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AUTHOR Mickler, Susan; Richardson, Deborah
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ABSTRACT

The present study was designed to examine the effectiveness of post-experimental debriefing in reducing both self-reported anxiety and physiological arousal among participants who differed in their characteristic responses to threat. One hundred five female undergraduates were classified according to their Repression-Sensitization type and were presented with threatening self-relevant information. Self-report measures of anxiety were then obtained and were supplemented by the monitoring of physiological response. As expected, repressives alone demonstrated a discrepancy between physiological and self-reported distress levels in response to the threatening information. Following debriefing, all participants types returned to baseline levels on both distress measures. It was concluded that debriefing can effectively ameliorate the negative consequences of distress resulting from experimental participation, even among persons whose self-reports characteristically misrepresent their true reactions. (Author)

# Are Self-Reports Adequate for Assessing the Effectiveness of Postexperimental Debriefing?



Susan Mickler and Deborah Richardson

University of Georgia

Running head: DEBRIEFING EFFECTIVENESS

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Address correspondence to: Susan Mickler
Department of Psychology
University of Georgia
Athens, GA 30602

Abstract

The present study was designed to examine the effectiveness of post-experimental debriefing in reducing both self-reported anxiety and physiological arousal among participants who differed in their characteristic responses to threat. One hundred and five female undergraduates were classified according to their Repression-Sensitization type and were presented with threatening self-relevant information. Self-report measures of anxiety were then obtained and were supplemented by the monitoring of physiological response. As expected, repressives alone demonstrated a discrepancy between physiological and self-reported distress levels in response to the threatening information. Following debriefing, all participants types returned to baseline levels on both distress measures. It was concluded that debriefing can effectively ameliorate the negative consequences of distress resulting from experimental participation, even among persons whose self-reports characteristically misrepresent their true reactions.

Principle H of the Ethical Principles in the Conduct of Research with Human Participants (APA, 1982) specifies the importance of postexperimental debriefing: "after the data are collected, the investigator provides the participant with information about the nature of the study and attempts to remove any misconceptions that may have arisen" (p. 63). Further, where research procedures result in undesirable consequences, the researcher has the responsibility of detecting and eliminating or correcting such consequences. Debriefing is the process by which the investigator performs these explanatory and ameliorative functions.

Fulfilling the requirements of the Ethical Principles through debriefing is often no simple matter - especially when investigations involve deception. For example, Mills (1976) illustrates how the use of deception may foster undesirable consequences: "Upon learning the truth about the experiment, the subjects may have strong feelings of embarrassment and shame or they may feel angry about having been deceived. The more elaborate the deception and the more successful it is in deceiving them, the more likely the subjects are to feel very disturbed upon learning the true nature of the experiment" (p. 3). This observation points out the special problems engendered by the use of deception and underscores the importance of effective postdeception debriefing in alleviating any negative consequences that may occur as a result of deception.

A survey of the literature reveals that two major limitations characterize previous debriefing research. First, the investigations typically have been conducted without regard to participant individual difference characteristics. Walster, Berscheid, Abrahams, & Aronson (1967) briefly mentioned that the aftereffects of debriefing might partially depend upon the personality traits of the participants involved, but they did not pursue the issue. Neither, apparently, did anyone else. Just as we realize that there may be individual differences among participants, we might also expect the participants to differ in their reactions to debriefing. Often in psychological research we strive for such differential reactions to our experimental manipulations. Logically, then, why should we not expect a similar range of responses to deception and debriefing?

Methodological problems are also apparent in the existing research on postexperimental debriefing. Investigations of the ameliorative functions served by debriefing has generally relied heavily upon self-report measures of psychological distress in assessing the effectiveness of debriefing (Holmes, 1976; Ross, Lepper, & Hubbard, 1975; Smith & Richardson, 1983). Ranging from social desirability to self-deception, the difficulties inherent in self-report measures are well documented (Crowne & Marlowe, 1964; Wiggins, 1973) and may be especially problematic in debriefing research. If the function of

debriefing is to ensure that participants leave the laboratory in as good as or better condition than when they entered (Tesch, 1977), then accurate self-reports, or means of verifying self-reports, are requisite to knowing whether we, as ethical researchers, are attaining this goal.

