On being an "Eagle Among Crows": an application of downward comparison principles

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On being an "Eagle Among Crows": An application of downward comparison principles

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On being an "Eagle Among Crows":
An application of downward comparison principles
by
Theresa J. Reis

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ABSTRACT

Three extensions or applications of downward comparison processes were investigated in the current study: the impact of downward comparison on affect and subjective well-being; the role of downward comparison processes in the development and maintenance of perceptions of vulnerability to negative events; and attitude change as a form of (indirect) downward comparison. Female subjects were selected to participate in a simulated discussion group on the basis of their global self-esteem levels and their use of effective contraceptive methods. Half of these participants received information about a comparison target who was using an ineffective contraceptive method (a downward comparison target) whereas the remaining individuals received no such information. Results revealed significant mood improvement in low self-esteem, downward comparison subjects. No additional predicted interactions proved significant. Implications concerning the influence of threat on individual differences in downward comparison, the theoretical importance of indirect downward comparison, and the role of downward comparison in enhancing perceptions of invulnerability were discussed.
INTRODUCTION

Long before psychology emerged as an independent scientific discipline, scholars and social scientists were questioning how people develop a sense of who they are as individuals—what modern psychologists refer to as the self-concept. One recurring thesis over the years has been that, during the process of self-concept development, people rely heavily on information obtained from their social environment. More specifically, they gain information about themselves or "discover" who they are through their interactions with other people (cf. Cooley, 1902; Hyman, 1942; Mead, 1934). From this perspective, self-definition is essentially a social process. Sociologist C. H. Cooley, for example, embraced this social dynamic in his conceptualization of the "looking glass" self when he suggested that our self-concept is a reflection of how others view us (Cooley, 1902).

In social psychology, an equally prominent theoretical position has emphasized that social groups provide individuals with an valuable source of self-evaluative information. That is, they serve "as a standard or comparison point against which people measure themselves," which may be an integral component in the process of self-concept development and refinement (cf. Suls, 1977). This viewpoint forms the basis for one of the most historically prominent theories in the discipline, Leon Festinger's statement of the principles of social comparison (Festinger, 1954).
Like theorists before him, Festinger was intrigued by the way individuals use other people as a social source of information about themselves. Out of this curiosity grew his formulation of the underlying motivation for and the circumstances or rules governing the process of social comparison (SC). Although direct tests of the original hypotheses were conducted only sporadically over the years following 1954, social comparison theory has increasingly influenced social psychological research by serving as the point of departure from which a number of theoretical extensions and clinical applications have been developed (cf. Goethals & Darley, 1977; Taylor, Wood, & Lichtman, 1983; Tesser, 1980; Tesser, Millar, & Moore, 1988; Wills, 1981, 1991).

The current study was designed to investigate and extend one such theoretical off-spring, Thomas Wills' elaboration of the principles of downward (social) comparison (Wills, 1981). In keeping with the current enthusiasm for testing both the basic principles of and applications for downward comparison theory (cf. Gibbons & Gerrard, 1989, 1991; Wheeler, 1991), the general goal of the present study will be to examine more closely the mechanics involved in the downward comparison process and the consequences to self of comparing with a "worse off" other. Three specific extensions or applications of the process will be explored: the applicability of
attitude change as a form of (indirect) downward comparison; the impact of downward comparison on affect and subjective well-being; and the role of downward comparison processes in the development and maintenance of perceptions of vulnerability to negative events. Prior to expanding on these issues as they relate to downward comparison theory, the principle assumptions underlying both social and downward comparison processes will be reviewed.

**Principles of Social Comparison**

**Self-evaluation**

In the central tenet of his theory on social comparison, Festinger asserted that people possess a drive for self-evaluation. They seek information about the correctness of their opinions and proficiency of their skills and this is especially the case when they feel uncertain about their abilities or opinions (Festinger, 1954). Under what circumstances does this motivation evolve into a social event? Initially, we explore the physical world for an objective or absolute standard with which to compare our skills or opinions. In the absence of an objective source for ascertaining the accuracy of such an opinion or the quality of a skill, however, we are most inclined to compare our abilities and opinions with the next best information source—other people.
Similarity

With whom do we socially compare? According to Festinger, the choice of an appropriate comparison target is the result of a relatively selective process. We don't indiscriminately settle on some random comparison target. In what has become known as the "similarity" hypothesis, Festinger stated "someone else close to one's ability or opinion will be chosen for comparison" (p. 121).

