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# Trait anxiety, leadership and group-induced decision change

Chester D. Gaston

*University of Nebraska at Omaha*

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TRAIT ANXIETY, LEADERSHIP, AND  
GROUP-INDUCED DECISION CHANGE

A Thesis

Presented to the

Department of Psychology

and the

Faculty of the Graduate College

University of Nebraska at Omaha

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

by

Chester D. Gaston, Jr.

July, 1973

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THESIS ACCEPTANCE

Accepted for the faculty of the Graduate College of the University of Nebraska at Omaha, in partial fulfillment of the requirements for the degree Master of Arts.

Graduate Committee

Name	Department
John K. Britton	Speech
Joseph C. F. Vore	Psychology
James M. Thomas	Psychology

C. Raymond Millwright  
Chairman  
July 30, 1973  
Date

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The twelve item Choice Dilemmas Questionnaire (CDQ) developed by Kogan and Wallach (1964) has been used extensively for investigating individual and group decision-making processes. Each item presents a hypothetical life situation in which the central character must choose between two courses of action, one of which is more risky than the other but also more rewarding if successful. For each situation the Ss must select the lowest probability of success they would accept before recommending that the potentially more rewarding (and risky) alternative be chosen. After Ss have made their private individual choices, a group is formed and each item is discussed until a consensus decision is reached. Following group discussion to consensus, Ss again make individual decisions in which they are allowed to change their decisions from that of the group if they so desire. When all twelve items are analyzed together, the typical finding is that the group consensus decision is more risky than the average of privately made individual pre-consensus decisions, and that the shift toward risk tends to be maintained for the average of privately made post-group consensus decisions (Cartwright, 1971). Stoner (1961), the discoverer of the phenomenon, labeled the effect the "risky shift."

An extensive number of hypotheses have been generated to explain group-induced shifts. Cartwright (1971), Clark (1971), Pruitt (1971), and Vinokur (1971) provide excellent reviews of these hypotheses and of the empirical research performed to examine the nature of choice shifts. Three major theoretical explanations emerge most frequently.

The Leadership Hypothesis (Marquis, 1962; Collins & Guetzkow, 1964) suggests that the most dominant and influential members of a group assume greater initial risk. In group discussion, leaders use their influence to convince the remaining group members of the appropriateness of the risky decision. The Risk-as-Value Hypothesis (Brown, 1965) argues that people tend to view themselves as being at least as willing as others to take risks. When, through group discussion, less risky group members come to recognize the discrepancy between their decisions and the decisions of the more risky members, they alter their decisions in favor of greater risk. These first two hypotheses suggest that initial differences in risk taking among group members are a prerequisite to group shift in risk level. The Diffusion of Responsibility Hypothesis (Wallach, Kogan, & Bem, 1964) suggests that emotional bonds developed during group discussion permit the more cautious members of the group to accept a more risky decision because they do not have to shoulder all the blame in the event that the decision should lead to failure. This hypothesis does not necessarily require initial differences in risk taking among individuals as a prerequisite to group shift, only that the responsibility for decision making be diffused by the group members.

Marquis (1962), Ferguson and Vidmar (1971), and Vidmar and Burdeny (1969) have found confirming evidence for the proposition that level of initial risk is an important determinant of individual shift following group discussion. However, there have been relatively few investigations which have explored the relationship between



individual difference variables, initial level of risk, and differential shift toward greater risk.

Clark and Willems (1969) suggest that perceived consequences of failure in the CDQ items is an important determinant of risk taking; items eliciting the greatest initial risk are perceived to have trivial consequences, while items eliciting caution are perceived to have severe consequences. Persons possessing differential thresholds for perceiving success and failure, then, should view the same CDQ item in different ways. In this regard, Millimet and Gardner (1972a, 1972b) have shown that high and low trait anxious persons,<sup>1</sup> as measured by the Manifest Anxiety-Defensiveness (MAD) Scale (Millimet, 1970), experience success and failure differently. High trait anxious ss experienced negative affect and low self-esteem before and after evaluative feedback of success and failure, while low anxious ss experienced positive affect and high self-esteem before and after evaluative feedback of success and failure. It follows from these findings that high trait anxious persons would be expected to respond to the CDQ with caution because they are prone to experience events in terms of the severe consequences of failure. Low trait anxious persons, perceiving the consequences of failure in less severe terms, and perhaps even perceiving the events in terms of success, would be expected to respond to the CDQ with greater risk.

Support for this contention was demonstrated by Millimet and Gaston<sup>2</sup> who found that, in groups composed of low and high trait anxious individuals and low and high sensation seeking individuals (as measured by the 1964 Zuckerman, Kolin, Price, and Zoob Sensation

Seeking Scale), low trait anxious Ss and high sensation seekers were significantly more risky than, respectively, high trait anxious Ss and low sensation seekers in their initial, private decisions on CDQ items. Additionally, high trait anxious Ss and low sensation seekers exhibited significant shifts toward risk at group consensus, while low trait anxious Ss and high sensation seekers exhibited no significant decision shifts.

The present study was designed to explore more fully the leadership hypothesis as it relates to risk taking for low and high anxious individuals. Although the leadership hypothesis has come under fire from various researchers as an inadequate explanation of the variance found in risk taking studies employing the CDQ, it may well be that these attacks are misguided, if not premature, as none of the studies purporting to refute the leadership hypothesis have obtained independent measures of leadership. These studies usually define leaders as those individuals whose initial decisions are riskier than those made by their fellow group members (e.g., Edwards & Willems;<sup>3</sup> Vidmar, 1970). Perhaps this procedure of defining leaders is conceptually inadequate. There is no compelling reason to believe that leaders are necessarily high risk takers. Even if leaders are generally disposed to greater risk taking than non-leaders, they may also exercise conservatism when a situation warrants caution. For the purpose of this study leaders will be defined in terms of their influence rankings (influential in determining the group consensus) as made by fellow group members and by objective observers. While this definition of leadership may not meet

with the complete approval of all psychologists involved in studying group dynamics, influence rankings have often proven useful (Stein, Geis, & Damarin, in press).

Since the Byrne (1961) Repression-Sensitization (R-S) Scale and the MAD Scale have been shown by Millimet and Cohen (1973) to be highly correlated (.97 for males and .94 for females), the following findings from repression-sensitization research were applied to the present study. Repressors (low trait anxious individuals) have been found to be more self-actualizing (Foulds & Warehime, 1971), success-striving (Hoffman, 1970), and dominant (Altrocchi, Parsons, & Dickoff, 1960) than sensitizers (high trait anxious individuals). While leadership research has been generally unable to delineate variables which consistently predict leadership, in order to research the possibility that the above traits relate to leadership it was hypothesized that low trait anxious (LA) Ss would be more likely than high trait anxious (HA) Ss to emerge as the leaders in group discussion of CDQ items in which both LA and HA Ss were represented.

Willems and Clark (1971), Vidmar (1970), and others have demonstrated that groups composed of Ss whose private individual decisions differ in riskiness make larger shifts as a result of group discussion than groups composed of Ss whose private individual decisions are homogeneous with respect to risk taking. Since trait anxiety has been shown to differentiate between high and low CDQ risk takers, the second prediction was that groups composed of both high and low trait anxious persons (heterogeneous groups) would make significant choice shifts,

but that groups composed of either all high or all low trait anxious persons (homogeneous groups) would not. The third prediction was that, while neither of the homogeneous groups were expected to make significant decision shifts, LA groups would make initial decisions significantly more risky than those made by HA groups, and that this difference in risk taking would be carried through to the two other decision phases of the CDQ paradigm.