Research of Weinberger, Schwartz, & Davidson (1979) provides a framework from which to assess the effectiveness of debriefing. That framework allows for the inclusion of a relevant individual difference characteristic (Repression - Sensitization) and provides a supplement to self-report distress measures. Weinberger et al. examined Repression - Sensitization in conjunction with physiological measures of arousal and suggested that the assessment of physiological response may provide a method of evaluating the accuracy of self-reports of distress.

Specifically, Weinberger et al. (1979) distinguished persons who, when exposed to threat, accurately reported experiencing little distress (i.e., were not defensive) from persons who inaccurately reported little distress (i.e., were defensive). According to this classification scheme, accuracy of perception depends upon the person's level of psychological defensiveness as measured by the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964). Thus persons who score low on the Repression - Sensitization (R-S) scale and low on the Marlowe - Crowne (M-C) are classified as true low anxious; those who score low on R-S but high on M-C

are labeled repressive.

In a study utilizing both physiological and self-report indicators of stressful reactions, these two repressor subgroups were compared to a group of true high anxious persons (analogous to sensitizers, for the present purpose). Weinberger et al. (1979) found that for all dependent measures true low anxious participants showed less evidence of distress than true high anxious participants, whereas repressive participants emitted physiological responses which were equal to or greater than the responses of true high anxious persons. Interestingly, repressive participants reported experiencing significantly less distress than even the true low anxious participants.

Because experimental procedures, manipulations, and even the laboratory setting itself are potentially threatening to research participants, the coping strategy continuum of Repression - Sensitization (Bell & Bryne, 1978) might be a particularly relevent variable from which to investigate the efficacy of debriefing in reducing distress. Of special interest in assessing the effectiveness of debriefing is the pattern of repressives' response to threat. If repressives characteristically misrepresent their internal states through self-reports, then such inconsistency between physiological and self-reported distress levels might well lead repressive participants to report successful desensitization following debriefing although measures of their physiological arousal

might indicate otherwise. In other words, the incongruence between repressives' self-reported and physiological distress may lead to false affirmation of the effectiveness of debriefing in reducing distress.

Following the logic of Weinberger, et al., we predicted that the presentation of potentially threatening self-relevant feedback would differentially affect the three R-S types. Specifically, we expected that the self-reported distress levels of true low anxious and repressive participants would be less affected by threat than those of sensitizers. In contrast, sensitizers might show considerable increases in self-report distress levels when confronted with threatening information. For the physiological arousal measure, however, a different pattern was predicted. We expected that true low anxious participants would demonstrate little change in physiological responding in reaction to threat. Similarly, we predicted that sensitizing participants would maintain a consistent level of physiological response across time, although they might show a higher baseline response. We further hypothesized that repressives' measures of physiological arousal would exceed those of true low anxious participants and equal or exceed the level of response elicited from sensitizers when exposed to high levels of threat.

Another factor should be considered when examining the effects of threat among R-S participant types: The context

in which the threat occurs might affect participant responses. Because experimental participation may lead the investigator to discover information about participants which could be threatening to their self-esteem (Committee for the Protection of Human Participants in Research, 1982), it is plausible that a full-disclosure debriefing containing such information might create more anxiety than it dispels. To test this notion, one half of the participants received threatening information about themselves in the context of a simulated debriefing at the second, manipulation stage of the experiment. The remaining participants received the information in the guise of an experimental, false feedback manipulation which was presented at the same point in the procedure. Due to the exploratory nature of the context manipulation, no specific predictions about its effects were made.

Finally, we (optimistically) predicted that a thorough, final debriefing would effectively reduce any increases in subjective (i.e., self-report) anxiety and/or physiological arousal induced by the high-threat manipulation. It was hoped that the divergence between physiological and self-report measures of distress which characterize repressives' response to threat could be overcome by careful debriefing. In short, all participant types at both high and low threat levels, and regardless of context manipulation, were expected to show reduced levels of both self-reported

and physiological indicators of distress after the debriefing.