The underlying assumption for the hypothesis is that comparison with a divergent other is imprecise—it lacks information relevant to the self. In short, information about others whose abilities are increasingly different from ours is irrelevant. Why should a first year medical student, for example, compare her/his clinical skills with those of a veteran practitioner? The sheer number and quality of skill differences that might emerge from such a comparison would probably be overwhelming (not to mention discouraging) for the hapless student. Comparison with a similar other, say another first year student with a similar educational situation and equivalent opportunities, provides more realistic skills appraisal. Thus, the most common interpretation of Festinger's similarity hypothesis suggests that the selection of a comparison other is merely a function of that target's capabilities on the comparison dimension presently under consideration. To rely entirely on this restrictive
interpretation, however, shortchanges the attempt to thoroughly explain the complex process of selecting a similar comparison other.

In a less frequently noted hypothesis, Festinger stated that "if persons who are very divergent from one's opinion or ability are perceived as different from oneself on attributes consistent with the divergence, the tendency to narrow the range of comparability becomes stronger" (p. 133). In other words, people would be less likely to select a comparison other if that person was dissimilar to themselves on both the relevant comparison dimension and attributes relevant to that dimension. If I were to compare my tennis skills with that of another person, for example, I would not be interested solely in his/her playing ability but also in gender, age, hours of practice time, general physical stamina, etc. Theoretically, my preference for this person as a suitable comparison target would decline as the self-other differences across such variables increased.

This preference for seeking target information that is associated with the primary social comparison dimension has come to be referred to as the "related-attributes" hypothesis (Goethals & Darley, 1977; Wheeler & Zuckerman, 1977; Wood, 1989). A number of subsequent theorists have reformulated that line of reasoning by arguing that "we do not merely seek out someone with an opinion similar to ours but rather seek
out someone who ought to have, by virtue of similarity to us on attributes related to the opinion issue, a similar opinion" (Wheeler, Shaver, Jones, Goethals, Cooper, Robinson, Gruder, & Butzine, 1969, p. 231).

Thus, using a combination of the similarity and related-attributes hypotheses, the selection of a similar other requires that we assess the potential comparison target's comparability to us on both the specific dimension in question and on dimension-related attributes. For the current study, the related-attributes concept will re-emerge as an integral component in the conceptualization and study of attitude change as a method of downward comparison.

**Upward Comparison**

In addition to the preceding hypotheses, Festinger posited a third crucial hypothesis, one that was closely linked to the preference for a similar comparison other. He said that the social comparison process was also affected by a culturally-determined drive toward increasingly better performances such that an individual was "oriented toward some point on the ability continuum slightly better than his own performance..." (p. 126). Festinger referred to this phenomenon as the unidirectional drive upward and, although he didn't specify how this dynamic affected one's preference for a comparison target, other researchers have suggested that it
is manifested in a preference for a similar but *slightly superior* comparison other (cf. Wheeler, 1966).

In addition to providing us with information about our skills relative to those of another person, upward comparison is educative in that it also provides us with the opportunity to discover what this person is doing differently that makes his/her performance just that little bit better than ours without pointing out glaring skill deficiencies that might cause us to feel discouraged. We should be able to develop the skills evidenced by such comparison others because their skills are only slightly better than ours--suggesting that only minor skill adjustments would be required on our part to acquire similar capabilities. Thus the goal of self-evaluation, and concomitant self-improvement, can be satisfied through such a comparison.

**Summary**

The three preceding hypotheses represent the most influential and widely studied aspects of the theory of social comparison as it was originally stated. Although Festinger was primarily interested in interpreting the impact of these phenomena in the more general study of group dynamics and interpersonal influences, other social psychologists have conducted basic research designed to study more specifically the need for self-evaluation and preferences for similar or upward comparison targets. A great deal of research has
tested this seemingly straightforward, but deceptively complicated trio of ideas.

