

## Normative and Informational Effects of Group Interaction\*

DAVID G. MYERS  
PAUL J. BACH  
*Hope College*

F. BARRY SCHREIBER  
*University of Colorado*

---

---

*Sources of group-induced shift on choice dilemma items were examined by comparing the typical discussion treatment with normative and informational treatments. Control condition groups responded to three "risky" choice dilemma items without prior treatment. Social comparison condition groups responded after being exposed to the percentage distribution of initial responses by control subjects. Relevant arguments condition groups responded after discussing the items without pretest and without awareness of the probability scale. Both experimental treatments produced significant effects when compared to control responses. These and other findings are interpreted as supportive of a two-process explanation of group-induced shift and as contrary to explanations of group shift based on group decision models.*

Recent research has indicated that on certain tasks, group responses tend to differ predictably from the average responses of those individuals composing the group (cf. Pruitt, 1971a, b). By completing our theoretical understanding of group-induced response changes on these tasks, we may better define other conditions under which group interaction may be expected to affect responding.

Building upon these previous investigations, choice dilemma items were used in this study of group discussion effects. On these items, the intriguing finding of past research is that discussion tends to

---

\*This work was supported by a grant from the National Science Foundation (GS 2891A#1) to the senior author and an NSF Undergraduate Research Participation Award to the second author. A briefer version of this paper was presented at the Midwestern Psychological Association, Chicago, May, 1973. Requests for reprints should be sent to David G. Myers, Department of Psychology, Hope College, Holland, Michigan 49423.

enhance choice tendencies initially valued in the subject population. Current theoretical controversy centers on the extent to which these response shifts derive from normative social influence (social comparison processes of some sort) or informational influence (the exchange of relevant arguments). Social comparison theorists have reasoned that response changes occur when the subject discovers that others share his inclinations more than he had supposed. Informational theorists have suggested that change occurs because discussion generates arguments predominantly favoring the valued alternative; thus, cognitive learning tends to occur in the direction initially valued. (See Pruitt, 1971a for a thorough analysis of these theories.)

The present experiment contrasted the effects of social comparison and relevant arguments by isolating these elements of the group interaction in a manner less subject to alternative interpretations than has been the case in past research. There were three conditions in a between-groups design.

The *control condition* was a typical discussion-without-consensus procedure involving pre- and postdiscussion responses to three "risky" items. The pretest responses of this condition provided a baseline for examining the relative contributions of social comparison and informational processes in the two experimental conditions.

The *social comparison condition* was designed to minimize possible problems occurring in past research on this variable. In general, these experiments have indicated that if subjects compare their initial responses without discussion, roughly one-half as much shift occurs as when there is an exchange of arguments as well. This effect was obtained originally by Teger and Pruitt (1967) and by others who used their procedures (Clark *et al.*, 1971; Clark and Willems, 1969; Willems and Clark, 1969). An information theorist might be tempted to explain away this "half effect" because the instructions appear to have contained a demand for change (Murdoch *et al.*, 1970) and because the three rounds of public display of decisions may have motivated some renewed scrutiny and "internal discussion" of relevant arguments. Experiments which have provided the minimal sufficient conditions for a social comparison effect—the simple sharing of initial decisions—have produced shift less reliably with this manipulation (Bell and Jamieson, 1970; Murdoch *et al.*, 1970; Myers and Bishop, 1971; Myers *et al.*, 1971; St. Jean, 1970; Stokes, 1971).

On the other hand, social comparison theorists could explain the weak "half effect" by criticizing these experiments for using procedures likely to stimulate psychological reactance against change. Public commitment to the initial decision was elicited and

followed by mere information about others' choices, a sure formula for inhibiting response change (cf. Asch, 1956). Needed is a research strategy which allows for social comparison processes (i.e., provides mere exposure to others' responses), but involves neither change-inhibiting commitment to initial choices nor a motivated rethinking of arguments. The present social comparison condition was an attempt to provide such conditions by having subjects respond to the choice dilemma items *without pretest* after merely being informed of the distribution of responses by subjects in the control condition. It should be noted that subjects were therefore exposed to a large sample of others' responses, whereas the typical group conditions expose subjects to the responses of about four others. This was an attempt to maximize the possibility of a social comparison effect uncontaminated by other variables. It should also be noted that unlike the typical social comparison treatment, the comparison persons were outside of the immediate group.