## Method

### Overview

The essential design of this study involved three between-subjects factors and one within-subjects factor. Specifically, the design was a 3 (true low anxious, repressive, or sensitizer type) x 2 (high or low threat) x 2 (experimental or debriefing context) x 3 (baseline, post-manipulation, and post-debriefing stage) factorial. The level of threat manipulation was accomplished by either including negative personal information about the participant (high threat) or by leaving out such feedback (low threat) after the baseline stage. The context manipulation was accomplished at this same time by presenting the high- or low-threat information as part of a debriefing or as personally-relevant feedback. Dependent measures of physiological arousal and self-report anxiety were collected at three times during the experiment; before (baseline) and after the threat manipulation, and again after the true debriefing.

### Participants

All persons participated in partial fulfillment of course requirements. In group pretesting sessions, approximately 1,000 female undergraduate students completed the Repression-Sensitization (R-S) scale and the

Marlowe-Crowne Social Desirability (M-C) scale. Persons who scored in the upper (>57) and lower (<34) quartiles on R-S were categorized as sensitizers and repressors, respectively. Repressors were further classified according to whether their M-C scores fell above or below the obtained median (15). Thus those who scored <34 on the R-S scale and <15 on the M-C scale constituted the true low anxious subgroup, while those scoring <34 on the R-S scale and >15 on M-C comprised the subgroup, repressives. Forty-three sensitizers, forty repressives, and twenty-two true low anxious persons participated in the actual experiment. After participants were classified by type, they were randomly assigned to threat and context conditions.

Procedure

When the participants arrived for their experimental sessions, the experimenter explained that the study was a preliminary step in preparation for a thesis research project to be undertaken the following term. The participants were told that they would be completing several inventories because the experimenter wanted to assess the psychological characteristics of the current student population. Further, participants were told that, since the investigator was considering several approaches to the experimental procedure, they would be asked to complete questionnaire items concerning their reactions to the experiment at several points during the session. Reactions were assessed by means

of the state portion of the State/Trait Personality Inventory (STPI) developed by Spielberger (1979). Responses to the anxiety subscale of the STPI were utilized as the measure of self-report anxiety. Participants were also told that their physiological arousal levels would be assessed by means of a harmless finger sweat-print measure of palmar sweating (McNair, Droppleman, & Pillard, 1967). The finger sweat-print was described as a means of monitoring any physiological arousal that might result from completing psychological scales or from experimental participation itself. Ostensibly the ultimate purpose of the measure was to help determine the least arousing type of experimental procedure for use in the upcoming study.

At this point, participants began their task by completing the Self-Monitoring Scale (Snyder, 1974) and the trait portion of the STPI. These scales were an integral part of the cover story in that they provided both a task for participants and a plausible basis for the presentation of negative feedback in the high-threat conditions. When the scales were completed, the experimenter obtained the first measure of physiological arousal by attaching a square of chemically treated filter paper onto the participant's forefinger (non-dominant hand). At this baseline stage, participants completed an evaluative questionnaire which included the state portion of the STPI. While participants responded, the experimenter took the just-completed task

scales to an adjoining room and ostensibly examined them. After five minutes, the experimenter returned and removed the sweat-print paper. When participants had finished the questionnaire, the second sweat-print paper was attached and the context and threat manipulations were initiated.

The two context conditions were designed to assess whether threatening information might be more distress-producing when presented as a component of debriefing or as an experimental false-feedback manipulation. In the debriefing context condition, an effort was made to simulate an actual process debriefing as described by Ross, Lepper, & Hubbard (1975). After baseline measures were collected, participants in this condition were told that they had been deceived about the true nature of the study (i.e., that the study was not, in fact, merely a preliminary study). This awareness "set the stage" for the delivery of the high- or low-threat information as a necessary part of a full-disclosure debriefing. For participants in the experimental context condition, no mention of deception or debriefing was made until the true process debriefing at the end of the experimental session. Thus the presentation of the high- or low-threat information appeared to be just another step in the experimental procedure.

Within the two contexts, the potentially threatening information regarding participants' scale responses was manipulated to create the high- and low-threat conditions.