**Challenges to Social Comparison Theory**

Initial research supported Festinger's ideas on the upward comparison and self-evaluation hypotheses (see Hakmiller, 1966a; Wheeler, 1966). Eventually, however, conflicting results began to emerge and some researchers began to question whether social comparison processes were governed solely by these central principles (for reviews see Wills, 1991; Wood & Taylor, 1991).

For example, Hakmiller (1966b) proposed that several instrumental functions of social comparison processes co-exist, including accurate self-assessment, self-improvement, and self-aggrandizement. He argued that the latter comparison motivation occurs when people are struggling with negative information about themselves and so, rather than seeking accurate self-information, these individuals focus on the differences between themselves and "an Other who is quite inferior". In so doing, Hakmiller proposed, the impact of threatening feedback is reduced.

To test for the presence of such a self-aggrandizement motivation, Hakmiller told participants in his study that they had high levels of a personality trait called "hostility towards parents." Half were told that the trait was a negative attribute (and thus were in the high threat
condition) whereas the remaining participants were told that the trait was a positive quality (i.e., the low threat condition). The opportunity to review the score of another participant in the study was provided and participants could choose a score that was either higher or lower than their own. Results indicated that high threat subjects preferred to receive information about someone who had more of the negative trait than themselves—evidence for what Hakmiller referred to as a downward comparison preference. Moreover, these individuals subsequently reported being less "upset" than did their counterparts in the experiment.

Hakmiller suggested that his results were evidence of a valuational, rather than an evaluational, motivation underlying the comparison process. By this, Hakmiller meant that sometimes the information present in a comparison situation was sought not so much for its self-assessment (knowledge) value but for its "comforting value." In the years since Hakmiller's research, this motivation has been relabeled as the self-enhancement motivation for social comparison.

Hakmiller's findings and interpretations are clearly among the earliest to contradict Festinger's predictions and thus contribute to the growing dispute concerning the processes involved in social comparison. Eventually, a more direct challenge to the basic premises of social comparison
was issued by Brickman and Bulman (1977). These authors echoed many of Hakmiller's earlier sentiments and developed a detailed attack against the three primary principles of social comparison theory. Specifically, they provided empirical evidence that sometimes people seek to avoid social comparison and, on those occasions when they do engage in social comparison, they prefer to compare with others who are dissimilar and/or performing worse than themselves. Although it is not the purpose of the present paper to review their specific arguments here, it is noteworthy that the preference and tendencies for engaging in downward comparison occupied a prominent position in their theoretical discussion.

**Downward Comparison Theory**

As the preceding arguments gained momentum, the stage was set for further development of the downward comparison perspective. Thomas Wills was the first to expand upon the concept in a formal theoretical statement (Wills, 1981). Adopting a somewhat less adversarial position than that of Brickman and Bulman, Wills offered an organized set of hypotheses that were complementary to Festinger's concepts, but which were explicitly concerned the underlying motivation for downward comparison, the situational and dispositional circumstances that elicit the process, and the different ways or routes through which people express the DC motivation.
Self-enhancement

The basis of downward comparison (DC) theory was the premise that self-evaluation was not the sole motivation underlying social comparison activities. Wills' position was that, under some circumstances, people socially compare out of a need to feel better about themselves; they need to self-enhance. Specifically, when people are subjected to physical or psychological (i.e., situational) threat or when they are in a chronic state of threat due to low self-esteem (i.e., dispositional threat) they are thought to experience a sense of decreased subjective well-being. People engage in "comparison with a less fortunate other," downward comparison, in an effort to restore subjective well-being (Wills, 1981, p. 245).

The Role of Situational Threat

In what he referred to as the "situational corollary," Wills proposed that the motivation for downward comparison is evoked when a person's "physical or psychological well-being has been decreased." The potential for threatening situations to evoke DC preferences had been discussed and empirically tested long before Wills' formal observation as evidenced by the incorporation of threat-inducing manipulations in early DC research. Recall that Hakmiller (1966b) manipulated threatening and nonthreatening feedback about a personality
trait and found systematic differences between high and low threat subjects in their requests for (DC) information.

