The effects of social comparison on uncertainty and self-esteem

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The Ohio State University, 1988
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THE EFFECTS OF SOCIAL COMPARISON ON UNCERTAINTY AND SELF-ESTEEM

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the degree Doctor of Philosophy in the Graduate School of Ohio State University

By

Lorraine Hildebrand Saints, M.A.

* * * * *

The Ohio State University

1988

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To My Husband
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INTRODUCTION
THE EFFECTS OF SOCIAL COMPARISON ON UNCERTAINTY AND SELF-ESTEEM

Traditionally, uncertainty has been viewed as a barrier to our understanding of our world and our effective functioning in that world. People view uncertainty as a negative experience (Garber, Miller, and Seaman, 1979). Although uncertainty is most likely a common everyday experience for most individuals, we generally attempt to eliminate it as quickly as possible so that we can perceive our world to be predictable and orderly, even if momentarily.

The desire to reduce uncertainty has been noted by many researchers as a strong motivator for behavior. Major topic areas such as social comparison, attribution, and depression have cited uncertainty as a motivator of individuals' behavior. As such, this motivator is very important. Concerns about predictability, controllability, and understanding of one's world can affect one's emotional, physical, and psychological state. Past research has indicated that individuals who were subjected to uncontrollable and unpredictable outcomes experienced feelings of depression, hostility, anxiety,
incompetence, stress, frustration, anger, and fatigue (see Garber, Miller, & Seaman, 1979, for review).

Researchers have suggested that the desire to reduce uncertainty plays an important role in social comparison activity (see Suls, 1977 for review). Jones and Gerard (1967) noted that individuals are motivated to gather information because uncertainty about one's abilities is an obstacle to effective functioning. Its existence is, therefore, aversive and its elimination, rewarding. Thus, persons who have been made to feel uncertain about their abilities or performances have shown an increased desire to engage in social comparison with others who performed in the same task situations (Brickman and Bulman, 1977; Gordon, 1966; Hakmiller, 1966; Wheeler, 1966; Zanna, et al., 1975).

It would seem that the motivation of uncertainty reduction should be of particular relevance to the study of depression. Depressives often are characterized as lacking in control and experiencing uncertainty. Evidence suggests that depressed perceivers have a lowered sense of control over their lives (Warren and McEachren, 1983) and are more uncertain and attempt to cope with stressful events by seeking more information and advice from others than nondepressed perceivers (Coyne, Aldwin, and Lazarus, 1981).
The purpose of the current study was to examine the motivations of depressed and nondepressed college students to engage in social comparison, the comparison others they choose, and the consequences of these comparisons. Research has suggested that depressives are very motivated to gain social comparison information, presumably due to a desire to reduce their heightened uncertainty about themselves and their judgments. Weary, Elbin, and Hill (1987), for example, found that depressives were more uncertain about their internal and external attributions for an event and were more sensitive to social comparison information about their attributions than were nondepressives.

Additionally, depressives have been shown to seek highly diagnostic social information from others when placed in an ambiguous situation. Hildebrand-Saints and Weary (in press) allowed depressed and nondepressed subjects to choose the questions they would like to ask of another in an upcoming interview. Results indicated that depressed subjects asked more diagnostic questions than nondepressed subjects. In addition, even when the information to be gained from the questions had low utility (unlikely to be useful in a future task), depressives sought more diagnostic than nondiagnostic information. It was argued that these results were due to
depressives' heightened uncertainty about their judgments and abilities in social situations. That is, depressives may be motivated to seek any or all relevant comparison information, even if it is not useful in the immediate future, in an attempt to reduce their uncertainty.

The current study investigated depressives' and nondepressives' feelings of uncertainty about their abilities and their social comparison choices following failure feedback. Festinger (1954) has proposed a number of hypotheses in an attempt to stipulate why comparison is used, with whom comparisons are made, and what effects comparisons have. The basic tenet of the theory (Hypothesis I, p. 117) is that humans have a drive to evaluate their opinions and abilities. Festinger assumes that an accurate appraisal of one's abilities and opinions leads to effective survival. The theory stipulates that people first attempt to evaluate themselves through objective nonsocial means (i.e. test score, performance rating); however, if such means are unavailable or if more information is desired, they evaluate themselves through comparisons with the abilities and opinions of other people (Hypothesis II, p. 118). If such social comparisons are also unavailable, then individuals' evaluations of themselves are unstable. This instability, presumably caused by uncertainty, is likely to continue
until social comparisons are found that provide an adequate means for self-appraisal.

According to the theory, people tend to choose similar others for comparison (Hypothesis III, p. 120) because highly divergent others will produce imprecise, uncertain, and inaccurate self-evaluations. Only similar others provide truly useful information and comparisons with highly divergent others should be avoided. Festinger contended that in the case of abilities there is a unidirectional drive upward (Hypothesis IV). Although Festinger did not specify how this drive might affect comparison choice, Wheeler (1966, cited in Suls, 1977) interpreted this to mean "that individuals will try to compare themselves with others of slightly superior ability, a choice that represents a compromise between the similarity force and the unidirectional drive upward" (p. 7).

Research has supported indirectly the idea that persons are motivated to seek social comparison information because of a need to reduce uncertainty. For example, studies indicate that persons show an increased motivation to make social comparisons when they are placed in ambiguous situations and when the comparison information is perceived as useful in decreasing the uncertainty aroused in those situations (Elliott, 1979;
Research also supports Festinger's hypothesis that similar or slightly superior comparison others are sought when uncertainty is aroused (Gordon, 1966; Hakmiller, 1966; Thornton and Arrowood, 1966; Wheeler, 1966; Zanna, et al., 1975), presumably because such comparisons provide the most evaluatively useful information (Radloff, 1966).

If, in fact, depressives are generally more uncertain about their abilities, as is suggested by research (Weary, Elbin, and Hill, 1987), they should report greater uncertainty about their abilities and their performance following failure feedback and should report a greater desire to engage in social comparison information seeking than nondepressives (Coyne, Aldwin, and Lazarus, 1981; Hildebrand-Saints and Weary, in press). Additionally, if the primary motivation for seeking social comparison information is one of reducing uncertainty, then both depressed and nondepressed subjects should be expected to seek similar or superior others for comparison. In summary, I expected that depressives would be even more likely to make such comparisons than nondepressives due to their heightened uncertainty about themselves and their task performances.

Another important issue for this investigation concerned the motive of self-esteem protection on social
comparison choices. Social comparison research reveals the conditions under which persons are less likely to seek social comparison information from similar or superior others. These are conditions under which individuals' self-esteem has been threatened. It seems reasonable that persons are more likely to perceive comparisons as threatening when they do not feel good about themselves. This may be due to reception of performance scores that are indicative of low ability (Goethals and Darley, 1977), low standing on a positive personality trait (Thornton and Arrowood, 1966; Wheeler, 1966) or high standing on a negative personality trait (Hakmiller, 1966; Thornton and Arrowood, 1966). Given these conditions, comparisons may be perceived as threatening if it is likely that they will reveal unfavorable information confirming the negative beliefs about the persons (i.e. low ability, negative personality traits).