Data obtained in the Millimet and Gaston study (see Footnote 2) concerning sex differences were equivocal. To be prudent, however, group composition in the present study was balanced for sex, though no specific predictions concerning sex differences were made.

## Method

### Subjects

Subjects were selected from a pool of some 700 introductory psychology students who had previously taken the Millimet (1970) Manifest Anxiety-Defensiveness (MAD) Scale. Criterion for selection were scores of at least plus or minus one standard deviation; however, because of the limited number of Ss available, one entire heterogeneous group (see below) was composed of Ss who missed the criterion cut-off by one raw score point toward the mean. Subjects were contacted by telephone. All Ss were volunteers who received extra credit toward their course grade in psychology.

### Group Composition

Three different 8-person group compositions were used: Heterogeneous (4 Low and 4 High Anxious Ss), Homogeneous Low Anxious (LA),

and Homogeneous High Anxious (HA). Four Heterogeneous Groups were composed of four LA (2 males and 2 females) subjects and four HA (2 males and 2 females) subjects. Two Homogeneous LA Groups were composed of 4 males and 4 females, all low anxious. Two Homogeneous HA Groups were composed of 4 males and 4 females, all high anxious. The total number of Ss was 64.

### Assessment of Risk Taking

Three choice dilemmas, items 12, 2, and 7 of the CDQ, were used because of their ability to generate cautious, moderate, and risky decisions, respectively (Cartwright, 1971). Standard verbal and written instructions were used for all groups. Procedures were used to insure that all Ss fully understood how they were to respond to the CDQ items. The three items used were:

1. (Item 12 from the CDQ) Mr. M is contemplating marriage to Miss T, a girl whom he has known for a little more than a year. Recently, however, a number of arguments have occurred between them, suggesting some sharp differences of opinion in the way each views certain matters. Indeed, they decide to seek professional advice from a marriage counselor as to whether it would be wise for them to marry. On the basis of these meetings with a marriage counselor, they realize that a happy marriage, while possible, would not be assured.

2. (Item 2 from the CDQ) Mr. B, a 45-year-old accountant, has recently been informed by his physician that he has developed a severe heart ailment. The disease would be sufficiently serious to force Mr. B to change many of his strongest life habits--

reducing his work load, drastically changing his diet, giving up favorite leisure-time pursuits. The physician suggests that a delicate medical operation could be attempted which, if successful, would completely relieve the heart condition. But its success could not be assured, and in fact, the operation might prove fatal.

3. (Item 7 from the CDQ) Mr. G, a competent chess player, is participating in a national chess tournament. In an early match he draws the top-favored player in the tournament as his opponent. Mr. G has been given a relatively low ranking in view of his performance in previous tournaments. During the course of his play with the top-favored man, Mr. G notes the possibility of a deceptive though risky maneuver which might bring him a quick victory. At the same time, if the attempted maneuver should fail, Mr. G. would be left in an exposed position and defeat would almost certainly follow.

Subjects are asked to imagine that they are advising the central figure in each story. They are then asked to choose the lowest probability for success they would consider acceptable in order to advise the central figure to take the risky but desirable alternative. The following choices are open to the Ss. For example:

Please place a check here if you think Mr. B should not have the operation no matter what the probabilities.

The chances are 9 in 10 that the operation will be a success.

The chances are 7 in 10 that the operation will be a success.

The chances are 5 in 10 that the operation will be a success.

The chances are 3 in 10 that the operation will be a success.

       The chances are 1 in 10 that the operation will be a success.

Decisions were scored as 10, 9, 7, 5, 3 or 1 depending on the probability selected. That is, a S who selected a probability of 7 in 10 would receive a score of 7, and so on.

Half of each group composition (two Heterogeneous groups and one each Homogeneous LA and Homogeneous HA group) received a CDQ booklet with the items arranged Risky-Moderate-Cautious (Risky Order). The other half of each group composition received a CDQ booklet with the items arranged Cautious-Moderate-Risky (Cautious Order). This partial balancing for order of presentation of the CDQ items was made because it was not known whether an order effect would in some way differentially influence Ss' decisions.

#### Pre-discussion Individual Decisions

Subjects were seated in a classroom lecture arrangement (all desks facing forward) so that the fact of later group discussion would be obscured. Each S was given a lettered placard which, he was told, would be used in lieu of his name on the questionnaire. Subjects were instructed to place a check mark in the space next to the probability they wished to select. Questionnaires were collected when all Ss were through.

#### Group Discussion to Consensus

Subjects were asked to form their desks into a tight circle and to set up their placards. They were told that the previous administration of the CDQ had been for familiarization and to give them an

indication of how they stood on each dilemma. They were then asked to discuss each item until a unanimous group consensus was reached, at which time they were to place a check mark next to the probability decided upon by the group. Subjects were told to refer to each other as Mr. A, Miss B, etc., and to attempt to limit discussion to approximately ten minutes per item. Deadlock instructions were available should they be needed.

The experimenter informed Ss that the group discussion would be video- and audiotaped for later analysis of its content by trained observers. Ss were assured that the video and audio recordings were confidential and would be used only by those few persons directly involved in this research. After responding to any questions, E retired to another part of the room and the recording equipment was turned on.

#### Post-Group Discussion Individual Decisions

After the group discussion, Ss were asked to realign their chairs for some further individual work. Ss were then asked to privately review the booklet they had used in noting the group consensus, indicating their present personal decision with a "P" in the space next to the desired probability. Ss were free to change or retain the group choices.

#### Participants' Rankings of Leadership

After collecting the questionnaires, E handed out a rating form concerning degree of exerted influence (leadership). Ss were asked to rank the top four group members, including themselves when appropriate, in terms of influence in the group discussion.



### Objective Rankings of Leadership

Four graduate students, 2 males and 2 females, viewed the video-audiotapes made during the group discussion. Tapes were presented in a different order for each rater and the group compositions were not known to the raters at the time the tapes were evaluated. The raters were asked to rank each member of a group in terms of degree of exerted influence in the group. Stein, Geis, and Damarin (in press) have shown that untrained raters can consistently judge leadership in groups with influence as the criterion.

### Determination of Individuals as Group Leaders

Influence rankings made by discussion participants and by graduate student observers were used to determine which Ss emerged as leaders during group discussions.

Rankings of influence were weighted: first place ranks were weighted 8, second place ranks were weighted 7, and so on. The determination of individual group leaders was then based on their total weighted-rank score. If a subject was to receive all eight first place ranks his weighted score would be 64 (8 x 8). This S would most definitely be the leader. But such a designation is probably overestimated in a group discussion which lasts only 10 minutes per item or 30 minutes total. A more realistic definition, and the one adopted here, would be a S whose weighted rank score was 48 (6 x 8) or that obtained should he receive six first place votes.

For rankings made by the graduate student observers, leaders were defined as those Ss in a group whose weighted rank scores (determined as above) were 28 or more.

## Results

### Analysis of Variance for Heterogeneous Groups

A 2 (Trait Anxiety dimension) x 2 (Sex) x 2 (Order of Presentation) x 3 (Initial decision, Group consensus decision, Post-group consensus decision) x 3 (Cautious, Moderate, and Risky items) factorial analysis of variance with repeated measures on the last two factors was performed (see Table I). Where interaction effects were found to be statistically significant or of value in terms of specific predictions, simple effects were explored.