The third condition, *relevant arguments*, engaged subjects immediately (without pretest) in discussion of the three items. These items contained no probability scale, the subjects' task being merely to discuss whether the protagonist should or should not attempt the risk and to exchange all the arguments relevant to that decision. Previous experiments using a similar informational treatment (Clark *et al.*, 1971; Myers *et al.*, 1971; St. Jean, 1970) have each involved pretests with the probability scale, perhaps stimulating an implicit social comparison of probabilities during the discussion. Since in the present experiment, the first exposure to the probabilities scale was after discussion, social comparison of numerical probability responses could hardly have taken place. While this procedure is addressed to versions of social comparison theory which imply that the comparison of scalar responses is crucial for group shift, the procedure does not eliminate a social comparison of general opinions regarding the items.

The study was also designed to provide data relevant to the role of a pretest in eliciting group effects, to the adequacy of group decision models for explaining group interaction effects, to the question of whether group convergence is causally related to group shift or merely a concomitant of it, and to the possibility that shift toward risk on choice dilemmas is a result of risk-biased instructions.

## METHOD

### *Subjects*

Introductory psychology students at Hope College were randomly

assigned to one of the three conditions in groups of five. Due to the failure of some to show up, group size ranged from three to five members, resulting in 40 subjects in 10 control groups, 41 subjects in 10 groups for the social comparison condition and 41 subjects in 10 groups for the relevant arguments condition. All data were gathered as the small groups sat at a round table.

### *Materials*

Three choice dilemma items were selected which were known from past research to elicit shift to lower probability responses following discussion (items 4 and 7 from the Choice Dilemmas Questionnaire, Pruitt, 1971a; item 2 from Myers, 1967). Each item was presented with a 10-unit probability response scale.

### *Procedure*

*Control condition.* Pretest responses to the three choice dilemma items were elicited and followed by three-minute discussions on a second set of the same items in the same booklet. Subjects were instructed to discuss the items without marking any response. Post-treatment responses were then elicited on a third set of the same items after all discussions were completed. To enable the social comparison treatment, indicated below, all experimental condition groups were run after the control group data were collected. Although this necessitated a nonrandom sequence of administration of treatments, the assignment of subjects to conditions was completely random. The total experiment was conducted within a seven day period.

*Social comparison condition.* Subjects received similar instructions except that these indicated that prior to responding, the subject should take a few minutes to familiarize himself with each of the items.

There is no one right or best answer to these items—people have all different kinds of opinion on them.<sup>1</sup> On these warmup materials we have noted the percentage distribution of responses by participants in the experiment last week. This will give you some feel for the wide variability among responses. You can see that virtually any response will have some advocates for it.

---

<sup>1</sup> Although the instructions for all conditions encouraged freedom in using the whole range of response alternatives, it might be argued that this sentence had a liberating effect on social comparison subjects. To check this, two groups, 27 in each, were given the three items with or without the statement “There is no right or best answer” added at the end of the instructions. Both groups averaged 3.9 on the three items, indicating this statement did not bias responding.

During this stage of the experiment while you are familiarizing yourself with these warmup materials you can form your own opinion but you should not write or mark anything in the booklet.

Subjects then examined the three items, each containing xeroxed notation of the percentage distribution of "responses by people in the experiment last week" (control pretest scores). Following this treatment, subjects turned to a new instruction page followed by the same three items:

Now that you have had an opportunity to become more familiar with each of the situations we would like to give you an opportunity to indicate your opinion. Please indicate your own personal opinion on each item.

*Relevant arguments condition.* Subjects were instructed immediately (without pretest) to "talk over what advice you would give the person who must make the choice described in the problem." Each item was presented without the probability response scale. For example, the first item concerned a low-ranked chess player considering a risky maneuver against a top-favored player: "Imagine that you are advising George. Would you recommend that he attempt the risky play? Please discuss together your ideas and opinions about this situation." Three minutes of discussion was timed and subjects were asked not to write anything on the pages. Following these discussions, subjects were then introduced to the probability scale and asked to respond to a new set of the three items presented with the scale.

*Other measures.* Following the post-treatment responses in each condition, two additional measures were taken on all subjects. The first was a cognitive measure based on Anderson's (1971) information integration theory. Subjects wrote arguments relevant to each item and indicated the weight and direction of each argument. We then added these values using the information integration model. Since definitive results were not obtained, the data from this measure will not be reported.

Finally, subjects returned to the post-treatment items and were instructed:

Please guess what you think the average response of your fellow students here at Hope College would be if responding to these items without any opportunity for discussion. On each of the three pages *go back and write an "A" in the space that corresponds to the choice you think the average student would make* if asked to take this questionnaire.