Under such self-esteem threatening conditions, studies reveal that subjects make downward comparisons (see Wills, 1981, for review). That is, subjects choose to compare with others who are described as having performed less well than themselves. These comparisons may not provide useful information in evaluating their performance, but they may be less threatening than similar or upward comparisons. Thus, downward comparisons may
serve a self-esteem protection need.

Research on depressives' motivation to protect their self-esteem is scarce. One recent study did provide evidence that depressives are motivated to engage in social comparison in order to enhance their self-esteem. Using depressed and nondepressed subjects, Gibbons (1986) manipulated current mood states in a positive or negative direction by asking subjects to write a self-disclosure statement about a recent event that happened to them which had either a positive or negative effect on them. Subjects were then allowed to choose to view others' statements that were indicated to be very positive or negative.

In contrast to the nondepressed group, depressed subjects, who had written negative statements about themselves and thus were feeling bad, showed a definite preference for information revealing negative events for others. This downward comparison improved the mood state of the depressive, even when mood state was not altered (positively or negatively) in the beginning experimental manipulation. That is, reading about the misfortune of their comparison partner and his/her associated negative affect improved depressives' moods. No mood change was found for nondepressives when they made downward comparisons. Gibbons reasoned that for depressives,
comparing with someone who is worse off or at least similar in negative affect to themselves may serve a self-aggrandizement (or ego-enhancing) motive. Gibbons' study differs from the current study in that ability evaluation was the focus for social comparison, rather than affect evaluation. It was not clear whether depressives would be motivated to make downward comparisons when ability evaluation was the goal and when self-esteem concerns were made salient.

In addition to examining depressive and nondepressive differences in motivation to engage in social comparison of abilities and choices of social comparison others, this study focused on the consequences of social comparison on feelings of uncertainty and on self-esteem. The discovery of the consequences of social comparison has potentially great implications for depressives. If in fact depressives are generally more uncertain about their abilities and generally tend to seek out more social information, and are more likely to choose those comparisons that provide evaluatively useful information, then according to the above reasoning, their uncertainty should be reduced. Why is it, then, that depressives are characterized by heightened uncertainty about themselves? Perhaps, for the depressive, more information is not always better. It could be that depressives, due to their
tendency to seek out comparison information, may continually expose themselves to evaluative information that, oftentimes, may be very self-esteem threatening. By continually comparing themselves to others who are (or who are perceived to be) superior, depressives may reinforce the belief that they always fail and that they are inferior (Beck, 1967). Such beliefs are very likely to generate more uncertainty and lower self-esteem, as well as give rise to other symptoms of depression.

In the current study, depressed and nondepressed college students were given 20 items from Cattell's Culture Fair Test of "g" (Cattell and Cattell, 1963). For half of the subjects, the test was described so as to encourage high ego involvement, thus arousing self-esteem concerns. These subjects learned that the test is a highly valid measure of intelligence designed by the Institute for Personality and Ability Testing and that it is used to predict future performance on business and academic placement tests. The other half of the subjects heard a description that should have encouraged little arousal of self-esteem concerns. Although the test was still described as an intelligence test, subjects learned that it was the result of a class project and its validity had not yet been established. Greenberg and his colleagues (Greenberg, Pyszczynski, and Solomon, 1982;
Pyszczynski and Greenberg, 1983) have used these high and low ego involving descriptions in previous studies and have found that these descriptions of the "intelligence" test sufficiently aroused high and low levels of self-esteem concerns, respectively.

All subjects received failure feedback concerning their test performance. Failure on an ability task has been used in research to instigate or arouse uncertainty (Brickman and Bulman, 1977; Gordon, 1966; Hakmiller, 1966; Jones and Regan, 1974) as well as to arouse self-esteem concerns (Brickman and Bulman, 1977; Goethals and Darley, 1977).

Desire To Engage in Social Comparison

The current investigation employed a 2 (Depressed, Nondepressed) X 2 (High, Low Ego Involvement) between subjects experimental design. An interaction of level of depression and ego involvement on subjects' desire to engage in social comparison was expected. According to Festinger (1954) and others (Gordon, 1966; Hakmiller, 1966; Thornton and Arrowood, 1966; Zanna, et al., 1975), the desire to seek social comparison information should increase with increased uncertainty levels. Due to depressives' presumed chronic heightened uncertainty about their abilities and performance, it was expected that they would desire social comparison regardless of self-esteem
threat. Nondepressives on the other hand were expected to indicate more desire to engage in social comparison when self-esteem was not threatened; that is, in low ego involving conditions rather than high ego involving conditions. In support of this prediction, research indicates that persons who have experienced a threat to their self-esteem should want to avoid further exposure to negative information that could be contained within a social comparison (Gerard, 1963; Singer and Shockley, 1965).

Choice of Comparison Other

Regardless of expressed desire to engage in social comparison, subjects were then asked to choose a comparison other whose answers they would like to view. Their comparison choice was made based on information offered on the four comparison others. The comparison others involved upward comparisons (a clearly superior other and a somewhat better other) and downward comparisons (a slightly worse off other and an inferior other). An interaction of level of depression with ego involvement was expected to produce significant effects. Social comparison theory stipulates that similar or upward comparisons will provide the most useful information and should be sought by uncertain individuals wishing to evaluate their abilities. Since depressives are expected
to experience chronic heightened uncertainty, further aroused by failure, it was predicted that the motive to decrease uncertainty would play a stronger role in social comparison choice than the motive to protect self-esteem. Therefore, depressives were expected to make more upward (and fewer downward) comparisons than nondepressives in both high and low ego involving conditions. On the other hand, nondepressives were expected to engage in upward comparisons primarily when self-esteem had not been threatened (low ego involvement condition). When self-esteem had been threatened (high ego involvement condition), nondepressives were expected to attempt to protect their self-esteem from further threat by making downward comparisons (Wills, 1986).

Pretest Uncertainty and Self-Esteem Concerns

Subjects answered pre- and post- measures of uncertainty and self-esteem (see Appendix A and B). These questionnaires, constructed by the experimenter, assessed the subjects' feelings of uncertainty about their performance on the test and their ability in general. Also, subjects' sense of control over the outcome of the test and over life events in general was assessed. Theory and research suggests that depressives experience an expectation of a lack of control over life events resulting in feelings of uncertainty and helplessness
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(e.g. Abramson, Seligman, and Teasdale, 1978; Garber, Miller, Seaman, 1979; Warren and McEachren, 1983; Weary, Elbin, and Hill, 1987). Thus, it was expected that depressives would report a greater sense of lack of control than nondepressives following failure feedback on the pretest measure.

In addition to uncertainty and control, subjects' feelings about themselves (self-esteem concerns) were assessed. Self-esteem concerns were measured using the Egotism scale of the Differential Emotions Scale (Izard, 1972; Izard, Dougherty, Bloxom, & Kotsch, Note 1). It was expected that subjects in the high ego involvement condition would report greater self-esteem concerns than subjects in the low ego involvement condition. Additionally, the Joy and Distress scale of the Differential Emotions Scale were used as indices of positive and negative affects. Although no specific predictions were made with respect to these measures, it seemed likely that the results of the Joy and Distress Scales would correlate positively and negatively, respectively, with the results of the Egotism scale (an indicant of positive self-feelings).