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Insert Table I about here

---

The main effect of Sex was statistically significant ( $F = 4.463$ ,  $df = 1/24$ ,  $p < .05$ ) indicating that females made more risky decisions ( $\bar{X} = 5.535$ ) than males ( $\bar{X} = 6.007$ ). The main effect for Items was statistically significant ( $F = 31.009$ ,  $df = 1/48$ ,  $p < .001$ ) with the risky item ( $\bar{X} = 4.281$ ) being significantly more risky than both moderate ( $\bar{X} = 6.625$ ) and cautious ( $\bar{X} = 6.406$ ) items (R vs. M:  $F = 48.848$ , R vs C:  $F = 43.928$ ;  $df = 1/48$  and  $p < .001$  in both cases). There was no significant difference between the moderate and cautious items.

The Order x Item interaction effect was statistically significant ( $F = 5.803$ ,  $df = 2/48$ ,  $p < .01$ ). Simple effects for this item are presented below. The Anxiety x Sex x Order x Item interaction effect was statistically significant ( $F = 3.227$ ,  $df = 2.48$ ,  $p < .05$ ) as was the Anxiety x Sex x Order x Decision x Item interaction effect ( $F = 2.668$ ,  $df = 4/96$ ,  $p < .05$ ). Table II presents the means for the heterogeneous 5-factor interaction. An Omega Square analysis (Keppel, 1973) for these interactions indicated that the four-factor interaction accounted for only 02.4% of the variance and that the five-factor interaction accounted for only 01.3% of the variance. Because of the difficulty of interpreting such

large interactions, simple effects for these two interactions were not calculated. No other statistically significant effects were found for the heterogeneous group analysis.

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Insert Table II about here

---

Because of their potential value for the predictions made in this study, the following nonsignificant interactions were explored for simple effects. The Anxiety x Decision interaction contained no significant differences between LA and HA Ss for either Initial or Post-group consensus decisions, nor did this analysis reveal any significant shifts in risk for either anxiety group. The Anxiety x Decision x Item interaction contained no significant differences between LA and HA Ss that would indicate differential item perception, nor were any significant shifts in risk found here for the different items.

It was suspected that Order of Presentation might be producing some differential responding for LA and HA Ss, so the following interactions were investigated. The Anxiety x Order interaction showed a marginal difference in responding for HA Ss between the risky ( $\bar{X} = 6.028$ ) and cautious ( $\bar{X} = 5.472$ ) orders ( $F = 3.139$ ,  $df = 1/24$ ,  $p < .10$ ). The simple effects analysis of the Order x Item interaction showed that the cautious item was responded to with significantly greater risk when it appeared first (cautious order:  $\bar{X} = 5.583$ ) than when it appeared last (risky order:  $\bar{X} = 7.229$ ;  $F = 9.372$ ,  $df = 1/40$ ,  $p < .01$ ). This differentiating effect was not found for either the moderate or risky items. The simple effects of the Anxiety x Order x Item interaction showed that this differentiating effect on the cautious item was produced for both LA ( $F = 6.478$ ,  $df = 1/40$ ,  $p < .025$ )

and HA ( $F = 7.541$ ,  $df = 1/40$ ,  $p < .01$ ) subjects.

Analysis of Variance for Homogeneous Groups

A 2 (Trait Anxiety Group dimension) x 2 (Sex) x 2 (Order of Presentation) x 3 (Initial decision, Group consensus decision, Post-group consensus decision) x 3 (Cautious, Moderate, and Risky items) factorial analysis of variance with repeated measures on the last two factors was performed (see Table III). Simple effects were explored where interaction effects were found to be statistically significant and where nonsignificant interaction effects might be useful in explaining predicted and non-predicted findings.

---

Insert Table III about here

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The main effect of Trait Anxiety Group was statistically significant ( $F = 11.529$ ,  $df = 1/24$ ,  $p < .01$ ) with HA groups being more risky than LA groups ( $\bar{X} = 5.410$  and  $\bar{X} = 6.229$ , respectively). This direction was contrary to prediction. The main effect of Sex was not significant ( $F > 1$ ). The main effect of Order of Presentation was statistically significant ( $F = 5.368$ ,  $df = 1/24$ ,  $p < .025$ ) with the cautious order ( $\bar{X} = 5.528$ ) producing riskier responses than the risky order ( $\bar{X} = 6.181$ ). The main effect of Items was statistically significant ( $F = 32.159$ ,  $df = 2/48$ ,  $p < .001$ ) with the risky item ( $\bar{X} = 4.354$ ) being significantly more risky than either the cautious ( $\bar{X} = 6.667$ ) or moderate ( $\bar{X} = 6.542$ ) items ( $F = 50.861$  for R vs. C,  $F = 45.513$  for R vs. M;  $df = 1/48$  and  $p < .001$  in both cases). There was no significant difference between the cautious and moderate items.

The Decision x Item interaction was statistically significant ( $F = 12.379$ ,  $df = 4/96$ ,  $p < .001$ ). The Initial decision yielded significant differences only between the risky ( $\bar{X} = 5.344$ ) and moderate ( $\bar{X} = 6.125$ ) items ( $F = 4.805$ ,  $df = 1/80$ ,  $p < .05$ ). At Group consensus, the cautious and moderate items were identical ( $\bar{X} = 7.000$ ) and both were significantly more cautious than the risky item ( $\bar{X} = 3.500$ ;  $F = 96.504$ ,  $df = 1/80$ ,  $p < .001$  in both cases). Significant shifts from Initial decision to Group consensus decision were found for all three items. Cautious shifts were found for the cautious items ( $F = 5.781$ ,  $df = 1/80$ ,  $p < .025$ ) and the moderate item ( $F = 4.164$ ,  $df = 1/80$ ,  $p < .05$ ). A risky shift was obtained for the risky item ( $F = 18.493$ ,  $df = 1/80$ ,  $p < .001$ ). At Post-group consensus, differences between the risky item ( $\bar{X} = 4.291$ ) and both the cautious ( $\bar{X} = 7.033$ ) and moderate ( $\bar{X} = 6.500$ ) items were maintained (R vs. C:  $F = 61.059$ ,  $df = 1/80$ ,  $p < .001$ ; R vs. M:  $F = 40.988$ ,  $df = 1/80$ ,  $p < .001$ ). There were no significant shifts from Group consensus decision to Post-group consensus decision. The shifts which appeared at Group consensus were maintained at Post-group consensus for the cautious item (cautious shift;  $F = 5.814$ ,  $p < .025$ ) and the risky item (risky shift;  $F = 6.883$ ,  $p < .025$ ) but not for the moderate item.

The Anxiety x Sex x Order interaction was statistically significant ( $F = 4.921$ ,  $df = 1/24$ ,  $p < .025$ ). The risky order differentiated the more cautious LA males ( $\bar{X} = 6.917$ ) from the HA males ( $\bar{X} = 5.444$ ;  $F = 6.834$ ,  $df = 1/24$ ,  $p < .025$ ), while the cautious order differentiated conservative LA females ( $\bar{X} = 6.444$ ) from more risky HA females ( $\bar{X} = 4.889$ ;  $F = 7.616$ ,  $df = 1/24$ ,  $p < .025$ ). Additionally, HA females were significantly more risky when receiving the cautious order of presentation ( $\bar{X} = 4.889$ ) than when receiving the risky order ( $\bar{X} = 6.306$ ;  $F = 6.324$ ,  $df = 1/24$ ,

$p < .025$ ). There were no other significant differences found.

The Anxiety x Sex x Order x Decision interaction was statistically significant ( $F = 5.991$ ,  $df = 2/48$ ,  $p < .01$ ) but an Omega Square analysis showed that this interaction accounted for only 01.7% of the variance. The Anxiety x Sex x Order x Decision x Item interaction was statistically significant ( $F = 3.308$ ,  $df = 4/96$ ,  $p < .025$ ) but an Omega Square analysis showed that this interaction accounted for only 01.1% of the variance. Simple effects for these higher order interactions were not calculated because of their complexity and difficulty of interpretation. Table IV, however, presents the means for the homogeneous 5-factor interaction.