Participants assigned to the low-threat conditions were told that their responses were not of interest at an individual level but would be combined with all other data collected during the study and analyzed for possible group trends. They then completed a word-association "filler task" so that the time intervals of the threat/context manipulation stage would be approximately equal in the high- and low-threat conditions. The high-threat manipulation consisted of the same information in both context conditions but was, of necessity, couched in different terms. In the high-threat, debriefing context, participants were told that in order for the debriefing process to be complete, they would be informed about their performance in the experiment and what their responses to scale items had indicated. Participants in the high-threat, experimental context condition were told that the experimenter had drawn up a brief profile for participants based on their responses to pretest scales. They were told that they might examine the profile if interested, and all participants expressed such an interest. The information presented to participants in both context conditions was identical and reflected negatively on their responses. The experimenter's handwritten comments on a standard form included such negative statements as: "low in sociability", "problems in coping with stressful situations", "may tend towards social immaturity." Other dimensions, such as individuality and creativity, were rated as "average."

In all conditions the sweat-print measure of physiological arousal was removed after five minutes had elapsed. All participants again completed the state measure of anxiety.

When these scales were completed, new sweat-print papers were attached and the true process debriefing was presented to all participants. It was extremely detailed and thorough and was presented in both verbal and written forms. The verbal debriefing was tailored to fit the response patterns of each individual. That is, it attempted to justify the behavior of the participant in response to the manipulations no matter what their behavior might have been. For example, if a participant had become flustered when confronted with the uncomplimentary information, she was told tht such a response occurred commonly among participants. Thus an effort was made to effectively desensitize every participant. For those in the high-threat conditions (in which participants received uncomplimentary information about "themselves"), the experimenter made certain that all participants understood that the information had been fabricated by the investigator at a remote time and was, in no way, based on their reponses to any scale or questionnaire items. It was emphasized that all participants who were randomly assigned to receive the negative information received exactly the same fabricated information. The perseverance effect (Ross, Lepper, & Hubbard, 1975), whereby

participants persist in their belief of personally-relevant false feedback even after they have been instructed via debriefing to discount such information, was discussed with participants. Those who had received false information ostensibly about themselves were carefully questioned to make certain they understood the existence and dynamics of the effect. Participants in the low-threat conditions were also told the foregoing to increase their understanding of the study.

The debriefing concluded with an open discussion between the experimenter and each participant which continued for as long as the participant chose. Five minutes into the debriefing, the sweat-print paper was removed and after the debriefing discussion had ended, the state anxiety measure was again completed to assess the effectiveness of the final, true debriefing.

## Results[1]

### Self-Report Anxiety

A 3 (type) x 2 (context) x 2 (threat) x 3 (stage) analysis of variance was performed on the self-report anxiety data. This analysis yielded significant main effects for Type, $F(2,93) = 15.83$, $p < .0001$, and Stage, $F(2,186) = 21.36$, $p < .0001$. The Type x Threat x Stage interaction approaced conventional significance, $F(4,186) = 2.27$, $p < .07$. The simple main effects of this interaction were computed, and the appropriate cell means were compared to

determine at which stage(s) of the experiment the changes in self-report anxiety occurred. These analyses demonstrated that under conditions of high threat, the self-reported anxiety levels of both repressives and sensitizers changed significantly. True low anxious participants showed no such change, however. For repressive participants, the change in anxiety across the three stages of the experiment ($F[2,186] = 5.33$, $p < .01$) took the form of a decrease in anxiety at Stage 3, subsequent to the true debriefing ($M = 12.00$). It should be noted that repressives' self-reported anxiety did not increase significantly from baseline ($M = 13.44$) to the second, post-manipulation stage ($M = 14.48$) in response to the high-threat feedback. Self-reported anxiety of sensitizer participants increased from baseline ($M = 17.05$) to stage 2 ($M = 19.81$) in response to the threatening information and decreased significantly ($M = 16.71$) after the debriefing, $F(2,186) = 9.99$, $p < .0001$. The anxiety levels of true low anxious participants remained constant across the experimental stages, $F(2,186) = 1.34$, ns.