The pretest measures followed immediately the reception of the failure feedback. An interaction of level of depression with ego involvement was expected.
Specifically, depressives were expected to report greater uncertainty and self-esteem concerns than nondepressives primarily in the low ego involvement condition. This is due to the expected high levels of uncertainty and self-esteem concerns in depressives regardless of self-esteem threat. Both depressives and nondepressives, on the other hand, were expected to report high levels of uncertainty and self-esteem concerns in the high ego involving condition where self-esteem is most threatened.

Posttest Uncertainty and Self-esteem Concerns

Following the social comparisons, subjects completed the uncertainty and self-esteem measures again. These posttest measures were used to assess the consequences of social comparison on feelings of uncertainty and self-esteem. I reasoned that unfavorable comparisons with similar or better-off others should reduce uncertainty but also should provide no protection for self-esteem. On the other hand, downward comparisons should protect and enhance self-esteem but should not provide uncertainty reducing information.

Based upon this reasoning, an interaction of mood and ego involvement on level of uncertainty was expected. Depressives, due to their heightened uncertainty, were expected to seek evaluatively useful (upward) comparison regardless of self-esteem threat, thus resulting in
uncertainty reduction. Nondepressives were expected to protect their self-esteem by seeking downward comparisons, especially in the high ego involvement condition, resulting in little uncertainty reduction. Therefore, nondepressives in the high ego involvement condition were expected to report equal or more posttest uncertainty than depressives. An interaction of mood and ego involvement was also expected for posttest self-esteem concerns. It was predicted that depressives would have greater posttest self-esteem concerns than nondepressives. I reasoned that depressives would make more upward comparisons than nondepressives regardless of self-esteem threat. These comparisons were expected to result in an additional blow to depressives' self-esteem, especially in the high ego involvement condition.
METHOD

**Subjects**

Under the guise of a study seeking normative information on several recently developed psychological scales, undergraduates enrolled in introductory psychology at Ohio State University completed the Beck Depression Inventory (BDI; Beck, 1967, 1976). From this pool, groups of depressed and nondepressed subjects were selected. The criterion for inclusion in the nondepressed group was a BDI score of 4 or below, and for inclusion in the depressed group a BDI score of at least 10 was required. Two hundred and eight subjects then were contacted to arrange for their participation in another study. Less than 1 1/2 weeks ensued before subjects reported for the experimental procedure. To eliminate subjects who may only have been experiencing a transient depressed state, the BDI was readministered at the time of the experiment (c.f. Sacco, 1981). If the second BDI score fell below 10 for the depressed subjects or went above 4 for the nondepressed subjects, those subjects were excluded from the final sample. Thirty subjects fell into this transient category. 18 subjects, equally represented across all conditions and
sexes, were excluded due to suspiciousness or failure to follow directions. The final sample included 80 depressed subjects (24 males and 56 females) and 80 nondepressed subjects (24 males and 56 females). Of the 80 depressed subjects in the experiment, 50 were mildly depressed, 22 were moderately depressed, and 8 were severely depressed. For depressed subjects, the mean BDI scores for the first and second administration were 17.48 and 15.68, respectively. For the nondepressed subjects, the mean BDI scores for the first and second administration were 1.86 and 1.51, respectively. Within level of depression, subjects were randomly assigned to experimental conditions (Appendix F).

Procedure

Upon arrival at the laboratory, subjects were told that the study was an extension of the psychological validation study in which they had participated previously. Participants were informed that the experimental session consisted of two parts. They were told that during the first part of the session, they would be completing a large study conducted by several members of the Psychology Department. Subjects were asked to answer several questionnaires, one of which they had completed earlier in the quarter. The rationale for the second administration of these questionnaires was said to be an investigation of
the psychometric properties of the inventories. Participants were given the Beck Depression Inventory and the Rosenberg Self-Esteem Scale and were instructed to put the completed questionnaires in an envelope.

Participants were told that the second phase of the study was concerned with the collection of normative data for an intelligence test given to OSU students so that the test can be used for further experimentation and vocational placement at OSU. Subjects in the high ego involvement condition were given the following information about the purpose, validity, and importance of the test:

This is a highly respected test of financial and occupational success. It was designed by the Institute for Personality and Ability Testing and it has been used extensively in business and educational settings. Because this test uses abstract symbols rather than words, it measures pure intelligence and reasoning abilities. These abilities are basic to complex problem solving and creative thinking, and may be different than those abilities typically measured by college exams.

This test is known to be an excellent predictor of future performance on placement type tests such as the LSATs to get into law school or the GREs or GMATs to get into graduate or professional business schools.
These placement tests measure the same ability, that is, creative thinking and reasoning as does this test. Therefore, this test has been used to predict how well you might do on these placement tests. The results of this test are very important so you should try to work very hard and do the best that you can.

Subjects in the low ego involvement condition heard the following about the test:

This test is still in its beginning stages and was actually originally designed for a research class by myself. The task was to design a test that measured an ability other than that usually measured in college classes. This test was designed to measure the types of skills that placement-type tests measure, such as the LSATs to get into law school or the GREs or GMATs to get into graduate or professional business schools. This quarter, I'm just trying to get an initial look at how OSU students do on this test. Most likely, this will be preliminary data and the questions will have to be revised. What I hope to do with the results is to revise the test and determine reliability and validity. If it proves to be a good test, I will eventually be able to use it to predict your performance on placement type exams.
Since the problems are designed to measure creative thinking and reasoning skills, they probably will reflect these skills to some degree but are not standardized yet so should be viewed with some caution. You should attempt to answer the questions to the best of your ability.

Subjects were given a test containing 20 items from Cattell's Culture Fair Test of "g" (Cattell and Cattell, 1963). Instructions for the test were given and subjects were asked if they had any questions at this time. All subjects were told that they would have 10 minutes to complete the test although each subject was allowed to finish the test regardless of time. Subjects took between 7-15 minutes to complete the test.

Following the completion of the test, the experimenter took the test answer sheet out of the room to score. The same 12 items were marked incorrect for each subject, regardless of their answers. Test answer sheets for the "other subjects" were constructed at this time based on the subject's answers. The experimenter then presented the subject with his/her test answer sheet and with an index card containing the date and time, the subject's experiment number (#117 for all subjects), score (8/20 for all subjects), and percent correct (40% for all subjects). Each of these items were verbally presented and the subject
was informed the he/she had performed in the below average range.