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Insert Table IV about here

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No other significant main or interaction effects were found for the homogeneous analysis.

Because of the predictions made, the following nonsignificant interaction effects were explored. The Anxiety x Decision interaction revealed no significant differences between LA and HA groups in terms of initial decisions. Differences became apparent at group consensus decisions (though not through any significant shifting on the part of either LA or HA  $S_s$ ) when LA groups ( $\bar{X} = 6.333$ ) were significantly more cautious than HA groups ( $\bar{X} = 5.333$ ;  $F = 6.795$ ,  $df = 1/40$ ,  $p < .025$ ). The differences were maintained at the post-group consensus decisions ( $\bar{X}$  for LA groups = 6.458,  $\bar{X}$  for HA groups = 5.375;  $F = 7.970$ ,  $df = 1/40$ ,  $p < .01$ ). No other significant shifting was found for either LA or HA

groups, as predicted. It may be recalled that contrary to prediction, heterogeneously composed groups did no significant shifting either.

The Anxiety x Decision x Item interaction, while again not significantly differentiating LA and HA Ss for any of the three items at the initial decision, did reveal some significant shifting not found when collapsed across items in the Anxiety x Decision interaction. LA groups made a significant cautious shift between initial ( $\bar{X} = 6.250$ ) and group consensus ( $\bar{X} = 8.000$ ) decisions ( $F = 12.063$ ,  $df = 1/80$ ,  $p < .001$ ) on the cautious item, and this shift was maintained at the post-group consensus ( $\bar{X} = 8.000$ ) decisions ( $F = 12.063$ ,  $df = 1/80$ ,  $p < .001$ ). LA groups made a significant risky shift from initial ( $\bar{X} = 5.813$ ) to group consensus ( $\bar{X} = 4.000$ ) decisions ( $F = 12.939$ ,  $df = 1/80$ ,  $p < .001$ ) on the risky item, and this shift was maintained at the post-group consensus decision ( $\bar{X} = 4.500$ ;  $F = 6.790$ ,  $df = 1/80$ ,  $p < .025$ ). HA groups made a significant risky shift from initial ( $\bar{X} = 4.875$ ) to group consensus decision ( $\bar{X} = 3.000$ ;  $F = 13.848$ ,  $df = 1/80$ ,  $p < .001$ ) on the risky item, but this shift was not maintained at the post-group consensus decision ( $\bar{X} = 3.938$ ;  $F = 3.370$ ,  $df = 1/80$ , NS). No other significant shifts were found.

It was again suspected that order of presentation was at work in some way to produce differential responding for LA and HA Ss. As found (marginally) for heterogeneously composed groups, the Anxiety x Order interaction showed response differences for HA Ss between the risky ( $\bar{X} = 5.875$ ) and cautious ( $\bar{X} = 4.944$ ) orders of presentation ( $F = 5.460$ ,  $df = 1/24$ ,  $p < .05$ ). Such differences were not found for LA Ss. The

differential effect or order of presentation on the HA  $S_s$  was enough to make them significantly more risky than LA  $S_s$  ( $\bar{X} = 6.111$ ) when the cautious order was employed ( $F = 8.579$ ,  $df = 1/24$ ,  $p < .01$ ). The Order x Item interaction showed that the risky item was responded to significantly more riskily when it appeared last (cautious order:  $\bar{X} = 3.792$ ) than when it appeared first (risky order:  $\bar{X} = 4.917$ ;  $F = 5.763$ ,  $df = 1/48$ ,  $p < .025$ ). This differentiating effect was not found for either the moderate or cautious items. (Recall that for the heterogeneously composed groups the cautious item was differentiated by the order effect, but not the moderate or risky items.)

The significant Anxiety x Order x Item interaction yielded the following significant simple effects of interest. LA groups were significantly more cautious ( $\bar{X} = 7.917$ ) than were the HA groups ( $\bar{X} = 5.083$ ) on the cautious item when it appeared first, i.e., cautious order of presentation ( $F = 18.285$ ,  $df = 1/40$ ,  $p < .001$ ); but there was no significant difference between LA and HA groups on the cautious item when it appeared last, i.e., the risky order. A similar finding appeared for the risky item: HA groups ( $\bar{X} = 4.042$ ) were significantly more risky than LA groups ( $\bar{X} = 5.792$ ) when the risky item appeared first, i.e., risky order ( $F = 6.923$ ,  $df = 1/40$ ,  $p = .025$ ); but when the risky item appeared last (cautious order) the differences disappeared. Differences in the perception of cautious and risky items, depending on their order of presentation, are shown by two other significant differences for this interaction. Order of presentation affected only the cautious item for HA groups, who responded significantly more riskily



when this item appeared first (cautious order:  $\bar{X} = 5.083$ ) than when it appeared last ( $\bar{X} = 6.750$ ;  $F = 6.326$ ,  $df = 1/40$ ,  $p < .025$ ). The difference between LA and HA groups on the cautious item seemed to be due to the effect of order of presentation on the HA groups. On the other hand, LA groups responded significantly more cautiously to the risky item when it appeared first (risky order,  $\bar{X} = 5.792$ ) than when it appeared last ( $\bar{X} = 3.750$ ;  $F = 6.923$ ,  $df = 1/40$ ,  $p < .025$ ); apparently, accounting for LA groups being more cautious than HA groups when the risky item appeared first.

#### Combining Means for Heterogeneous and Homogeneous Groups

Since all Ss, regardless of whether they participated in heterogeneous or homogeneous groups, were treated alike in the initial decision phase of the study, combining the means into one analysis for the initial decision phase should give a more accurate picture of how the various factors interacted with the anxiety dimension. (Combining heterogeneous and homogeneous means at either the group consensus or post-group consensus phases would not have been appropriate, since homogeneously-grouped Ss interacted only with same-anxiety level Ss, but heterogeneously-grouped Ss interacted with both same- and different-anxiety level Ss). Table V shows the means of the combined heterogeneous and homogeneous interactions for the initial decision phase. A statistical analysis of this combined interaction was not performed because of the complications of collapsing a repeated measure into a non-repeated measure with the resulting loss of degrees of freedom and changes in error terms. This procedure was undertaken for the purpose of attempting

to clarify some of the inconsistencies found within the two previous analyses of variance. Mean differences less than about 2.0 were not considered sufficiently large to warrant mention.

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Insert Table V about here

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For LA males the order of presentation made a difference for the cautious item. They responded with considerably more risk when the cautious item appeared first (cautious order:  $\bar{X} = 4.500$ ) than when it appeared last (risky order:  $\bar{X} = 8.375$ ). This differential responding for LA males made their decisions on the cautious item more cautious than LA females' ( $\bar{X} = 6.000$ ) when the item appeared last, but more risky than LA females ( $\bar{X} = 6.500$ ) when the item appeared first. The order of presentation produced response differences for HA females on the cautious item (as did the LA males) when it appeared first (cautious order:  $\bar{X} = 4.500$ ) than when it appeared last (risky order:  $\bar{X} = 7.375$ ). This differential responding by HA females to the cautious item presented in different orders did not differentiate them from the HA males. The cautious order did, however, make HA females considerably more risky in their responses to the cautious item than the LA females.