## RESULTS AND DISCUSSION

### *Major Treatment Effects*

Responses were averaged across items and subjects to yield an

average choice dilemma score for each group. Table 1 summarizes these results.

Control groups showed the expected shift to lower probability responses following group discussion ( $t = 3.53$ ,  $df = 9$ ,  $p < .001$ ). This replicates the oft-reported "risky shift" phenomenon. The pretest responses provide a baseline against which to compare the effects of social comparison and relevant arguments.

The average post-treatment response of the social comparison group differed significantly from the pretest baseline of the control condition ( $t = 2.58$ ,  $df = 18$ ,  $p < .02$ ). This is strong and surprising evidence for the role of social comparison processes in eliciting group effects. It cannot be due to informational influences, since there was no discussion, and suggests that previous studies showing small or nonexistent social comparison effects may have suffered from the inhibiting effects of the pretest. It is also a non-obvious finding in that it is the opposite of a pure conformity effect—the subjects were fairly accurate in their guess of the average pretest response of others (mean estimate = 4.17), yet this exposure to others' responses stimulated them to deviate from the perceived norm. Made aware that others shared their tendencies more strongly than they might

TABLE 1

*Summary of Design and Results*

Condition*	Treat- ment	Mean Choice Dilemma	Mean Variance	Treat- ment	Mean Choice Dilemma	Mean Variance
Control	---	4.52	3.61	Dis- cussion	3.80	1.62
Social Comparison	Exposure to control responses	3.57	3.16	---	---	---
Relevant Arguments	Argument exchange w/o aware- ness of scale	3.36	3.71	---	---	---

\*10 groups in each condition

have supposed, the subjects were apparently stimulated or liberated to act out their ideal more strongly.<sup>2</sup>

Post-treatment responses of relevant arguments groups were significantly lower than pretest responses of the control subjects ( $t = 3.13$ ,  $df = 18$ ,  $p < .01$ ). This relatively substantial effect parallels results from previous informational treatments and suggests that these effects are not the result of an implicit comparison of probability responses. Nonetheless, it is possible to conceive of a social comparison of attitudes occurring in this situation, since informational assumptions imply that attitudes may be inferred from expressed cognitions. Indeed, subjects' mean post-treatment estimate of others' responses (4.02) revealed a social perception similar to that of the social comparison condition where information about others' responses was not suppressed.

To summarize the main experimental results, the social comparison treatment produced a significant effect in the predicted direction and social comparison dynamics seem to be the most plausible avenue for explaining this finding. Burnstein *et al.*, (1973) also exposed subjects to the choices of one or five other persons and observed only a weak effect of interpersonal comparison. The strong effect of the present study may have resulted from the larger sample of others' responses to which subjects were exposed.

The informational influence treatment also produced a significant effect without explicit comparison of responses and even without any awareness of the response scale. It is not clear whether the persuasive impact of the arguments resulted from their teaching the subject something he did not know (informational influence) or from their telling the subject something about the attitudes of the persons who spoke them. However, this finding, taken in combination with previous work by Silverthorne (1971) (indicating the effect of information manipulation) and by Vinokur and Burnstein (in press) (indicating the correspondence of information resources with shift) suggests that informational influence may also produce group shift.

---

<sup>2</sup>This finding has been twice replicated in a classroom demonstration that is simple to conduct. For example, ask half of a class to complete a risk-valued item (e.g., football player item). Then distribute questionnaires to the remainder of the class, telling them they will mark their opinion in a moment. Prior to responding, have them guess the average response by those just completing the items after a simple show of hands indicating the distribution of those responses. After this social comparison treatment, do these new respondents differ from the group norm they have just observed?

Thus, it appears that a theoretical explanation of group-induced shift will need to accommodate both normative and informational processes, as does Pruitt's (1971b) "two process" explanation.

### *Other Results*

Several other questions are addressed by data from the experiment. Numerous investigators (e.g., Dion *et al.*, 1970) have raised the possibility of a dependence of the group shift phenomenon on the sensitizing effects of a pretest. Both of the experimental conditions of this study involved no pretest and yet produced a significant group effect. Contrary to the present findings, Castore (1972) observed a group effect only when there were repeated measures. Conceptual differences between the two studies which might account for these differing results are not readily apparent, although methodological differences might provide a clue. Castore's subjects discussed items with the probability scale until consensus was reached. In the present experiment, subjects in the relevant arguments treatment merely discussed whether or not the protagonist should attempt the risk, so public verbal commitments favoring risk may have been made during the discussion. Such commitments may have influenced the subsequent probability responses. A commitment explanation, however, would not explain the significant social comparison effect.