Subjects then completed a pretest measure of uncertainty (Questionnaire #1 - Appendix A). This questionnaire consisted of 5 9-point scales (ranging from 1=not at all certain to 9=extremely certain) addressing subjects' feelings of certainty about their performance on the test and in general, and feelings of personal control over the experimental situation and in general. Following this questionnaire, subjects completed the Differential Emotions Scale (Izard, 1972; Izard, et al., Note 1) (Appendix B). The Egotism, Joy, and Distress measures comprising this scale are composed of 5-point adjectival rating scales that ask subjects to indicate how they are feeling at that time. On each rating scale, a high number indicates a high amount of affect. The Egotism scale includes the following adjectives: boastful, self-centered, and egotistic. The Joy scale is composed of the adjectives happy, joyful, delighted; and the Distress scale includes the adjectives sad, discouraged, and downhearted. Measures of internal consistency for the Joy, Distress, and Egotism measures are .80, .90, and .71, respectively.

All subjects were asked to complete a questionnaire designed to assess subjects' desire to engage in social comparison (Questionnaire #2 - Appendix C). Subjects
indicated how much they desired social comparison in this situation and in general on three 9-point scales (ranging from 1=not at all to 9=very much). The experimenter then presented the subjects with 4 folders containing answer sheets and scores of previous subjects. Subjects were informed that these folders and had not been filed yet. The folders were offered to the subjects to "look over" but they were asked to choose just one folder due to time constraints. In order to make their choice an informed one, the experimenter offered information on each folder. The folders were placed in rank order across the table, including the subject's folder and the experimenter described each one as "excellent", "above average", "yours is below average", "this one is also below average but a little worse than yours", "and this one is poor". The subjects were asked to choose the folder that they would be most interested in viewing their scores and answers. The folders actually contained bogus answer sheets that were marked and scored according to their description. "Excellent" was scored as 16/20 correct, "above average" was 12/20 correct, "below average" had 6/20 correct, and "poor" had 4/20 correct. Each answer sheet was identified with time and date and the subject's experiment number. No names were on the sheets.
After subjects chose a folder, they were told to look over the answer sheet of the other "subject" and the other folders were removed from the room. The posttest measures of uncertainty and self-esteem were then administered (Appendix A and B). The questions from the pretest measure of uncertainty were embedded in a list of 15 questions on the posttest measure. The Egotism Scale was readministered as the measure of self-esteem. Subjects were told that although the questionnaires may seem familiar and some of the questions are the same, many of the questions have been revised in order to make the questionnaire broader in scope; consequently, they should attempt to answer the questions according to how they are feeling at the present time.

After completing this questionnaire, the participants completed manipulation checks "concerning their understanding of the experiment" (Appendix D). Participants then were fully debriefed. In order to insure that subjects fully realized that the failure feedback was contrived, they were shown the templates used to produce the false feedback. They were also asked to explain the procedure and its purpose to the experimenter before being dismissed.
RESULTS

Manipulation check measures. Subjects answered questions designed to check on their understanding of the test, the importance of their score on the test, and the comparison other's score on the test. All subjects in the high ego involvement condition indicated that the test was designed by the Institute for Personality and Ability Testing. All subjects in the low ego involvement condition indicated that the test was designed by the experimenter for a research class requirement. Additionally, all subjects correctly indicated their performance score on the test and whether or not they had an opportunity to view another's answers and score on the test.

To check on the manipulation of ego involvement, subjects indicated on a 9-point scale the extent to which they believed the test predicted their future performance on professional and academic placement tests. A main effect for Ego Involvement was expected. Contrary to expectations, a 2(Mood) X 2(Ego Involvement) analysis of variance of this measure yielded no significant main effects. As a check on the subjects' perceived level of
performance in relation to others, subjects were asked to indicate on a 9-point scale how well they had performed. As predicted, all subjects correctly viewed their performance as poor (overall $M=3.34$). No significant effects for mood or ego involvement were revealed. To check on the subjects' perceived level of performance of their comparison others, subjects indicated on a 9-point scale how well the other did on the test. A 2 (Mood) x 2 (Ego Involvement) x 2 (Direction of Comparison) analysis of variance was conducted. A significant main effect was found for the direction of comparison, $F(1, 72)=203.631$, $p<.001$. Those subjects who compared upward reported that the comparison other performed significantly better ($M=8.71$) than the comparison others of those subjects who compared downward ($M=3.12$). Thus, subjects correctly identified how well their comparison other performed on the test (Note 2).

**Measure of pretest uncertainty and self-esteem concerns.** All subjects received failure feedback on the test. They were then asked to rate on three separate 9-point scales how confident or certain they were about their performance on the test, their performance on similar types of tests, and their intellectual reasoning skills in general. It was predicted that depressives would report a greater amount of uncertainty than
nondepressives. This difference was expected to be particularly pronounced in the low ego involvement condition.

A 2 (Mood) X 2 (Ego Involvement) multivariate analysis of variance conducted on the three measures of pretest uncertainty revealed a significant main effect for Mood, $F(3,74)=6.198$, $p < .001$. Univariate analyses revealed, as predicted, that depressed subjects reported greater uncertainty (less certainty) about their abilities as measured by the test ($M=3.25$) than nondepressives ($M=4.40$), $F(1,76)=9.264$, $p<.003$, greater uncertainty about their ability to perform on similar types of tests ($M=4.33$) than nondepressives ($M=5.38$), $F(1,76)=6.804$, $p<.011$, and greater uncertainty about their abilities in general ($M=5.10$) than nondepressives ($M=6.58$), $F(1,76)=12.116$, $p<.001$ (see Note 3). Contrary to predictions, no interactive effects with ego involvement were revealed.

In order to assess self-esteem concerns, subjects indicated on the Differential Emotions Egotism Scale the extent to which each of three adjectives (boastful, egotistic, self-centered) described how they felt at that time. It was expected that subjects receiving failure feedback in the high ego involving condition should experience greater self-esteem concerns (report less
egotism) than subjects receiving failure feedback in the low ego involving condition. Additionally, depressives were expected to report greater self-esteem concerns than nondepressives primarily in the low ego involvement condition.

A 2 (Mood) X 2 (Ego Involvement) analysis of variance on the egotism scale revealed a strong tendency toward a main effect for ego involvement, although not significant. As predicted, subjects in the high ego involvement condition tended to report less egotism (have greater self-esteem concerns) ($M=3.88$) than subjects in the low ego involvement condition ($M=4.58$), $F(1, 76)=2.915$, $p<.09$. No differences were found between depressives' and nondepressives' reported egotism (or self-esteem concerns) on this pretest measure.

**Joy and Distress Scale.** The main and interactive effects of mood and ego involvement on the subjects' reported level of joy and distress following the failure feedback also were assessed to examine overall positive and negative affect. A 2 (Mood) X 2 (Ego Involvement) analysis of variance on the subjects' sense of joy revealed main effects for mood, $F(1, 76)=6.694$, $p<.012$, and ego involvement, $F(1, 76)=6.694$, $p<.012$. Depressives reported less joy ($M=5.05$) than nondepressives ($M=6.58$), and subjects in the high ego involvement condition
reported less joy ($M=5.05$) than subjects in the low ego involvement condition ($M=6.58$).

