
PWS	6.92*	69	3.82*	75	—	—
CWS	8.93**	60	9.82***	56	—	—
MWS	6.93***	65	4.82**	72	1.47	94
TWS	.26	94	2.43	84	.06	99
Allocation						
PWS	6.72**	73	.67	94	—	—
CWS	14.72**	56	10.67***	62	—	—
MWS	2.72	81	2.67	87	.29	98

Note. PWS = power-wins, CWS = coalition-of-weak-parties-wins, MWS = majority-wins, and TWS = truth-wins social decision schemes. % overlap = the percentage of correspondence between observed and theoretically expected frequencies.
* $p < .20$. ** $p < .10$. *** $p < .05$.

Table 5
Relative Frequency With Which Group Members Changed Their Personal Decision Preferences for Each Task and Status Level, Aggregating Over Experimental Condition.

Task	Status level 2 (N = 112)	3 (N = 117)	4 (N = 48)	5 (N = 32)	Status-change association $\chi^2(3)$
Personnel Selection	.27	.15	.06	.06	14.263, $p < .003$
Mystery Problem	.40	.30	.31	.38	3.031, *ns*
Allocation	.28	.18	.21	.06	7.930, $p < .05$

for each task as a function of their assigned status, aggregating for the moment over experimental conditions. Status was significantly associated with decision-preference change (higher status holders change less) for the Personnel Selection and Allocation tasks, $\chi^2(3, N = 309) = 14.263, p < .003$, and 7.930, $p < .05$, respectively, but not for the Mystery Problem, $\chi^2(3, N = 309) = 3.031$, *ns*. However, the Mystery Problem yielded the highest overall before–after change rate. In fact, aggregating over status revealed that .35 of the subjects changed on the Mystery Problem (an intellective task), whereas .17 and .21 changed on the Personnel Selection and Allocation (judgmental) tasks respectively, a significant change-task association, $\chi^2(2, N = 309) = 28.76, p < .001$, assuming intertask independence.

Intermember status discrepancy. Status level may be moderated by or act in conjunction with the status pattern that characterizes the group as a whole—a possibility we now examine by comparing the status-change contingencies between the conditional power (2-3-4) and outstanding power (2-2-5) conditions. Examination of Table 6 suggests that in both conditions status generally affected change as we have come to expect: On the two judgmental problems higher status members generally change less, but no similar tendency is evident for the intellective problem. However, the status-change association is significant only in the outstanding power condition for the Personnel Selection, $\chi^2(1, N = 96) = 7.548, p < .01$, and Allocation, $\chi^2(1, N = 96) = 3.750$, $p = .05$, tasks, but not the Mystery Problem, $\chi^2(1, N = 96) = .343$.

Discussion

Group Decision

The interaction of status pattern and task type (intellective or judgmental) was, as anticipated, generally consistent with the well-known normative-informational distinction of Deutsch and Gerard (1955). The Mystery Problem had a correct answer and results were best predicted by a model based on a truth-wins principle; information processing, not status, was relevant to the decision. For the other two tasks (Personnel Selection and Allocation), models incorporating normative principles were successful. For groups with equal-status members, a majority model was very accurate in predicting decisions—a familiar finding from studies of ad hoc groups wherein status has been controlled or randomized out.

When there was a considerable difference in power (outstanding power condition, 2-2-5), a power-wins model best predicted group decisions on the two judgmental tasks. However, the majority-wins model also acceptably fitted the data. As shown in Table 3, the power-wins model gives statistically better predictions than the majority-wins model only for the Personnel Selection task. No such difference between the two was found for the Allocation task. A more detailed social decision scheme analysis showed opposite results (Table 4). The power-wins scheme proved a better predictor than the majority-wins scheme for the Allocation task, but both models led to acceptably accurate predictions for the Personnel Selection task. No obvious and straightforward interpretation of this apparent task by scheme "interaction" is evident. The first problem concerns on which analysis of goodness-of-fit (Table 3 or 4) should one rely. Because the first analysis is an overall test, and the second was performed on a group-by-group basis, the second seems preferable. Now, it might be argued that manipulated status differences were somewhat attenuated for the Personnel Selection task. Half of the groups had performed the Personnel Selection task first, and the Mystery Problem second, and the other half acted in the reverse order. All groups performed the Allocation task last, after status differences had been reemphasized. In groups that started with the Mystery Problem, the member assigned the highest level of expertise or status may have been less salient by the second task; the member who had proposed the correct solution to the Mystery Problem may have been perceived as more expert than the member with the experimentally assigned high status. Thus, when discussing the Personnel Selection task, an unplanned change of status may have taken place. If this reasoning is valid, a power-wins scheme should best account for those groups that started discussion with the Personnel Selection task—attenuating the power to discriminate among models in the overall sample. Unfortunately, experimental conditions did not permit the collection of data appropriate to address this post hoc conjecture.