In a more recent study, Gibbons and Gerrard (1989) placed persons with high and low self-esteem in a state of decreased subjective well-being by having them describe their college adjustment problems. These subjects were then given the opportunity to read another student's statement, which reflected either similar adjustment difficulties or adjustment success. It was argued that those subjects who had been threatened (by the review of their own adjustment inadequacies) were more likely to experience mood amelioration following information about someone else who was reportedly in an even worse situation. In short, they were expected to (and did) benefit from a DC opportunity because the threatening situation in which they had been placed resulted in decreased subjective well-being. These studies support Will's assumption that situations involving psychological threat, and the decreased subjective well-being that results from them, motivate downward comparison activity.

Passive and Active Downward Comparison

One of the unique characteristics of downward comparison processes, as Wills describes them, is that people may engage in DC through either one of two different routes. We may take advantage of information indicating that "worse off" others exist around us, a process Wills called passive downward
comparison; or we may actually create less advantaged others through derogation or causing them harm (active DC). An example of the passive process occurs when threatened people were given the option of waiting with a similarly threatened peer (one who was awaiting a shock or some other form of punishment) or a non-threatened peer. They more often select the threatened peer (the fear-affiliation effect; cf. Schachter, 1959; Zimbardo & Formica, 1963). According to Wills, when these subjects selected this peer they were capitalizing on the fact that there were disadvantaged others available for observation and used that as an opportunity for comparison; thus, they engaged in a form of passive DC.

Methodologically, subsequent research attempting to measure passive DC has commonly involved either having subjects select or indicate a preference for a comparison other, or it has involved measuring the impact of providing downward comparison information on subjects' mood states (cf. Gibbons, 1986, Gibbons & Gerrard, 1989). The latter technique has been employed under the assumption that those people who simply read or "observe" DC information will react to it, albeit passively, with mood improvements (i.e., an increase in subjective well-being).

Wills also believed that, under some conditions, people actively involve themselves in the DC process by derogating or actually causing harm to another person. In the process they
create a "worse off" other with whom they can compare their skills. Wills reinterpreted results from research on scapegoating (cf. Stricker, 1963; Miller & Bugelski, 1948) and hostile or displaced aggression (cf. Berkowitz & Holmes, 1960) as support for this second active DC route. The general conclusion of these studies was that when subjects were presented with some kind of ego threat and subsequently given an opportunity to either state their impression of or behave aggressively toward a comparison target, they would derogate or aggress toward that person. In short, these subjects were engaging in active DC. Methods in contemporary DC research that include giving people the opportunity to rate themselves and comparison others are likely to evoke these active downward comparison processes (cf. Crocker et al., 1987; Gibbons & Boney McCoy, 1991).

Thus, Wills hypothesizes that a variety of DC strategies are available to those persons engaging in self-enhancing activities. Persons engaging in DC might use either process--indeed, Wills provided no clarification as to when one type or the other might prevail. Contemporary research on the final major area of Wills' statement of concern for the present paper, his explanation of personality differences with respect to the DC motivation, offers some insightful observations on the use of these active/passive strategies.
Individual Differences in Downward Comparison

Wills expected that certain dispositional states characterize persons who experience chronic levels of decreased subjective well-being. In what he referred to as the "personality corollary," Wills proposed that low self-esteem individuals fit such a pattern and thus, would be most likely to engage in and benefit from DC. Other researchers have extended this tendency to other people in analogous states of decreased subjective well-being, such as depression. Research designed to test this premise has not provided straightforward support but, rather, has resulted in a more complicated explanation of preferences for the active and passive paths of DC.

Support. Gibbons (1986) provided convincing evidence in favor of Wills' original statement of the personality corollary. In the first study, persons reporting high or low levels of depression wrote a self-disclosing statement about a personally significant event with either a positive or negative outcome. Following a measure of mood state, they were allowed to select a positive or negative statement supposedly written by one of the other participants in the experiment. It was expected that participants who were depressed and had written a self-disclosing statement about a negative personal event—and thus would be experiencing a
decrease in subjective well-being—would prefer to read a negative statement. Results supported this prediction.