A 2 (Mood) X 2 (Ego Involvement) analysis of variance on the level of distress revealed a significant main effect for mood, $F(1,76)=21.383$, $p<.0001$, and an interaction effect between mood and ego involvement, $F(1,76)=6.265$, $p<.014$. Overall, depressives reported greater distress ($M=7.85$) than nondepressives ($M=5.13$). Pairwise comparisons revealed that depressives reported significantly more distress ($M=8.55$) than nondepressives ($M=4.35$) only in the low ego involvement condition, $p<.05$ (see Table 1).

**Control Scale.** Subjects were asked to indicate their perceived level of personal control over life events in general on a 9-point scale. A 2 (Mood) X 2 (Ego Involvement) analysis of variance revealed a highly significant effect for mood, $F(1,76)$, $p<.0001$. As expected, nondepressives reported a greater feeling of personal control over events in their lives ($M=7.35$) than depressives ($M=5.40$). However, contrary to predictions, no differences were found for mood on the measure of personal control over the outcome of the current test.

**Desire to engage in social comparison.** All subjects were asked to indicate on three 9-point scales how interested they would be in seeing another subject's
Table 1
Means for the Level of Pretest Distress on the Distress Scale

<table>
<thead>
<tr>
<th></th>
<th>High Ego Involvement</th>
<th>Low Ego Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressed</td>
<td>7.15&lt;sub&gt;a&lt;/sub&gt;</td>
<td>8.55&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>(20)</td>
<td>(20)</td>
</tr>
<tr>
<td>Nondepressed</td>
<td>5.90&lt;sub&gt;ab&lt;/sub&gt;</td>
<td>4.35&lt;sub&gt;b&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>(20)</td>
<td>(20)</td>
</tr>
</tbody>
</table>

Note: The higher the mean, the greater the reported pretest distress. The numbers in parentheses indicate the number of subjects in each condition. Experimental condition means sharing a common subscript are not significantly different at the .05 level (Dunn's <em>a priori</em> pairwise comparisons).
answers and scores on the test, how interested they are in seeing others' answers and scores in general, and how interested they are in comparing their level of ability with others. It was predicted that depressives would be more interested in social comparison than nondepressives but this difference was expected to be more pronounced in the high ego involvement condition where self-esteem concerns would attenuate nondepressives' desire. A 2 (Mood) X 2 (Ego Involvement) multivariate analysis of variance conducted on these questions revealed a main effect for mood, F(3,154)=3.017, p<.032. Univariate analyses revealed that, as predicted, depressives reported a greater interest or desire to view another's answers and scores on test (M=6.83) than nondepressives (M=6.19), F(1,156)=4.368, p<.038. No significant effects were found for the measure of desire to engage in social comparison of test performance or ability in general.

Comparison Choice. Subjects were told the relative position of four other "subjects" who had completed the test. They were told that two of these comparison others did better than the subject and two did worse than the subject. The subjects were asked to choose the one comparison other whose answers and score they would like to see. It was predicted that depressives, given their greater uncertainty and presumed motivation to decrease
uncertainty, would make more upward comparisons than nondepressives, regardless of level of ego involvement. This depressive/nondepressive difference was expected to be less pronounced in the low ego involvement condition where all subjects were predicted to make upward comparisons. However, in the high ego involving condition, where self-esteem had been threatened, nondepressives were expected to make downward comparisons in an attempt to protect their self-esteem from further threat.

Chi-square analyses were conducted on the frequency of choice for the four comparisons for each level of mood and ego involvement. Contrary to predictions, no significant differences were found for mood or ego involvement on the comparison choices. However, chi-square analysis revealed that upward comparisons were chosen more frequently \((N=63)\) than downward comparisons \((N=17)\) in general, \(X^2 = 26.45, p<.001\) (see Appendix E).

**Posttest Uncertainty and Self-esteem Concerns**

This study measured subjects' pre- and post- levels of uncertainty and self-esteem in order to determine the effect of social comparison. The use of the Solomon Four Group Experimental Design allowed for the determination of the main effects of pretesting and the interaction of pretesting with social comparison on the posttest scores.
(Campbell and Stanley, 1963). A 2 (Comparison/No Comparison) X 2 (Pretested/Unpretested) analysis of variance was conducted on posttest scores. No main or interactive effects of pretesting on posttest scores were found. This analysis indicates that the posttest scores were not significantly affected by pretesting or by the interaction of pretesting with social comparison.

**Effect of comparison direction.** Given the results of the above analysis, it was then permissible to perform analyses of covariance on the posttest scores using Mood, Ego Involvement, and Direction of Comparison as independent variables and pretest scores as covariates. The posttest measure was used to assess the consequences of social comparison on feelings of uncertainty and self-esteem concerns. It was reasoned that upward comparisons should reduce uncertainty, but should provide no protection for self-esteem, thereby increasing self-esteem concerns. On the other hand, downward comparisons should protect and enhance self-esteem (decreasing self-esteem concerns), but should not provide uncertainty reducing information. Therefore, it was expected that those subjects who made upward comparisons should report less uncertainty and greater self-esteem concerns than those subjects who made downward comparisons.
Two 2 (Mood) X 2 (Ego Involvement) X 2 (Direction of Comparison - Upward/Downward) analyses of covariance with pretest scores as covariates were conducted on posttest scores to determine the main or interactive effects of the direction of comparison on subjects' levels of uncertainty and self-esteem concerns (see Note 4). Contrary to expectations, the analysis on the measure of uncertainty revealed no significant effects for direction of comparison. However, as expected, the analysis on the measure of self-esteem concerns revealed a main effect, $F(1,31)=9.391, p<.004$, for comparison direction. Subjects who compared upward reported greater self-esteem concerns (less egotism) ($M=3.48$) than subjects who compared downward ($M=4.44$). Additionally, a significant direction of comparison by ego involvement interaction was revealed, $F(1,31)=8.244, p<.007$. Pairwise comparisons (Dunns) revealed that of those who compared downward, subjects in the low ego involvement condition reported significantly less self-esteem concerns (higher egotism) ($M=6.00$) than subjects in the high ego involvement condition ($M=3.20$), $p<.05$. Also, for subjects in the low ego involvement condition, those who compared downward were significantly less concerned with self-esteem ($M=6.00$) than those who compared upward ($M=3.63$), $p<.05$. In other words, as expected, subjects in the low ego involvement condition
who compared downward were the least concerned about their self-esteem following social comparison (See Table 2).

**Effect of comparison/no comparison.** A 2(Mood) x 2(Ego Involvement) x 2 (Comparison/No Comparison) analysis of variance was conducted on posttest scores to determine the main or interactive effects of engaging in social comparison (regardless of direction of comparison) on self-esteem concerns and uncertainty. The analysis revealed a main effect for comparison on self-esteem concerns, $F(1,152)=5.174$, $p<.024$. Subjects who made a social comparison reported significantly greater self-esteem concerns (lower egotism) ($M=3.60$) on the posttest measure than subjects who did not compare ($M=4.15$). Given that 83% of those that compared made an upward comparison, this result is consistent with predictions. Additionally, a mood by ego involvement by comparison/no comparison interaction on reported uncertainty about ability as measured by the test was revealed, $F(1,152)=3.908$, $p<.05$. Pairwise comparisons (Dunns test) revealed no significant differences among the means. Contrary to expectations, no significant differences in posttest uncertainty were revealed between those who made social comparisons and those who did not compare.