A second question is whether the treatment effects might be the result of implicit group decision rules. Several schemes for combining individual preferences to form a group response have been invoked to account for group shifts; these include shifts obtained in discussion-without-consensus treatments where an implicit group decision process may nonetheless be occurring (Burnstein, 1969; Cartwright, 1971; Castore *et al.*, 1971; Davis, 1972; Zajonc *et al.*, 1972). The relevant arguments and social comparison conditions provided no opportunity for the application of group decision rules to individual probability preferences. In the relevant arguments conditions, subjects were not even aware that a probability scale existed until after the treatment. Thus the treatment effects appear difficult to explain as the result of implicit rules for combining individual preferences into group decisions. Other recent experiments also suggest that individual preferences changes *do* occur after discussion (Burnstein *et al.*, 1971; Kogan *et al.*, in press).

There is evidence that group members converge—as well as shift—following discussion of choice dilemmas, and that the magnitude of group convergence is a predictor of group shift (Bishop and

Myers, 1973; McCauley, 1970). It is not clear, however, whether group convergence and group-induced change are somehow causally related or whether they can be shown to occur independently of each other. Vidmar (1970) has suggested an intrinsic relation based on social comparison theory (subjects who are relatively cautious on risk-valued items will be stimulated to shift toward risky group members). Neither of the two experimental conditions involved discussion of pretest responses, so it is of interest to see whether the group effects in these conditions were accompanied by reduced variability among responses (in comparison with control condition pretreatment variability).

Table 1 indicates the average within-group response variability for each condition. Results are presented in terms of population variance scores for comparability with past research on this question.<sup>3</sup> A variance estimate was computed for each item for each group and the variance scores for the three items were averaged to yield one mean score per group. The significant convergence in the control condition (decreased post-test variance;  $t = 4.07$ ,  $df = 9$ ,  $p < .001$ ) replicates previous studies (e.g., Teger and Pruitt, 1967). Was there a comparable treatment effect on group variance in the experimental conditions? Table 1 indicates that post-treatment variability scores in the two experimental conditions were significantly larger than the post-treatment variability of the control condition ( $t$ 's = 1.90 and 2.94), but did not significantly differ from pre-treatment variability scores of the control condition ( $t$ 's < 1). Apparently, group convergence is a typical concomitant of group shift, but not a necessary component of the causal mechanisms which produce it. Since implicit group decision making would presumably increase homogeneity among responses, this demonstration of treatment effects in the absence of convergence casts further doubt on the significance of implicit group decision processes.

Finally, it has been suggested that group shift is dependent on a biasing of the discussion by risk oriented instructions to mark the "lowest probability" (Clark and Willems, 1969). Since the relevant arguments condition did not present the probability scale and its associated instructions until after the discussion, the observed discussion effect cannot be explained by this demand characteristic of the typical instructions.

These findings, calling into question explanations of group shift

---

<sup>3</sup>The analyses reported were also performed using mean deviation scores. Since the conclusions from these analyses yielded comparable results, the data are not reported separately.

based on pretesting effects, group decision processes, and instructional bias, provide further indirect support to the social comparison and informational explanations of group-induced response change.

#### REFERENCES

- Anderson, N. H.  
1971 "Integration theory and attitude change." *Psychological Review* 78 (May):171-206.
- Asch, S. E.  
1956 "Studies of independence and conformity: A minority of one against a unanimous majority." *Psychological Monographs* 70 (No. 9, Whole No. 416).
- Bell, P. R. and B. D. Jamieson  
1970 "Publicity of initial decisions and the risky shift phenomenon." *Journal of Experimental Social Psychology* 6 (July):329-345.
- Bishop, G. D. and D. G. Myers  
in "Informational influence in group discussion." *Organizational Behavior press and Human Performance*.
- Burnstein, E.  
1969 "An analysis of group decisions involving risk (the "risky shift")." *Human relations* 22 (October):381-396.
- Burnstein, E., H. Miller, A. Vinokur, S. Katz, and J. Crowley  
1971 "The risky shift is eminently rational." *Journal of Personality and Social Psychology* 20 (December):462-471.
- Burnstein, E., A. Vinokur and Y. Trope  
1973 "Interpersonal comparison versus persuasive argumentation: a more direct test of alternative explanations for group-induced shifts in individual choices." *Journal of Experimental Social Psychology* 9 (May):236-245.
- Cartwright, D.  
1971 "Risk taking by individual and groups: An assessment of research employing choice dilemmas." *Journal of Personality and Social Psychology* 20 (Dec.):361-370.
- Castore, C. H.  
1972 "Group discussion and prediscussion assessment of preferences in the risky shift." *Journal of Experimental Social Psychology* 8 (March):161-167.
- Castore, C. H., K. Peterson and T. A. Goodrich  
1971 "The Risky Shift: Social value or social choice?" *Journal of Personality and Social Psychology* 20 (December):487-494.
- Clark, R. D. III and E. P. Willems  
1969 "Where is the risky shift? Dependence on instructions." *Journal of Personality and Social Psychology* 13 (November):215-221.
- Clark, R. D. III, W. H. Crockett and R. L. Archer  
1971 "Risk-as-value hypothesis: The relationship between perception of self,