HA males were differentially affected by order of presentation on the risky item (though LA males and females and HA females were not). When the risky item appeared last (cautious order:  $\bar{X} = 2.750$ ) HA males responded to it considerably more riskily than when it appeared first (risky order:  $\bar{X} = 5.625$ ). This risky responding on the part of HA males to the risky item presented last was considerably more risky

than either LA males ( $\bar{X} = 4.625$ ) or HA females ( $\bar{X} = 5.625$ ). Finally, HA females ( $\bar{X} = 4.125$ ) responded with considerably more risk than LA females ( $\bar{X} = 6.125$ ) to the risky item when it appeared first.

#### Participants' Evaluation of Leadership

Two-tailed Mann-Whitney U tests were performed on group members' total weighted-rank scores, as made by his fellow group discussion participants, to determine whether the anxiety or sex dimensions would differentiate leaders.

For the heterogeneously composed groups, males were significantly more influential than females ( $p = .058$ ) on the risky item in one of the cautious-order-of-presentation groups. No other significant differences were found for the heterogeneous groups.

Homogeneously composed groups provided a number of significant differences in influence between males and females. Females were significantly more influential than males on the cautious item for both LA groups (risky order:  $p = .028$ ; cautious order:  $p = .058$ ) and were significantly more influential than males on the moderate item in the cautious-order LA group ( $p = .058$ ). Males and females were not significantly differentiated for any item in either of the homogeneously composed HA groups.

It should be noted that no significant rank order differences were found for any of the eight groups in terms of total group influence; that is, across all three items discussed by a group.

#### Objective Evaluations of Leadership

Two-tailed Mann-Whitney U tests were performed on group members' total weighted-rank scores which were made by the four graduate student

observers.

Males were significantly more influential than females on the risky item ( $p = .028$ ) in one of the cautious-order heterogeneous groups (rankings for the same group by the participants significantly differentiated males from females in terms of influence). HA Ss were significantly more influential than LA Ss on the moderate item ( $p = .058$ ) in one of the risky-order heterogeneous groups. No other significant differences were found for items for the heterogeneous groups, and no significant differences were found between either males and females or LA and HA Ss in terms of total group influence in the heterogeneous groups.

No significant rank order differences were found between males and females in any of the homogeneously composed groups.

#### Biserial Correlations of Anxiety and Leadership

Biserial correlations between trait anxiety and leadership were performed for heterogeneous groups. These correlations were based on the total influence weighted-rank scores received by each subject. For participant rankings,  $r_{(BIS)} = .11$ . For observer rankings,  $r_{(BIS)} = .08$ .

#### Spearman Rho Correlations of Influence Rankings

Correlations between participants' and observers' rankings of leadership (for both item and total group influence) are presented in Table VI. The correlations ranged from a nonsignificant low of  $r = .351$  for the risky item in the risky-order LA homogeneous group, to a high of  $r = .976$  for the moderate item in the second risky-order heterogeneous group.

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Insert Table VI about here

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Neither the cautious item or total influence rankings for either of the cautious-order heterogeneous groups reached significance, nor, as mentioned above, did the risky item rankings of the risky-order LA homogeneous group. All other correlations for items and totals reached the .05 (or better) level of significance, indicating considerable agreement on group leadership hierarchies between group discussion participants and graduate student observers.

#### Individual Group Leaders

Individual Ss who received a total weighted score of 48 or more from the group discussion participants are presented in Table VII under the columns labeled PART. Ss meeting the criterion of 28 or more as determined by the graduate student observers are shown in Table VII under the columns labeled OBS. Question marks indicate that no Ss were seen as sufficiently influential to garner the appropriate minimum weighted-score criterion of leadership. When more than one S met the criterion, the S with the highest score is listed above the other(s). For example, in the first cautious order heterogeneous group, two males (Ss "B" and "D") both met the participant ranking criterion of leadership for the risky item, though S "B" obtained a higher weighted rank than S "D". Agreement between participants and observers as to the group leader is shown by an "X" between the PART and OBS columns.

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Insert Table VII about here

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## Discussion

### Leaders and Leadership

There was only scant support for the first hypothesis, that LA Ss would be the heterogeneous group leaders. Although Mann-Whitney U tests did not produce any significant differences between LA and HA Ss as a group, and biserial correlations between anxiety and leadership were near zero, it is apparent from Table VII that, when Ss met the criterion established to be group leaders, LA Ss were more likely to emerge as leaders. When the group discussion participants themselves ranked each other, in only one case where leaders were apparent did they select a HA S. In this instance a HA female emerged as the leader for the discussion concerning the cautious item. The graduate student observers selected a LA female as most influential in this case. It should be recalled here that the cautious item involves the couple contemplating marriage in the face of a number of arguments resulting from sharp differences of opinion. When compared with the items involving the risky chess maneuver and the man deciding on a heart operation, it becomes apparent that the marriage item is the one with which females can most easily identify. It comes as no surprise, then, that females more often asserted themselves in group discussions of the cautious item than in discussions of either the moderate or risky items. Other exceptions to the finding of LA Ss as leaders were found in the rankings

made by graduate student observers who selected HA males for one of the heterogeneous groups (risky order of presentation). Here, group participants selected a LA female. Discrepancies between participants and observers offered a cautionary note.

It was apparent that, while LA Ss were most often found to be the group leaders, there was considerable lack of agreement between participants and observers as to who were the group leaders. In only two of the heterogeneous groups was there some agreement (in both cases for the cautious item and for total influence). In several instances no clear cut leader emerged, as when either no S met the criterion or when more than one S met the criterion. Leadership is a matter of degree and not an all-or-none affair. For this reason the emergence of more than one group leader in either participant or observer rankings, as well as the selection of different leaders by participants and observers, would be expected. Both participants and observers may have been forced to rank order group members when, because of diffusion of influence, no clear cut influence ranking existed. In addition, as noted previously, it might have been somewhat optimistic to have hoped for the emergence of clear cut leaders for every item or even for every (total) group when the time allotted for discussion was so limited. Studies dealing more specifically with emergent leadership (e.g., Stein, et al, in press) usually allow group discussions to last considerably longer than 30 minutes.

Though specific predictions were not made for homogeneously composed groups in terms of leadership, the following findings were of

interest. First, there was considerably more agreement between participants and observers in terms of who emerged as the group leaders for homogeneous groups than there was for heterogeneous groups. Secondly, females were more likely to emerge as group leaders in LA groups than in HA groups, especially for discussions of the cautious item (i.e., the "female item"). Mann-Whitney U tests for LA groups showed that females were significantly more influential than males for the cautious item in both the risky order homogeneous ( $p = .028$ ) and cautious order homogeneous ( $p = .058$ ) groups. Also, reflected in Table VII is a preponderance of male leaders in the HA homogeneous groups (though none of the Mann-Whitney U tests were significant). It would appear that females are more likely to assert themselves when they are LA than when they are HA.

The biserial correlations between anxiety and leadership in this study were disappointingly low. Perhaps the author was premature in suggesting that leaders would more likely be low trait anxious Ss than high trait anxious Ss. The argument does still have some intuitive appeal and perhaps further research is indicated.

A few additional observations concerning leadership seem appropriate. High correlations between participant and observer rankings of influence do not necessarily mean the two will agree on a particular discussant as the group leader (compare Tables VI and VII). In addition to the problem of diffusion of influence mentioned earlier, group participants may very well have attributed a somewhat different criterion to leadership than graduate student observers, even though both participants and observers were given similar instructions for



making their evaluations. Group participants had to live the problem of reaching discussion consensus; observers merely had to watch this process. The situations under which leadership was evaluated were thus considerably different.