**Effect of mood and ego involvement.** Two 2 (Mood) x 2 (Ego Involvement) analyses of covariance with pretest
Table 2
Means for Posttest Self-Esteem Concerns on the Egotism Measure

<table>
<thead>
<tr>
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<th>Upward Comparison</th>
<th>Downward Comparison</th>
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<tbody>
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<td>3.20&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td></td>
<td>(10)</td>
<td>(10)</td>
</tr>
<tr>
<td>Low Ego Involvement</td>
<td>3.63&lt;sup&gt;a&lt;/sup&gt;</td>
<td>6.00&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>(10)</td>
<td>(10)</td>
</tr>
</tbody>
</table>

Note: The higher the mean, the less posttest self-esteem concerns (greater egotism). The numbers in parentheses indicate the number of subjects in each condition. Experimental means sharing a common subscript are not significantly different at the .05 level (Dunn's <i>a priori</i> pairwise comparisons).
scores as covariates were conducted on posttest scores to
determine the main or interactive effects on self-esteem
concerns and uncertainty for subjects who engaged in
social comparison. It was predicted that depressives
would report greater self-esteem concerns than
nondepressives in the high ego involvement condition.
Also, it was predicted that depressives would report
uncertainty levels that were less than or equal to those
reported by nondepressives in the high ego involvement
condition. Contrary to prediction, no interactive effects
were revealed. However, the analysis on the self-esteem
measure revealed a main effect for depression,
\(F(1,35)=4.047, p<.05\) that was consistent with predictions.
Taking into account pretest scores, depressives reported
greater self-esteem concerns following comparison (M=3.60)
than nondepressives (M=3.80). A main effect for
depression on level of uncertainty also was revealed,
\(F(1,35)=4.184, p<.05\). Taking into account pretest
scores, depressives reported greater uncertainty (M=12.95)
than nondepressives (M=16.15) following comparison.
Although this finding is contrary to specific predictions
for this measure, it is consistent with the overall thesis
that depressives are much more uncertain than
nondepressives. Given that almost all of the subjects
chose upward comparisons presumably for the purpose of
reducing uncertainty, depressives continued to report greater uncertainty than nondepressives.
DISCUSSION

The purpose of the current study was to examine the motivations of depressed and nondepressed college students to engage in social comparison, the comparison others they choose, and the consequences of these comparisons. It has been suggested that uncertainty and self-esteem threat are two underlying factors affecting persons' desires to seek social comparison information and their choice of comparison others. Social comparison may provide reduction of uncertainty about oneself and self enhancement relative to others as well as arouse self-esteem concerns when major inadequacies or inabilities are highlighted. Thus, under certain conditions, social comparisons may serve as precursors to low self-esteem and negative self-evaluations. This is particularly important in considering the etiology and maintenance of these characteristics in depressives. Research has suggested that depressives are very motivated to gain social information or are more sensitive to comparison information presumably due to their heightened uncertainty about themselves and their judgements (Coyne, Aldwin, and Lazarus, 1981; Hildebrand-Saints and Weary, in press;
Weary, Elbin, and Hill, 1987). Thus, depressives' uncertainty and desire to gain social comparison information should play a major role in their social comparison activity.

**Pretest uncertainty and desire for comparison.** Based on this reasoning, it was predicted that depressives should report greater uncertainty about their abilities and their performance following failure feedback and should report a greater desire for social comparison than nondepressives. Support for this prediction was found. Following failure feedback, depressives reported greater uncertainty about their abilities as measured by the test, their abilities to perform on similar tests, and their abilities in general than nondepressives. Similarly, depressives reported a greater desire to engage in social comparison than nondepressives.

Another important factor proposed to underlie the desire for social comparison was the motivation of self-esteem protection. It was suggested that self-esteem threat, incurred by the reception of information implying low ability or negative personality traits (Goethals and Darley, 1977; Hakmiller, 1966; Thornton and Arrowood, 1966), would decrease the desire for social comparison (Gerard, 1963). In this study, self-esteem concerns were manipulated using high and low ego involvement
descriptions of the test on which the subjects subsequently failed. It was predicted that subjects in the high ego involvement condition would report greater self-esteem concerns following the failure feedback than subjects in the low ego involvement condition. Despite manipulation check evidence that the ego involvement manipulation was ineffective, there was a tendency for subjects in the high ego involvement condition to report lower egotism (more self-esteem concerns) than subjects in the low ego involvement condition. Additionally, it was expected that level of depression would affect self-esteem concerns. However, nondepressives and depressives did not differ significantly in their reported pretest self-esteem concerns.

Thus, results of the pretest measures of uncertainty and self-esteem concerns lend support to the basic research hypotheses. As expected, depressives were more uncertain than nondepressives and indicated a greater desire for social comparison. Additionally, subjects in the high ego involvement condition tended to have more self-esteem concerns following failure feedback than subjects in the low ego involvement condition. Levels of mood and ego involvement did not interact to attenuate levels of uncertainty and self-esteem as expected. This may be due to the failure of the ego involvement
manipulation. All subjects seemed to believe that the test results held significance for their future (high ego involvement) regardless of condition.

Why did this manipulation fail? It could be that the setting of the study (major university) and the nature of the task (intelligence test) served to aroused interest in a subject population of college students. Despite the low ego involvement description of the test, the students' sense of self-esteem and interest in this condition may have been sufficiently aroused by their failure to cause them to subsequently attach more importance to the test than what was intended.

Another possible explanation for the failure of ego involvement manipulation may lie in the low ego involvement description itself. Since this description enlists the subjects' help in developing this test for the experimenter, the subjects may have been motivated to "help" by reporting that the test really is good and holds significance for their future.

Comparison choice. Research indicates that subjects whose self-esteem has been threatened will desire to avoid social comparison, presumably in order to avoid further self-esteem threat (Gerard, 1963). However, when forced to make comparisons, research supports the notion that self-esteem threatened persons will choose those
comparisons that will be least likely to further that threat, i.e. downward comparisons (Wills, 1981). These comparisons should provide some self-esteem protection. Additionally, these comparisons provide little evaluatively useful information and thus, should not significantly reduce uncertainty.

Given that one of the motivations to engage in social comparison is to gather uncertainty reducing information (Elliott, 1979; Festinger, 1954; Jones and Regan, 1974; Miller, Norman, and Wright, 1978) and that this can best be accomplished by seeking similar or upward comparisons (Festinger, 1954; Gordon, 1966; Hakmiller, 1966; Radloff, 1966; Thornton and Arrowood, 1966, Wheeler, 1966; Zanna, et al., 1975), the motivation to reduce uncertainty was expected to compete with the motivation to protect self-esteem. Persons with high uncertainty (i.e. depressives) were expected to seek upward comparisons to reduce that uncertainty. Persons whose self-esteem had been threatened (i.e. subjects in the high ego involving condition) were expected to seek downward comparison to protect self-esteem from further threat. These predictions were not supported. Eighty-three percent of those subjects who compared made an upward comparison. Additionally, the downward comparisons chosen by seventeen percent of the subjects were relatively equally
distributed across mood and ego involvement conditions.