Only sensitizers exhibited a change in anxiety in the low-threat conditions, $F(2,186) = 7.10$, $p < .01$. Their reports of anxiety did not increase from baseline (17.09) to the post-manipulation stage ($M = 17.59$) in response to low-threat but did show significant decreases following debriefing ($M = 14.95$, $p < .03$). True low anxious participants again demonstrated no change over time, $F(2,186)$

= 1.10, ns; repressives' reports of anxiety also remained constant, $F(2,186) < 1.00$, ns.

Because there were specific predictions about how the three types of participants would react to threat, and considering that the predicted three-way interaction was only marginally significant, planned comparisons were computed for the Type X Stage interaction for the high threat conditions. For self-report anxiety, the means were weighted as follows: for true low anxious and repressive participants (-1) was assigned to the means at all three stages of the experiment; these participants were not expected to respond to the high-threat manipulation. Because we expected that sensitizers would report higher baseline anxiety levels than the other participant types and would show an increase in self-report anxiety in response to threat, sensitizer means were weighted (1.5) at Stage 1, (3) at Stage 2, and (1.5) at Stage 3. The comparison revealed that, indeed, sensitizers were the only participant group to respond with reports of increased anxiety in response to the threat manipulation, $F(4,153) = 13.03$, $p < .001$.

Physiological Arousal

The physiological measure of arousal was the finger sweat-print technique of measuring palmar sweating as described in McNair et al. (1967). Two colleagues independently judged the prints as to their darkness according to a 15-point scale developed by Malmo (1965). The

prints were used to monitor changes in participant arousal levels before, during, and after the experimental manipulation.

A 3 (type) x 2 (threat) x 2 (context) x 3 (stage) analysis of variance was conducted to determine which of the independent variables affected physiological arousal. This analysis produced a main effect for Stage, $F(2,180) = 8.87$, $p < .002$; a Threat x Stage interaction, $F(2,180) = 6.62$, $p < .0025$; and a marginally significant Type x Threat x Stage interaction, $F(4,180) = 2.23$, $p < .06$. The three-way interaction was further examined via the computation of simple main effects and by subsequently comparing individual cell means. These analyses revealed that, within the high-threat conditions, only repressives demonstrated a significant change in physiological response, $F(2,180) = 14.28$, $p < .0001$, as the experiment progressed. At Stage 1 (baseline) repressives' responses ($M = 12.90$) did not differ from the responses of true low anxious ($M = 12.68$) or sensitizer ($M = 13.18$) participants, $F(2,90) < 1$, ns. In response to the high-threat manipulation of Stage 2, repressive response increased significantly ($M = 15.17$), exceeding true low anxious response ($M = 12.77$) and matching the sensitizer level ($M = 14.55$). At Stage 3, in response to debriefing, repressive physiological response decreased significantly ($M = 13.50$) but still surpassed true low anxious response ($M = 11.86$) and approximately equalled

sensitizer response levels (M = 13.80). True low anxious participants demonstrated no change in physiological response across the three stages of the experiment [F(2,180) = 1.35, ns.], nor did sensitizers differ across time [F(2,180) = .041, ns.].

In the low-threat condition, there were no significant simple main effects and no significant differences among any of the cell means.

Because the three-way interaction effect of Type, Stage, and Threat upon physiological arousal was marginally significant, planned comparisons again were computed for the high-threat condition data. True low anxious participants' physiological responses were not expected to fluctuate as a result of the threat manipulation; accordingly those means were weighted (-1) across the three stages of the experiment. The means for repressives were assigned (-1) at Stage 1, (5) at Stage 2, and (-1) at Stage 3 because it was predicted that these participants would demonstrate the greatest increase in physiological responding in reaction to high threat. We predicted that sensitizers would exhibit a small increase in physiological arousal in response to the high threat manipulation. Therefore sensitizer means were assigned the weights of (-1) at Stage 1, (2) at Stage 2, and (-1) at Stage 3.

Results of the comparison indicated that, in fact, repressive participants demonstrated the greatest increase in

physiological arousal in reaction to the manipulation of high threat; sensitizers showed a similar, although attenuated, response pattern, $F(4,147) = 12.21$, $p < .001$.

The response patterns of the three participant types on both physiological and self-reported measures of distress are summarized in Figure 1.