Finally, no support was found for the definition of leaders as those Ss whose initial decisions were riskier than those made by their fellow group members. Nor could a conceptually similar definition, that leaders are those Ss whose initial decision is the same as the decision reached by the group, be substituted. When leaders' initial decisions were compared with those of other group members and with decisions reached by the group at consensus, no consistent pattern appeared. Leaders' initial decisions could be more risky than, more cautious than, or about the same as, the average of other group members' initial decisions. Some leaders made risky shifts, some made cautious shifts, and others held the same decision as that reached by the group. It would appear that group leaders can be either risky or cautious, and may be induced to shift from their initial decisions as a result of group discussion. While these findings do not negate the possibility that leaders exert considerable influence on other group members to make decision shifts, they do provide damaging evidence for the traditional choice-shift literature definition of leadership.

#### Decisions and Decision Change

Perhaps the only finding that could be interpreted readily was that of the CDQ items. In both heterogeneous and homogeneous group analyses, the risky item was responded to more riskily than either the

moderate or cautious items. The moderate and cautious items were not differentiated, being responded to cautiously in both cases. While a previous study (Millimet & Gaston, see Footnote 2) found appropriate item differences, it was clear that in this study Ss approached the heart operation (moderate) and marriage (cautious) situations with about equal caution. This finding may not be a contradiction of the previous study so much as a reflection of the rapidly changing college student outlook concerning the institution of marriage and the increasing acceptance of divorce as a viable solution for marriage-gone-sour. The author, in viewing videotapes of the group discussions, witnessed an approximate two to one increase over the previous study in arguments suggesting divorce as a possible alternative to an unsuccessful marriage.

The prediction that heterogeneous groups would shift more than homogeneous groups was not supported. A comparison of the Anxiety x Decision x Item interactions for the heterogeneous and homogeneous analyses would have lead one to believe the opposite: that homogeneous groups shift more than heterogeneous groups. However, the author could offer no theoretical rationale to explain such a conclusion.

The most serious difficulty in this study resulted from finding a significant main effect for anxiety which indicated that HA homogeneous groups were more risky than LA homogeneous groups. While the difference was not significant for initial decision (in the Anxiety x Decision interaction), it was in direct opposition to the hypothesis being tested. A diffusion of responsibility explanation might suggest a reason for HA groups becoming more risky as a function of group discussion, but it

does not suggest that HA groups should be more risky than LA groups in either initial or group-consensus decisions as would appear to be the case. The order effect seemed to be producing some differential responding by LA and HA Ss depending on the item. Though it was not clear how or why this occurred, differential responding based on the order effect may have contributed to these inconsistent findings.

There did appear to be an order effect of some kind at work in this study, but its meaning could only be guessed at. Though it did not hold in some instances, the cautious order seemed to generate riskier responding to the risky and cautious items, while the risky order seemed to generate cautious responding to the risky and cautious items. Speculating a bit, it was as though Ss compared responses made on the last item in the group of three to those made on the first item, and then made decisions on the last item relative to the decisions made on the first. If for example, the risky item was intrinsically 20% more risky than the cautious item, then the items would tend to maintain this relativity. Having first responded to the risky item with a 5 in 10 (50%) success probability, it would then be necessary to respond 20% more cautiously to the (later appearing) cautious item with a 7 in 10 probability to maintain the relativity of the two items. On the other hand, having first responded to the cautious item with a 5 in 10 probability would necessitate a 20% more risky response to the risky item (i.e., a 3 in 10 probability). Thus a particular person could be made to respond either more cautiously or riskily to a given situation by providing him a preceding situation upon which he could

make a relative judgment. This effect might be labeled "adaptation of risk."

The effect of order of presentation (or "risk adaptation") of CDQ items has not heretofore been noted in reviews of risky shift literature. Further work with the order effect (assuming there is one) might lead to some interesting implications for group decision making. It might be possible to set up situations in which a group will make relatively more cautious or risky decisions concerning a matter by manipulating the (intrinsic?) riskiness of discussions which precede it. For example: An astute company executive might arrange the agenda for his board meetings in such a way that a critical issue he wants decided on in a certain way would follow topics of discussion designed to produce a cautious or risky adaptation process. At any rate, the problems of this experiment in terms of order of presentation need further study.

#### Combining Heterogeneous and Homogeneous Individual Decisions

The attempt to combine means for heterogeneous and homogeneous groups at the initial individual decision phase of this study in order to help clarify the unexpected results was a failure (see Table V). Differences large enough to approach significance, had a statistical analysis been performed, made no more theoretical sense than did the means for the separate heterogeneous and homogeneous analyses. Why the order effect should produce similar differentiating responses to the cautious item for LA males and HA females but not for LA females and HA males was not explainable. Nor was the finding that only HA

males responded differentially on the risky item as a result of the order effect.

### Conclusions

A number of problems associated with this study made interpretation of the results extremely difficult in some cases and next to impossible in others.

One problem was that of finding two significant 5-factor interactions. An intelligent interpretation of the simple effects associated with higher order interactions of this kind are rarely possible. The present study was no exception. That higher order interactions were found (even though they accounted for little of the total variance) suggests that lower order interactions and single factors which are found to be significant must be regarded with caution. The present study began as a 3-factor design (Anxiety, Decisions, and Items) and grew out of proportion quite unintentionally--and, paradoxically, for the sake of sound experimental design. It was decided to control for sex differences and order of presentation, an experimental procedure most researchers would agree is both necessary and appropriate. But since the information for sex and order of presentation was thus available, then why not analyze it? The answer to this question was made abundantly clear by the 5-factor interactions found in this study.

Another problem which may have contributed to the strangeness of the results which were obtained was the puzzling interplay of sex with the anxiety and order of presentation dimensions. Carlson (1971) has cogently argued for the need to control for sex in experimentation, as that variable most often leads to a significant effect.

Unfortunately, in the present study, the significant sex variable worked in mysterious ways, eluding comprehension. While the author attempted to make sense of the possible interaction of sex and anxiety in terms of group leadership, the reader is warned to be sceptical of that discussion because of the shaky ground upon which the rest of the study stands. Since the trustworthiness of the data as a whole is in question, the discussion of sex, anxiety, and leadership might turn out to be much ado about nothing.

It is difficult to see how compromising the original criterion for inclusion in the study (i.e., dropping one point toward the mean from plus or minus one standard deviation on the anxiety measure) for the Ss in one group (heterogeneous cautious-order) could have been a critical factor in contributing to the findings in this study, but the possibility does exist. A more probable source of difficulty could have been a procedure not previously mentioned. Before resorting to the criterion compromise, E included eight Ss who previously knew him as an instructor in their discussion sections in Introductory Psychology. There were one LA male, two LA females, and five HA females who were acquainted with E. These Ss, with the exception of one HA female, participated in one or the other of the two cautious order of presentation groups. It is possible that the inclusion of these Ss in three of the groups may have contributed to the jumbled results. For instance, the HA Ss who were acquainted with E may have had their anxiety levels attenuated such that they behaved more like LA Ss than those HA Ss who did not previously know E. That is, high

trait anxious Ss may have experienced relatively lower or higher state anxiety depending, respectively, on whether they did or did not previously know E.

One last factor which may have contributed to the problems of this study was the possibility that LA and HA Ss did not constitute homogeneous groups. The Millimet and Gaston study previously mentioned (see Footnote 2) used high and low trait anxious Ss who were also high and low sensation seekers. While the effect of sensation-seeking (SS) was not as pronounced as that of trait anxiety in that study, it was statistically significant: Ss high in SS were more risky than Ss low in SS. If the HA Ss in this study had been primarily high in SS, their decisions would have been elevated in risk above that which might have been expected. When the data was being gathered for this study it was assumed that the sensation seeking dimension would be randomly distributed with respect to anxiety. This may not have been the case. Low sensation seeking, high anxious Ss might have been less likely to volunteer to participate in the study than high sensation seeking, high anxious Ss. In the latter case, the threat of being involved in a psychological experiment might have been outweighed by a desire to participate in an adventure. In the former case, not only might the S be threatened by the experiment itself, but he might also have no desire to venture forth. For LA Ss, the threat of being asked to participate in an experiment would not be expected to interact with a lack of desire to participate as it would for HA Ss, at least to the extent that the low sensation seeking, low anxious Ss would resist volunteering.