Again, the reasoning given for the failure of the ego involvement manipulation could explain this result as well. Subjects were university students who may have been more sensitive to the motivation of uncertainty reduction than to self-esteem protection. Considering that the experimental test was described as a test to measure future success, university students may be more sensitized to uncertainty about their abilities, their future, and the need to reduce that uncertainty than other populations. Nevertheless, evidence does indicate that self-esteem threat was aroused in these subjects. Subjects in the high ego involvement condition did tend to report greater self-esteem concerns than subjects in the low ego involved condition. Therefore, it may be reasoned that these subjects chose upward comparisons despite the risk of further self-esteem threat.

Uncertainty and self-esteem concerns following comparison. It was proposed that persons seek comparison information in order to reduce uncertainty, and that this can best be accomplished by making the most evaluatively useful comparisons, i.e. with those who are similar or slightly better on the ability being evaluated (Brickman and Bulman, 1977; Festinger, 1954; Radloff, 1966; Zanna,
et al., 1975). Such comparisons may be perceived as threatening when persons do not feel good about themselves. Under conditions where self-esteem has been threatened (i.e. failure on a test), persons may choose downward comparisons as an attempt to protect/enhance self-esteem from further threat (Wills, 1981).

It was hypothesized that depressives, given their heightened uncertainty, would attempt to reduce that uncertainty through upward comparison regardless of self-esteem threat. Nondepressives were expected to be more motivated to protect their self-esteem by seeking downward comparisons, especially when the threat was highlighted (high ego involvement condition). Therefore, it was expected that depressives would experience more uncertainty reduction than nondepressives, resulting in a smaller difference between depressives and nondepressives uncertainty from pre-comparison levels. Support for this prediction was not found. Depressives continued to report greater uncertainty following comparison than nondepressives. It could be that since a majority of subjects (depressed and nondepressed) compared upward, the benefits of gaining evaluatively useful information were gained by all. However, depressives simply have greater uncertainty than nondepressives and this difference was not attenuated by comparison.
If previous reasoning on self-esteem threat and direction of comparison is correct, a majority of subjects should have experienced a blow to their self-esteem following their upward comparisons. However, results indicate that following comparison, depressives reported greater self-esteem concerns than nondepressives. This difference can be viewed as a consequence of comparison since depressives and nondepressives did not differ in reported self-esteem concerns prior to comparison.

The results of the current study revealed that depressives are more uncertain prior to comparison, indicated a greater desire to engage in social comparison, and reported greater uncertainty and self-esteem concerns following social comparison than nondepressives. Why is it that both groups compared upward but depressives' self-esteem suffered more than nondepressives' self-esteem? Does upward comparison help to reduce uncertainty for others but not for depressives? Perhaps, for depressives, more information especially unfavorable information, serves to maintain their depressive symptoms including their heightened uncertainty and low self-esteem. How might this happen? Several possible explanations can be offered. One hypothesis is that depressives may interpret information differently. Recent research by G. Weary and F. Gleicher (Personal Communication, May, 1988) has
revealed that depressives make more spontaneous inferences and more abstract inferences when exposed to a videotaped scene where the attributional norm of internality is violated. They subsequently report less confidence in their inferences than nondepressives. It seems that depressives, perhaps due to their increased sensitivity, are generating more uncertainty for themselves in the way they perceive information. It could be that following the reception of social comparison information in the current study, depressives made more abstract and negative self-inferences than nondepressives, thus leading to greater uncertainty.

A recent review by Swallow and Kuiper (1988) presents several other hypotheses concerning depressives and social comparison that are relevant to the present discussion. They outline several mechanisms by which upward comparisons serve to maintain uncertainty and low self-esteem in depressives, who already have a negative self-view (Kuiper & Olinger, 1986). Depressives tend to engage in more self-focused attention than nondepressives following a failure manipulation (Pyszczynski and Greenberg, 1985). Swallow and Kuiper feel that this self-focused attention could trigger the accessing of further negative affective components of depressives' self-schema. Thus, this affective sensitivity to unfavorable social
comparison may serve to further exacerbate the depressives' negative self-image.

Swallow and Kuiper present a second component of depressives' social comparison processes that may be relevant to this study. They propose that depressives may fail to employ the discounting principle (Kelley, 1973) when making upward social comparisons. That is, nondepressives may discount the comparison based on differences in nonability factors (i.e. age, experience, strength), thus protecting self-esteem from an unfavorable comparison. Depressives, however, may perceive the advantaged other to be an appropriate comparison target and thus attribute personal inferiority to low ability...An individual failing to discount in upward comparison could be expected to make an inordinate number of unfavorable, and hence, negative self-evaluations. In short, an individual engaging in such comparisons could be expected to be at increased risk for depression (p.68).

Social comparison is an inevitable, continual process that everyone experiences everyday. Whether it is through social interaction, the media, or observation, we all are exposed to favorable and unfavorable comparisons.
Research findings support the notion that depressives are more motivated to seek social comparison information and are more sensitive to its outcome (Warren and McEachren, 1983; Weary, Elbin, and Hill, 1987) than nondepressives. If this is true, depressives may well be exposing themselves to a great deal of unfavorable comparison information and are being unduly affected by this information. Whatever the mechanism, whether it is added sensitivity, generation of abstract or negative self-inferences, failure to protect self-esteem through downward comparisons or through discounting of upward comparisons, it is helping to maintain, and perhaps cause, depressive symptomatology. Further research is needed to delineate these mechanisms in the social comparison processes of depressives.
NOTES


2. A 2 (Mood) X 2 (Ego Involvement) X 2 (Sex) analysis of variance was conducted on all dependent variables to determine the main or interactive effects of sex. A main effect of sex on certainty about ability as measured by this test was revealed, \( F(1,72)=4.915, p<.03 \). Collapsed across mood and ego involvement, males reported greater pretest certainty (less uncertainty) (\( M=4.46 \)) than females (\( M=3.55 \)).

3. For the purpose of comparing pre- and post-test scores, the ratings for the three uncertainty measures were summed to obtain and overall measure of uncertainty. These three measures were significantly intercorrelated, \( p < .02 \). A 2 (Mood) X 2 (Ego Involvement) analysis of variance on this overall measure of uncertainty also revealed a main effect for mood, \( F(1,76)=15.847, p<.0001 \). Depressives reported
more uncertainty ($M=12.68$) than nondepressives ($M=16.35$).

4. Given the unequal subject numbers in the cells for upward and downward comparison, a test to determine whether the homogeneity of variance assumption is violated by the anova on this variable was conducted. Three procedures available for testing this assumption are Cochrans C, Bartlett-Box F, and Minimum Variance/Maximum Variance. These procedures yielded significance levels of .167 indicating that the hypothesis of homogeneity cannot be rejected. Given these results, an analysis of variance on the variable of direction of comparison can be conducted.