In a second study, Gibbons had persons who were either depressed or nondepressed read about a peer who reported feeling guilty due to his/her role in an accident. It was hypothesized that providing individuals with negative information concerning another person would give them the opportunity to take advantage of a DC situation (i.e., they could engage in passive DC). More specifically, it was predicted that depressed subjects would demonstrate mood improvement following this downward comparison opportunity. This expectation was supported; thus, it was argued that depressed, threatened persons are more likely than their nondepressed, nonthreatened counterparts to engage in DC.

In a conceptually similar study, Gibbons and Gerrard (1989) had high or low self-esteem, mildly threatened subjects listen to (bogus) information about a student who was or was not having trouble adjusting to college. As expected, results indicated that threatened, low self-esteem persons who engaged in passive DC (i.e., those who listened to information about problematic adjustment to college) demonstrated significant mood improvements relative to similar subjects who listened to information about nonproblematic adjustment.

Consistent with Wills' reasoning, the results obtained in these studies supported the hypothesis that chronic threats,
including dispositional characteristics such as low self-esteem or depression, are related to the observed preferences for and benefits obtained from downward comparison opportunities. These empirical findings in support of the personality hypothesis have not remained unchallenged, however.

Contradiction. Counter to Wills' hypothesis, a growing number of studies have demonstrated that persons who are not depressed or who are high in self-esteem also demonstrate a tendency for engaging in self-enhancing strategies. This evidence is derived from a variety of studies testing the relationship between individual differences, including chronically negative mood states and self-esteem, and a range of dependent measures covering judgments of control for events, perceptions of skill or opinion uniqueness, and comparative (self-other) attribute ratings. Self-other differences on these variables in the direction of viewing self as more in control of events, or possessing unique skills or more positive traits than others are all argued to represent self-enhancing strategies. Examples of several studies are provided below.

Alloy and her colleagues have repeatedly found that nondepressed participants tend to vary their estimates of personal control of events in ways that are self-protective. This tendency is not found among depressed participants (cf.

These tendencies are also relevant when considering self-esteem as the individual difference variable. For example, Campbell (1986) found that high SE (and nondepressed) persons were particularly likely to over- and underestimate the degree to which others shared their opinions or skills relative to similar estimates by low SE (or depressed) persons. These tendencies vary as a function of the desirability of the trait and apparently represent efforts to appear unique when a positive trait is being considered (i.e., self-enhancement), and similar to others when the focus is on a negative trait (i.e., self-protection). In a series of studies comparing personal attribute ratings for self and other, Crocker, Thompson, McGraw, and Ingerman (1987) observed that high, but not low, self-esteem persons responded to ego-threatening, failure feedback by engaging in ingroup favoritism and outgroup derogation—self-enhancement strategies that, according to these authors, are considered to be manifestations of downward comparison.

The evidence across these studies suggests that the tendency to engage in self-enhancing strategies is not specific to low self-esteem (or depressed) individuals but rather, under some circumstances, it is an activity prevalent among those who are high in self-esteem or who are nondepressed. Thus, these results stand in contradiction to
Wills' assumptions concerning individual differences in downward comparison.

Reconciliation. The emergent trends across those studies demonstrating support or nonsupport for the personality corollary suggest that both high and low self-esteem persons engage in the self-enhancing processes of DC and benefit from doing so. Subjects in those studies that support the personality corollary were engaging in passive forms of DC (e.g., simply stating a preference for DC information or evidencing mood amelioration). Subjects in the nonsupporting studies, on the other hand, engaged in procedures that provided an opportunity to derogate the target or rate themselves more positively (i.e., active DC). Thus, the focus of the individual differences question appears to be not who engages in the process of downward comparison but what type of DC different people select.