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Insert Figure 1 about here

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## Discussion

The purposes of the present investigation were (1) to assess the effectiveness of debriefing in reducing both physiological and self-reported distress levels for all participant R-S types, and (2) to observe whether repressive participants would respond in the inconsistent manner described by Weinberger et al. (1979). Of particular interest was whether repressives would report successful anxiety reduction following debriefing but continue to exhibit high levels of physiological arousal. Such an outcome might lead the investigator to believe that he or she had successfully desensitized the participant when, in fact, the repressive participant might continue to be aroused.

As predicted, the inclusion of threatening information differentially affected true low anxious, repressive, and sensitizer participants. On self-report anxiety measures, true low anxious and repressive participants were seemingly

unaffected by the high-threat manipulation; sensitizers, on the other hand, reported increases in anxiety when confronted with threatening information.

Regarding the physiological measure of arousal, true low anxious participants evidenced no increased arousal after they were confronted with negative information. Although sensitizers demonstrated higher arousal levels than either of the two other types of participants, their arousal did not increase as a function of the presentation of the high-threat information; arousal was initially higher and was maintained at a constant level. The most interesting pattern of physiological response was displayed by repressive participants, in that they alone showed increased physiological arousal attributable to the high-threat manipulation. Recall that for self-reported anxiety, repressives showed no response to the high threat manipulation, yet their physiological measures indicate that they were indeed affected at some level. This predicted inconsistency characterizes repressive response to threatening information and was not found among true low anxious or sensitizer participants.

The replication of the Weinberger et al. (1979) results occurred only in the high-threat conditions of the experiment. Under low-threat conditions, no systematic differences in response according to participant type were observed. Neither was there an effect for the context in

which the threatening information was presented to participants. The threat manipulation was apparently powerful enough to override any context effects.

We tentatively hypothesized that the true, full-disclosure debriefing would effectively lower all participants' anxiety and arousal regardless of participant type. This prediction was supported "across the board". For all participant types in both contexts, self-reported and physiological indicators of distress decreased after the presentation of the true debriefing. Subsequent to debriefing, self-report anxiety actually fell below baseline for the majority of participants. Thus the full-disclosure debriefing appears to have been effective in reducing participant distress.

A possible alternative explanation for these findings must be considered at this point. Because the indicators of distress for all participants declined from Stage 2 to Stage 3, it is possible that the decrease in distress may have been due merely to the passage of time, i.e., the participants may have habituated to the experimental setting. That is, the debriefing process may have been irrelevant to the reduction of distress which would have steadily declined over time, with or without any intervention.

We believe that this explanation is not particularly compelling. Most participants, in fact, demonstrated increases in self-reported distress or in physiological

arousal from Stage 1 to Stage 2. Such a pattern argues against this interpretation; a steady decline from Stage 1 to Stage 2 to Stage 3 would have been requisite to a habituation explanation.

The nature of the debriefing may be a significant factor in the successful amelioration of distress. Because one-half of the participants received a false debriefing, special care was taken in both the structuring and the delivery of the final, true debriefing. As noted previously, the true debriefing was extremely detailed about all aspects of the experimental procedure and was characterized by extensive interaction between the participant and the investigator.

We believe that the debriefing employed in the present study was more thorough and comprehensive than most. Researchers are cautioned against heeding only the finding that debriefing is an effective means of reducing participant distress following a stress-inducing procedure. They must be cognizant of the possibility that the effectiveness of the debriefing is dependent upon its quality. A less careful debriefing procedure might not produce the desired distress-reducing outcome, especially in the case of repressive and sensitizer participants who are particularly affected by threat-inducing procedures. This was, in fact, partially tested in the present study in that the manipulated debriefing was not as comprehensive nor as painstakingly presented as was the true, final debriefing. This simulated

debriefing resulted in increased physiological and psychological distress for repressive and sensitizer participants. That the implementation of the detailed, final debriefing reduced distress measures to baseline levels or below strongly speaks for its effectiveness and importance.

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## Author Notes

This research was conducted as a master's thesis at the University of Georgia by the first author under the direction of the second author.