5. Beck's (1967, 1976) depth of depression cut-off points for the BDI are $0-9 = \text{no depression}, 10-15 = \text{mild depression}, 16-23 = \text{moderate depression}, 24+ = \text{severe depression}$. 
APPENDIX A

PRE- AND POST- MEASURES OF UNCERTAINTY
Questionnaire # 1

1. How confident or certain are you about your intellectual and reasoning abilities as measured by this test?

1 2 3 4 5 6 7 8 9
extremely uncertain

2. In general, how confident or certain are you about your ability to perform on similar types of tasks (for example, other ability or intelligence tests)?

1 2 3 4 5 6 7 8 9
extremely uncertain

3. In general, how confident or certain are you about your intellectual and reasoning abilities?

1 2 3 4 5 6 7 8 9
extremely uncertain

4. To what extent did you have a feeling of personal control over the outcome of the testing situation in this experiment?

1 2 3 4 5 6 7 8 9
not at all entirely

5. To what extent do you have a feeling of personal control over the events in your life?

1 2 3 4 5 6 7 8 9
not at all entirely
Questionnaire #1 - Spring

1. In general, how anxious do you feel when you know that you are being evaluated?

1 2 3 4 5 6 7 8 9
not at all anxious

2. In general, how much control do you feel people have over the events in their lives?

1 2 3 4 5 6 7 8 9
no control total control

3. How confident or certain are you about your intellectual and reasoning abilities as measured by this test?

1 2 3 4 5 6 7 8 9
extremely uncertain completely certain

4. In general, how confident or certain are you about your ability to perform on similar types of tasks (for example, other ability or intelligence tests)?

1 2 3 4 5 6 7 8 9
extremely uncertain completely certain

5. In general, how confident or certain do you think most people are about their performance on intelligence or ability tasks?

1 2 3 4 5 6 7 8 9
extremely uncertain completely certain

6. In general, how confident or certain are you about your intellectual and reasoning abilities?

1 2 3 4 5 6 7 8 9
extremely uncertain completely certain
7. How often do you find yourself thinking about and planning for the future?

1  2  3  4  5  6  7  8  9
never all the time

8. To what extent do you view your college performance as a predictor of your future performance?

1  2  3  4  5  6  7  8  9
not at all very much

9. To what extent did you have a feeling of personal control over the outcome of the testing situation in this experiment?

1  2  3  4  5  6  7  8  9
not at all entirely

10. To what extent do you have a feeling of personal control over the events in your life?

1  2  3  4  5  6  7  8  9
not at all entirely

11. How often have you taken tests similar to the one in this experiment?

1  2  3  4  5  6  7  8  9
never very often

12. How anxious did you feel while you were taking the test.

1  2  3  4  5  6  7  8  9
not at all extremely anxious anxious

13. Please rate how anxious you feel in general when taking tests that measure your ability.

1  2  3  4  5  6  7  8  9
not at all extremely anxious anxious
14. How important is it for you to do well in school?

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15. How important is it for you to be considered "successful"?

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APPENDIX B

PRE- AND POST- MEASURE OF SELF-ESTEEM CONCERNS (EGOTISM SCALE)
Please indicate the extent to which each of the following nine words describe the way you feel at the present time. Record your answers by circling the appropriate number on the five-place scale following each word. If at the present moment the word describes the way you feel very slightly or not at all, you would circle the number 1; if it describes the way you feel to a moderate degree you would circle 3, and so forth.

Remember, you are requested to make your responses on the basis of the way you feel at this time.

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<tr>
<th>Word</th>
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<th>2</th>
<th>3</th>
<th>4</th>
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<td>considerably</td>
<td>very strongly</td>
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APPENDIX C

MEASURE OF DESIRE TO ENGAGE IN SOCIAL COMPARISON
Questionnaire #2

1. If it were possible, how interested would you be in seeing other subjects' answers and scores on this test?

   1 2 3 4 5 6 7 8 9
not at all
very
interested
interested

2. In general, how often do you like to see others answers and scores on tests that you have taken?

   1 2 3 4 5 6 7 8 9
never
very often

3. How interested are you in comparing your level of ability with others?

   1 2 3 4 5 6 7 8 9
not at all
very
interested
interested
APPENDIX D

MANIPULATION CHECK QUESTIONNAIRE
Questionnaire #3

The following questions are designed to determine how well you understood the experiment and the tasks that you were asked to complete.

1. The test that I took was designed by:
   ___ The Institute for Personality and Ability Testing
   ___ The Experimenter for a research class
   ___ I don't know

2. How well do you think this test predicts your performance on placement tests used in business and professional settings, such as the LSAT, GRE, Civil Service Exam, etc.?
   1 2 3 4 5 6 7 8 9
   not at all   very much

3. What was your performance score on the test? ____

4. In relation to others who have taken this test, how well did you do?
   1 2 3 4 5 6 7 8 9 10
   not at all   very well

5. Did you have an opportunity to view another student's answers and score on the test? yes or no (Circle one)

   If so, how well did that student do on the test in relation to others?
   1 2 3 4 5 6 7 8 9 10
   not at all   very well
APPENDIX E

OVERALL FREQUENCY OF UPWARD/DOWNWARD COMPARISON CHOICES
OVERALL FREQUENCY OF UPWARD AND DOWNWARD COMPARISON CHOICES

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<td>Low Ego Inv.</td>
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Note: Numbers represent the frequency of upward and downward comparisons chosen in each experimental condition.
APPENDIX F

MEAN BECK DEPRESSION INVENTORY SCORES
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<td>Males</td>
<td>Females</td>
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<td>Females</td>
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**Note:** Means are of BDI scores (second administration) for each experimental condition. The higher the mean, the higher the BDI score. The first number in parentheses is the standard deviation for each condition. The second number of parentheses is the number of subjects per condition (See Note 5).
APPENDIX G

ANOVA, ANCOVA, AND MANOVA TABLES
Multivariate Tests of Significance on Three Measures of Posttest Uncertainty For The Variable of Mood

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<tr>
<th>Test Name</th>
<th>Value</th>
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Univariate F-Tests with (1,156) D.F.

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Multivariate Tests of Significance on Three Measures of Desire to Engage in Social Comparison For the Variable of Mood

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Univariate F-Tests with (1,156) D.F.

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Analysis of Covariance of Mood, Ego Involvement, and Direction of Comparison on Post-test Self-Esteem Concerns (Egotism) with Pretest Scores of Self-Esteem Concerns as Covariate

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### Analysis of Covariance of Mood and Ego Involvement on Post-test Self-Esteem Concerns (Egotism) with Pretest Scores of Self-Esteem Concerns as Covariate

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Analysis of Covariance of Mood and Ego Involvement on Post-test Uncertainty with Pretest Scores of Uncertainty as Covariate

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## Analysis of Variance of Mood, Ego Involvement, and Comparison/No Comparison on Post-test Self-Esteem Concerns (Egotism)

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Analysis of Variance of Mood, Ego Involvement, and Comparison/No Comparison on Post-test Uncertainty

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APPENDIX H

SOLOMON FOUR GROUP DESIGN
### Solomon Four Group Design

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LIST OF REFERENCES