Recently, Gibbons and Boney McCoy (1991) investigated the difference in use of both active and passive forms of DC for persons with either high or low self-esteem. In their first study, high and low self-esteem subjects received either threatening or nonthreatening feedback and then received DC information that another student was having difficulty adjusting to college. Subjects' moods were assessed pre- and post-DC information to determine the impact of passive DC. Measures of active DC included subjects' evaluations of the
comparison target in terms of competence and likability as well as prevalence estimates for adjustment problems in college. These authors hypothesized that low self-esteem, threatened subjects would replicate earlier mood findings by demonstrating mood improvement following the passive DC opportunity. High self-esteem, threatened subjects, on the other hand, were expected to derogate their downward comparison target (i.e., engage in active DC). The pattern of obtained results followed these predictions. Subjects in the low self-esteem, threatened, DC condition demonstrated significant mood improvements (indicative of engaging in passive DC) whereas high self-esteem, threatened, DC subjects were more likely to rate the comparison target more negatively in terms of personal attributes. They also rated problematic college adjustment as less common (i.e., lower in prevalence). Both self-other attribute differences and prevalence adjustments were measures of what these authors interpreted as active DC. In combination, these data provided some of the strongest evidence to date that both high and low self-esteem persons engage in DC processes, but that they prefer to engage in and benefit from different forms of the process—an increasingly consistent conclusion in the downward comparison literature (cf. Wills, 1991; Wood & Taylor, 1991).
Summary

The concept of downward comparison represents an important modification of social comparison theory and has been the foundation for an increasing amount of empirical effort. The theoretical arguments and empirical evidence reviewed thus far highlight the continuing maturation of both social and downward comparison theories. Contrary to Festinger's original belief, accurate self-evaluation is now viewed as only one of a variety of goals for social comparison (Wood & Taylor, 1991). Moreover, the evidence to date supports the idea that downward comparison mechanisms are convenient means for satisfying the goal of self-enhancement. However, the process of downward comparison can hardly be described as a simple social event. On the contrary, it is itself a highly complicated process and, as we have observed thus far, it elicits different behaviors and emotional reactions from different people.

As the volumes of work related to social and downward comparison continue to accumulate, it has been argued that previous research has overemphasized the process of target preference and selection. In addition to attempts to expand upon our knowledge of basic theoretical concepts of downward comparison (e.g., the definition of similarity to a comparison target), contemporary researchers are now focusing on an ever-expanding list of issues including, for example, the
importance or personal relevance of the comparison dimension and the impact of incongruent goals (see Wood & Taylor, 1991; Wills, 1991, for reviews of these issues). In keeping with that spirit, the remainder of the present paper was developed to test three very specific applications and extensions of downward comparison theory: the applicability of attitude change as a form of (indirect) downward comparison; the impact of downward comparison on affect and subjective well-being; and the role of downward comparison processes in the development and maintenance of perceptions of vulnerability to negative events.

**Indirect Active Downward Comparison**

In the literature devoted to downward comparison principles, considerable emphasis has been placed on the study of the self-enhancement motivation. Thus far, most attention has been focused on studies validating or challenging Wills' concepts of passive and active DC as self-enhancing techniques as well as observed individual differences for engaging in these processes. However, focus on these perspectives should not be taken to imply that passive observation and active derogation represent the exclusive range of self-enhancement strategies. On the contrary—according to Wood and Taylor (1991), the self-enhancement motivation may actually be realized through a variety of strategies.
For example, some self-enhancement techniques involve several alternatives for target selection—we may select known (actually existing) persons whose activities or attributes cause them to be "worse off" others or we may simply imagine that such a person exists (cf. Taylor, Wood, & Lichtman, 1983). We may also feel better about ourselves if we choose to avoid the comparison process altogether, thus eliminating the possibility of discovering that our abilities are worse than expected (cf. Brickman & Bulman, 1977). Still other self-enhancement strategies emphasize variations that occur in the process of selecting the comparison dimension. For example, we may engage in what has been referred to as "dimensional comparison" (Taylor et al., 1983), by selectively focusing on dimensions on which we, rather than the comparison target, appear to be advantaged. Thus, it has been suggested there is actually a great deal of variety in the psychological methods used by people for achieving self-enhancement. One of the major goals of the current study is to investigate the existence of yet another, albeit indirect, pathway to self-enhancement.