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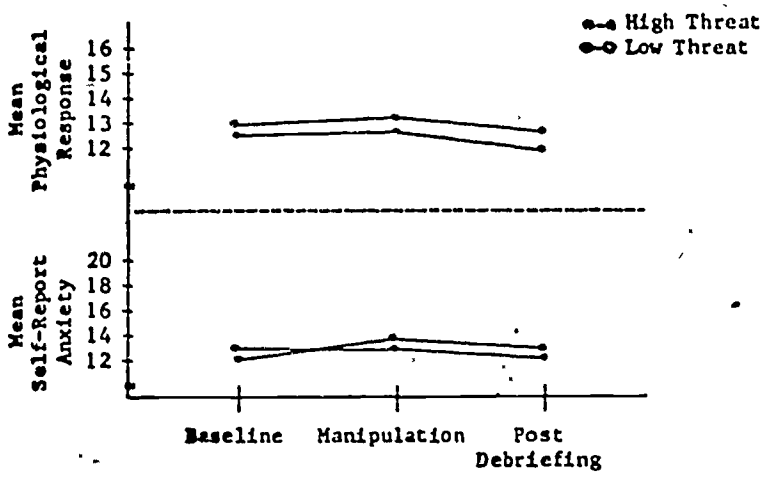
Requests for reprints should be sent to Deborah Richardson, Department of Psychology, University of Georgia, Athens, GA 30602.

## Footnotes

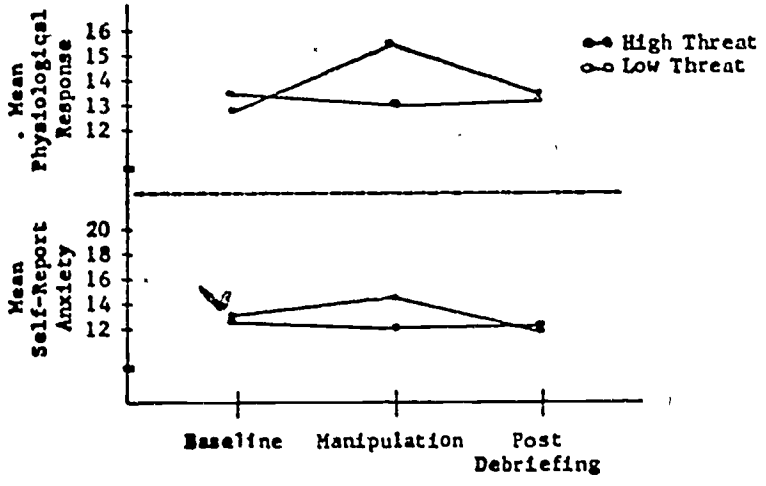
[1]Analyses revealed no significant main or interaction effects of Context. The discussion of the results will, therefore, deal only with the effects of Type, Threat, and Stage on participant distress.

## Figure Captions

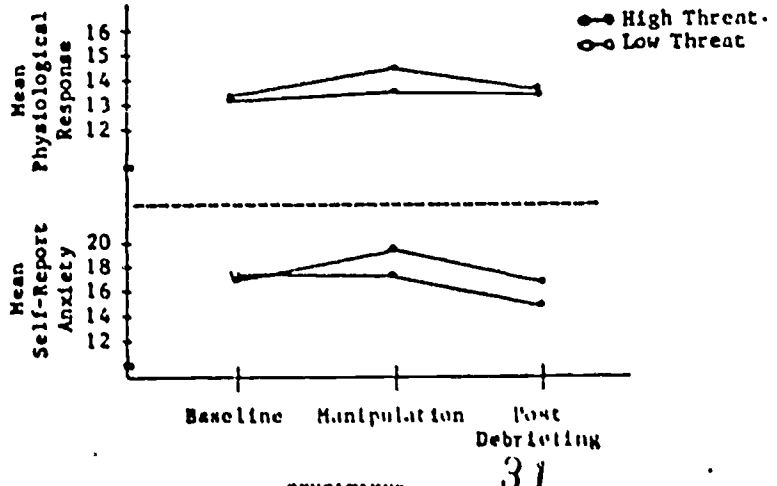
Figure 1. Comparison of physiological response and self-report anxiety for true low anxious, repressive, and sensitizer participants across stages of the experiment.




TRUE LOW ANXIOUS




REPRESSIVE




SENSITIZER