Even if sensation seeking did distribute itself randomly among LA and HA Ss, there could have been other personality factors which contributed to the inconclusive findings of this study. As earlier expressed, it is highly unlikely that the anxiety dimension alone would account for risk taking propensity.

This study raised more questions than it answered. Is it possible that different CDQ items possess some intrinsic differences which would cause males and females to respond differentially to them and to defend their responses with more or less vigor? Is there an "adaptation of risk" phenomena associated with order of item presentation? Do females' assertiveness in group discussion differ as a function of their anxiety levels?

This study suggests that further research is required to answer the above questions, as well as to clarify some provocative suggestions which were raised. While the leadership hypothesis as usually stated appears to be inadequate, the possibility still remains that group leaders play a large part in choice shifts. Researchers should also attempt to tackle the problems encountered here in smaller units-- limiting the number of factors used in their experimentation. Perhaps the problems with the sex variable which was encountered here could be avoided by using either all male or all female groups; though, of course, interesting data would be lost. And finally, the possibility of an "adaptation of risk" as the result of order of presentation, heretofore unnoticed in CDQ research, provides fertile ground for study since there may be a number of practical implications involved.



## References

- Altrocchi, V., Parsons, O. A., & Dickoff, H. Changes in self-ideal discrepancy in repressors and sensitizers. Journal of Abnormal and Social Psychology, 1960, 61, 67-72.
- Brown, R. Social Psychology. New York: Free Press of Glencoe, 1965.
- Byrne, D. The Repression-Sensitization Scale: Rationale, reliability, and validity. Journal of Personality, 1961, 29, 334-349.
- Carlson, R. Where is the person in personality research? Psychological Bulletin, 1971, 75, 203-219.
- Cartwright, D. Risk taking by individuals and groups: An assessment of research employing choice dilemmas. Journal of Personality and Social Psychology, 1971, 20, 361-378.
- Clark, R.D. Group-induced shift toward risk: A critical appraisal. Psychological Bulletin, 1971, 76, 251-270.
- Clark, R. D., & Willems, E. P. Two interpretations of Brown's hypothesis for the risky shift. Psychological Bulletin, 1972, 78, 62-63.
- Collins, B. E., & Guetzkow, H. A. A social psychology of group processes for decision making. New York: Wiley, 1964.
- Ferguson, D. A., & Vidmar, N. Effects of group discussion on estimates of culturally appropriate risk levels. Journal of Personality and Social Psychology, 1971, 20, 436-445.
- Foulds, M. L., & Warehime, R. G. Relationship between repression-sensitization and a measure of self-actualization. Journal of Consulting and Clinical Psychology, 1971, 36, 257-259.

- Hoffman, H. E. Use of avoidance and vigilance by repressors and sensitizers. Journal of Consulting and Clinical Psychology, 1970, 34, 91-96.
- Keppel, G. Design and analysis: A researcher's handbook. Englewood Cliffs, New Jersey: Prentice-Hall, 1973.
- Kogan, N., & Wallach, M. A. Risk taking: A study in cognition and personality. New York: Holt, Rinehart, and Winston, 1964.
- Marquis, D. G. Individual responsibility and group decisions involving risk. Industrial Management Review, 1962, 3, 8-23.
- Millimet, C. R. Manifest Anxiety-Defensiveness Scale: First factor of the MMPI revisited. Psychological Reports, 1970, 27, 603-616.
- Millimet, C. R. Support for a maladjustment interpretation of the anxiety-defensiveness dimension. Journal of Personality Assessment, 1972, 36, 39-44.
- Millimet, C. R., & Cohen, H. Repression-sensitization: A reflection of test taking set or personal adjustment? Journal of Personality Assessment, 1973, 37, 255-259.
- Millimet, C. R., & Gardner, D. F. Induction of threat to self-esteem and arousal and resolution of affect. Journal of Experimental Social Psychology, 1972, 8, 467-481. (a)
- Millimet, C. R., & Gardner, D. F. Trait-state anxiety and psychological stress. Journal of Clinical Psychology, 1972, 28, 145-148. (b)
- Pruitt, D. G. Choice shifts in group discussion: An introductory review. Journal of Personality and Social Psychology, 1971, 20, 339-360.

- Stein, R. T., Geis, F. L., & Damarin, F. The perception of emergent leadership hierarchied in task groups. Journal of Personality and Social Psychology, In press.
- Stoner, J. A. F. A comparison of individual and group decisions involving risk. Unpublished master's thesis, Massachusetts Institute of Technology, Sloan School of Management, 1961.
- Vidmar, N. Group composition and the risky shift. Journal of Experimental Psychology, 1970, 6, 346-350.
- Vidmar, N., & Burdeny, T. C. Interaction effects of group size and relative risk position with item type in the "group shift" effect. (Res. Bull. No. 128, Department of Psychology) Waterloo, Ontario: University of Western Ontario, 1969.
- Vinokur, A. Review and theoretical analysis of the effects of group processes upon individual and group decisions involving risk. Psychological Reports, 1971, 76, 231-250.
- Wallach, M. A., & Kogan, N. Sex differences and judgment processes. Journal of Personality, 1959, 27, 555-564.
- Wallach, M. A., Kogan, N., & Bem, D. J. Diffusion of responsibility and level of risk taking in groups. Journal of Abnormal and Social Psychology, 1964, 68, 263-274.
- Willems, E. P., & Clark, R. D. Shift toward risk and heterogeneity of groups. Journal of Experimental Psychology, 1971, 7, 304-312.
- Zuckerman, M., Kolin, E. A., Price, L., & Zoob, I. Development of a Sensation-Seeking Scale. Journal of Consulting Psychology, 1964, 28, 477-482.

## Footnotes

<sup>1</sup>For the purpose of clarity, the reader is reminded that trait anxiety differs from state anxiety. While state anxiety refers to the situational negative affect experienced by everyone from time to time, trait anxiety refers to a relatively enduring personality characteristic which predisposes an individual to experience state anxiety (Millimet & Gardner, 1972b).

<sup>2</sup>Millimet, C. R., & Gaston, C. D. Personality classification and risk taking in individuals and groups. Unpublished manuscript, University of Nebraska at Omaha, January, 1973.