- others, and the risky shift." *Journal of Personality and Social Psychology* 20 (December):425-429.
- Davis, J. H.  
1972 "Group decision and social interaction: A theory of social decision schemes." Unpublished manuscript, University of Illinois.
- Dion, K. L., R. S. Baron and N. Miller  
1970 "Why do groups make riskier decisions than individuals?" Pp. 306-377 in L. Berkowitz (ed.), *Advances in Experimental Social Psychology*, Vol. V. New York: Academic Press.
- Kogan, N., H. Lamm and G. Trommsdorff  
in "Negotiation constraints in the risk-taking domain: Effects of being press observed by partners of higher or lower status." *Journal of Personality and Social Psychology*.
- McCauley, C. R., Jr.  
1970 "Risk and attitude shifts after group discussion." Unpublished doctoral dissertation, University of Pennsylvania.
- Murdoch, P., D. G. Myers and G. F. Smith  
1970 "Information effects on cautious and risky-shift items." *Psychonomic Science* 20 (July):97-98.
- Myers, D. G.  
1967 "Enhancement of initial risk taking tendencies in social situations." Unpublished doctoral dissertation, University of Iowa.
- Myers, D. G. and G. D. Bishop  
1971 "Enhancement of dominant attitudes in group discussion." *Journal of Personality and Social Psychology* 20 (December):386-391.
- Myers, D. G., D. W. Wong and P. H. Murdoch  
1971 "Discussion arguments, information about others' responses, and risky shift." *Psychonomic Science* 24 (October):81-83.
- Pruitt, D. G.  
1971a "Choice shifts in groups discussion: An introductory review." *Journal of Personality and Social Psychology* 20 (December):339-360.  
1971b "Conclusions: Toward an understanding of choice shifts in group discussion." *Journal of Personality and Social Psychology* 20 (December):494-510.
- St. Jean, R.  
1970 "A reformulation of the value hypothesis in group risk taking." *Proceedings of the 78th Annual Convention of the American Psychological Association* 5:339-340.
- Silverthorne, C. P.  
1971 "Information input and the group shift phenomenon in risk taking." *Journal of Personality and Social Psychology* 20 (December):456-461.
- Stokes, J. P.  
1971 "Effects of familiarization and knowledge of others' odd choices on shifts to risk and caution." *Journal of Personality and Social Psychology* 20 (December):407-412.
- Teger, A. I. and D. G. Pruitt  
1967 "Components of group risk taking." *Journal of Experimental Social Psychology* 3 (April):189-205.
- Vidmar, N.  
1970 "Group composition and the risky shift." *Journal of Experimental Social Psychology* 6 (April):153-166.

- Vinokur, A. and E. Burnstein  
in "The effects of partially shared persuasive arguments on group-induced  
press shifts: A group problem solving approach." *Journal of Personality and  
Social Psychology*.
- Willems, E. P. and R. D. Clark  
1969 "Dependence of risky shift on instructions: A replication." *Psychologi-  
cal Reports* 25 (December):811-814.
- Zajonc, R. B., R. J. Wolosin and M. A. Wolosin  
1972 "Group risk taking under various group decision schemes." *Journal of  
Experimental Social Psychology* 8 (January):16-30.

**MANUSCRIPTS FOR THE  
ASA ROSE SOCIOLOGY SERIES**

Manuscripts (100 to 300 typed pages; three copies) are solicited for publication in the ASA Arnold and Caroline Rose Monograph Series in Sociology to the Series Editor, Professor Ida Harper Simpson, Department of Sociology, Duke University, Durham, North Carolina 27706.