Another possible explanation focuses on group members' "*justice norms.*" In some groups the members may have had an

Table 6
Relative Frequency With Which Group Members Changed Their Personal Decision Preferences by Status Level and Task for the Two Conditions With Intermember Status Differences

Experimental condition and task	Status level 2	3	4	5	Status-change association $\chi^2(2)$
Conditional power (2-3-4)					
Personnel Selection	.21	.15	.06	—	4.297, *ns*
Mystery Problem	.35	.27	.31	—	.776, *ns*
Allocation	.35	.19	.21	—	4.222, *ns*
N	48	48	48		
Outstanding power (2-2-5)					$\chi^2(1)$
Personnel Selection	.31	—	—	.06	7.548, $p < .01$
Mystery Problem	.44	—	—	.38	.343, *ns*
Allocation	.22	—	—	.06	3.750, $p = .05$
N	64			32	

equity orientation, favoring the member with the highest task-related expertise, whereas in other groups members may have been guided by equality norms—all members should have equal say independent of their status. Although the first type of group most probably could be described by a power-wins scheme, the second group might be characterized by the more polite majority-wins scheme. This explanation helps clarify some findings; it cannot, however, account for the *differences* observed between the Personnel Selection and Allocation tasks, and the parameters that activate one justice norm or the other remain to be determined.

There was no evidence that persons of lower status allied after the fashion assumed by the coalition-of-weak-parties-wins social decision scheme. Rather, for those groups with small status differences (conditional power condition, 2-3-4), a majority model was overall the best predictor of group decisions. However, considering just the Personnel Selection task, the results were ambiguous in that power-wins and majority-wins schemes fitted the data equally well. The apparent lack of effective status coalitions should, perhaps, be regarded with caution. It is possible that such alliances might require more time to develop than the other status-dependent social consensus processes considered. Only further research, perhaps with longer time intervals, can adequately assess this possibility.

Thus, individual differences were successfully included within the general social decision scheme model for the first time. That is to say, decision alternatives but not people have in the past been treated as distinguishable. The new conception treats both alternatives and people (actually member types) as distinguishable. Previous applications have either ignored such information, focused upon groups of equals, or used special sampling parameters (e.g., Davis, 1980) as a conceptual remedy. Future extensions may find useful *both* differential sampling from populations of differently-disposed individuals, and special-case models of the sort studied here in which interpersonal difference information is used directly in generating explicit predictions. (See Tindale and Nagao, in press, for a discussion of computer simulations or "thought experiments" that use a somewhat similar rationale.)

Research on how composition influences the performance of task-oriented groups has long been hampered by the failure of intuitively compelling demographic and personality variables to add much to the predictability of group-level actions. Several years ago, Mann (1959) and Heslin (1964) documented the generally poor performance of such variables, although a degree of association between intellective assessments of members and group outcomes was sometimes reported. McGrath and Altman (1966) added that the pattern of member traits, abilities, and the like may be the important ingredient in achieving better theoretical prediction through the use of personality and demographic information. One should not expect simple monotonic associations between the aggregate amount of a trait in group members and the group product.

However, the problem may be not only *how* to combine individual difference information but *what* information to use. In view of the dominant role of the task itself in determining the behavior of task-oriented groups (Davis, 1982; Steiner, 1972), task-relevant individual differences are surely the most likely to be useful. It seems likely that global measures of general personality traits are most closely related to interpersonal relations activities, and only indirectly to the group decision that results from the interaction. The successful use of task-relevant status differences reported in this study would seem to support the more direct approach. Note, too, that the special case models in the different conditions, in keeping with the McGrath-Altman hypothesis, also used distributional information.

Individual Change

Changes in personal preferences during or as a result of the social consensus process are not assumed by the theoretical notions advanced here, or by the general social decision scheme model. Individuals may change or merely acquiesce as a result of the discussion; the model is neutral on the issue. However, past research on group decision making has typically shown that at least some individuals have changed positions when personal preferences assessed before discussion were compared with those taken afterward (e.g., Davis, Stasser, Spitzer, & Holt, 1976). Such results, however, have also been obtained with randomly composed groups that generally lacked a status structure or other observable differential distribution of member differences.

In the study at hand, both task and status exerted significant influences on the tendency of members to change positions in the sense described above. Although more change in individual preferences occurred on the intellective task than on the other two tasks, status level was not a significant influence. But, for the two judgmental tasks, status was an effective influence on personal change; higher status individuals changed significantly less often. In other words, when the task required or framed the social possibilities, status pattern effectively mediated the tendency of individual members to change positions.

Small groups were once regarded with more interest than at present as "agents" of individual change. However, that attention began with discussion-induced attitude change (Lewin, 1958) and was subsequently extended to the small group as a means of altering more fundamental behavioral traits of the individual (e.g., see the historical summary of the group therapy movement by Back, 1972). Judgmental and intellective decisions of the sort studied here have not, heretofore, been much at issue, although individual changes in decision preferences are surely as important a research target as opinions and attitudes. The extent of member position change and the orderly influence of status observed here (individual and group data were mutually consistent) suggest that groups organized according to task-relevant individual differences might, depending upon the task, have some special potential as a "change agent." At the least, the way status structures of this sort work their influence in conjunction with the task is worth exploring further, especially if theory could be developed that would describe *individual* change with a level of success comparable to that achieved with groups by the theoretical extensions to social decision scheme theory we have described.

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