<sup>3</sup>Personal communication cited in Clark, R. D., Group-induced shift toward risk: A critical appraisal. Psychological Bulletin, 1971, 76, 251-270. (P. 255)

Table I  
Analysis of Variance for Heterogeneous Groups

Factor	df	Mean Squares	F
Anxiety (A)	1	0.125	<1
Sex (B)	1	16.055	4.463*
Order (C)	1	9.389	2.610
AB	1	0.000	<1
AC	1	2.722	<1
BC	1	1.681	<1
ABC	1	0.125	<1
Error 1	24	3.597	
Decision (D) <sup>r</sup>	2	4.292	2.063
AD	2	0.125	<1
BD	2	4.056	1.414
CD	2	3.389	1.629
ABD	2	0.042	<1
ACD	2	0.847	<1
BCD	2	0.930	<1
ABCD	2	4.625	2.224
Error 2	48	2.080	
Items (E) <sup>r</sup>	2	160.904	31.099***
AE	2	0.406	<1
BE	2	7.317	1.414
CE	2	30.025	5.083**
ABE	2	0.594	<1
ACE	2	0.316	<1
BCE	2	2.462	<1
ABCE	2	16.698	3.227*
Error 3	48	5.174	
DE	4	1.542	<1
ADE	4	0.719	<1
BDE	4	2.159	<1
CDE	4	2.118	<1
ABDE	4	0.323	<1
ACDE	4	0.316	<1
BCDE	4	4.181	1.916
ABCDE	4	5.822	2.668*
Error 4	96	2.182	

\*p &lt; .05

\*\*p &lt; .01

\*\*\*p &lt; .001

<sup>r</sup>-repeated measure

Table II

Means for the 5-Factor Heterogeneous Analysis

	N = 4	Initial Decision			Group Consensus Decision			Post-Group Consensus Decision			
		Cautious Item	Moderate Item	Risky Item	Cautious Item	Moderate Item	Risky Item	Cautious Item	Moderate Item	Risky Item	
Low Anxious	Males	Risky Order	5.500	4.500	7.000	7.000	4.000	8.750	6.500	3.500	
		Cautious Order	6.000	5.000	6.000	7.000	5.000	5.500	7.000	5.000	
	Females	Risky Order	6.500	4.750	7.000	7.000	4.000	5.000	6.500	3.500	
		Cautious Order	4.500	6.500	4.250	6.000	7.000	5.000	5.500	7.000	4.000
	Males	Risky Order	7.500	6.500	6.750	7.000	7.000	4.000	7.250	7.000	4.000
		Cautious Order	7.000	6.500	2.000	6.000	7.000	5.000	6.500	6.500	4.000
Females	Risky Order	7.250	6.500	2.500	7.000	7.000	4.000	7.500	6.000	3.500	
	Cautious Order	4.000	6.500	5.500	6.000	7.000	5.000	4.000	6.000	4.000	

Table III

## Analysis of Variance for Homogeneous Groups

Factor	df	Mean Squares	F
Anxiety			
Group (A)	1	56.887	11.529***
Sex (B)	1	1.389	<1
Order (C)	1	30.680	5.368**
AB	1	4.014	<1
AC	1	5.557	<1
BC	1	1.389	<1
ABC	1	28.124	4.921**
Error 1	24	5.715	
Decision (D) <sup>r</sup>	2	0.292	<1
AD	2	1.723	<1
BD	2	4.514	1.849
CD	2	7.347	3.001*
ABD	2	1.847	<1
ACD	2	4.222	1.730
BCD	2	4.514	1.849
ABCD	2	14.625	5.991***
Error 2	48	2.441	
Items (E) <sup>r</sup>	2	162.373	32.159****
AE	2	8.223	1.629
BE	2	2.889	<1
CE	2	4.181	<1
ABE	2	2.764	<1
ACE	2	30.722	1.730
BCE	2	3.722	<1
ABCE	2	10.292	2.038
Error 3	48	5.049	
DE	4	22.604	12.379****
ADE	4	2.586	1.416
BDE	4	2.483	1.360
CDE	4	0.597	<1
ABDE	4	0.910	<1
ACDE	4	2.858	1.565
BCDE	4	1.254	<1
ABCDE	4	6.041	3.308**
Error 4	96	1.826	

\*p &lt; .10

\*\*p &lt; .025

\*\*\*p &lt; .01

\*\*\*\*p &lt; .001

<sup>r</sup> -repeated measure

Table IV

## Means for the 5-Factor Homogeneous Analysis

	Initial Decision			Group Consensus Decision			Post-Group Consensus Decision			
	Cautious Item	Moderate Item	Risky Item	Cautious Item	Moderate Item	Risky Item	Cautious Item	Moderate Item	Risky Item	
N = 4	Males	Risky Order	7.000	7.000	7.000	5.000	7.500	7.000	5.750	
		Cautious Order	3.000	5.000	9.000	7.000	9.000	7.000	4.750	
	Females	Risky Order	5.500	5.000	7.000	7.000	6.500	6.500	4.500	
		Cautious Order	8.500	7.000	9.000	7.000	9.000	7.000	3.000	
	Low Anxious	Males	Risky Order	5.250	6.000	7.000	7.000	6.750	6.000	3.500
			Cautious Order	5.000	6.500	5.000	7.000	5.000	6.500	3.500
Females		Risky Order	7.500	7.500	7.000	7.000	7.000	7.500	4.500	
		Cautious Order	5.000	4.000	5.750	5.000	5.500	4.500	4.250	
High Anxious	Males	Risky Order	5.250	6.000	7.000	7.000	6.750	6.000	3.500	
		Cautious Order	5.000	6.500	5.000	7.000	5.000	6.500	3.500	
	Females	Risky Order	7.500	7.500	7.000	7.000	7.000	7.500	4.500	
		Cautious Order	5.000	4.000	5.750	5.000	5.500	4.500	4.250	



Table V

Combined Means for Heterogeneous and Homogeneous Groups  
(Initial Decision)

		N = 8	Cautious Item	Moderate Item	Risky Item
Low Anxiety	Males	Risky Order	8.375	6.750	5.750
		Cautious Order	4.500	5.750	4.625
	Females	Risky Order	6.000	5.500	6.125
		Cautious Order	6.500	6.750	4.375
High Anxiety	Males	Risky Order	6.500	6.250	5.625
		Cautious Order	6.000	5.500	2.750
	Females	Risky Order	7.375	7.000	4.125
		Cautious Order	4.500	5.250	5.625

Table VI

Spearman Rho Correlations Between Participant  
and Objective Rankings of Influence<sup>+</sup>

		Cautious Item	Moderate Item	Risky Item	Total
Heterogeneous	Cautious #1	.623	.700*	.802*	.429
	Cautious #2	.500	.776*	.738*	.530
	Risky #1	.854**	.778*	.843**	.854**
	Risky #2	.859**	.976**	.843**	.922**
Homogeneous	LA Cautious	.886**	.778*	.886**	.771*
	LA Risky	.690*	.881**	.351	.929**
	HA Cautious	.735*	.738*	.970**	.929**
	HA Risky	.833**	.922**	.934**	.810*

+ Corrected for ties

\*  $p < .05$

\*\*  $p < .01$

Table VII

Anxiety and Sex of Perceived Group Leaders

	Cautious Item		Moderate Item		Risky Item		Total	
	PART	OBS	PART	OBS	PART	OBS	PART	OBS
Heterogeneous Groups	Cautious Order #1	HA-Fa*	LA-FF	HA-Fc	LA-Mb	?	?	?
	Cautious Order #2	LA-Ma	LA-Ma	?	LA-Fg	?	LA-Ma	LA-Fg
	Risky Order #1	LA-Fg	HA-Mb	HA-Mb	LA-Fg	HA-Ma	LA-Fg	HA-Mb
	Risky Order #2	LA-Mc	LA-Mc	LA-Md	LA-Mc	LA-Fa	LA-Mc	LA-Mc
	Cautious Order-LA	Ff	Ff	Ff	Ff	Ff	Ff	Ff
	Risky Order-LA	Fc	Fc	Ff	Fc	Fc	Fc	Ff
	Cautious Order-HA	Fh	?	Fa	Mf	Mf	?	Mf
	Risky Order HA	Mc	Mc	Mc	Ma	Mc	Mc	Mc
		Fb	Fh	Me	Fh	Me	Me	Fh
		Me		Me	Me	Fh	Me	Me

? Criterion was not met

X Agreement between participants and observers

\* Capital letters indicate anxiety level and sex. Lower case letters indicate particular subjects within a group.