As noted, over the past decade considerable attention has been paid to the distinction between passive and active downward comparison. Building on this distinction, the current study was designed to test an extension of the process of active downward comparison. Active DC, as it has been
frequently conceptualized with the comparative ratings methodology, could be relabeled as a form of direct active DC. It often involves negative evaluations or derogation of some central attribute(s) of the target as an individual. Often the personality characteristics of the DC target, his or her positive or negative traits, were the actual focus of the downward comparison (e.g., s/he was evaluated as competent, likeable, etc.; cf. Gibbons & Boney McCoy, 1991).

One of the empirical questions addressed by the current study is whether people engage in active DC by indirectly derogating the comparison target. Is it possible that people derogate others by developing negative attitudes toward some activity, behavior, object, etc. that happens to be tangentially associated with the DC target? The theoretical basis for this process, referred to here as indirect active DC, lies in early research explicating the conceptual elements of balance theory, as well as Festinger's related-attributes hypothesis.

Balance Theory and the Related-Attributes Hypothesis

P-O-X theory. The concept of "balance" and the theories that sprang from it were based, in part, on the general Gestalt notion of Pragnanz, a belief that people try to make sense out of their perceptual world by imposing some kind of coherence, completeness, or meaningful structure upon the elements within a perceptual field. Fritz Heider incorporated
this notion into his theory of human social interaction, P-O-X theory (Heider, 1958). In seeking to identify ways in which social and/or physical entities are related to one another, Heider visualized the relationship in the form of a triad with the elements consisting of a perceiver (P), another person (O), and a third entity (X), which could be an object, a third person, etc. Balance, or harmony, within this triadic relationship depends on the sentiment links between each element (i.e., how P feels about O and X, how O feels about X). The simplest example of a balanced triad relationship occurs when all the sentiment links are positive [P likes O and X, and O likes X].

For the purposes of the current study, we are interested in a more complicated form of a balanced triad, which occurs when two of the sentiment links are negative and the remaining link is positive. Say, for example, person P dislikes person O but discovers that person O likes object X. Balance in this relationship could occur if P dislikes X. A state of imbalance would occur if P disliked O but also liked X as much as did O. According to balance theory, P would strive to obtain a balanced relationship and could do so by either developing a negative opinion or changing an existing opinion toward X so that it was negative. It is important to emphasize that the relationship links described thus far are sentiment links—how the people involved in the triad feel
about one another and the third entity. In this example, negative or positive attitudes toward O and X are reflections of those sentiments.

This type of balance has particular relevance to a downward comparison situation and the development of the concept of indirect active DC. If a comparer (represented by P in the P-O-X formulation) indicates that s/he dislikes or thinks poorly of a downward comparison target (O), then the press for balance in this triadic relationship would dictate that P also make negative assessments about items or objects (X) that are related to O in any positive way. Consequently, the comparer forms two types of evaluations in this situation: direct derogation of the comparee (by rating him/her negatively) and indirect derogation or devaluation of any object, X, associated with the comparison target. The related-attributes hypothesis (Festinger, 1954; Goethals & Darley, 1977) suggests similar theoretical arguments—specifically that, as social comparers, we are interested in and pay attention to objects (or dimensions) associated with a comparison target.

Related-attributes hypothesis. As discussed earlier, the positive restatement of Festinger's concept of related attributes suggested that we assess the degree of our similarity to a comparison other by attending to attribute information consistent with (relevant to) the comparison
dimension. An elaboration of the related-attributes perspective was incorporated by Goethals and Darley (1977) into their attributional approach to social comparison and is of particular interest for the current conceptual development.

These authors argued that the comparison process is an attribution problem. The dispositions typically being evaluated in social comparison often cannot be observed directly but, rather, have to be inferred through a person's behaviors. Using information from the social environment, we attempt to determine the cause of the person's behavior: was it due to external (environmental) influences or internal (dispositional) influences? With respect to the present study, the most important aspect of this inferential process is the recognition that a person's performance is often only partly influenced by his or her actual ability on that dimension. Performance is also affected by a variety of nonability factors (or related attributes) such as luck, task difficulty, effort, age, gender, access to products that facilitate/inhibit performance, etc. Consequently, Goethals and Darley argue that we seek knowledge about nonability factors when we engage in any comparison process designed to evaluate an ability. Such knowledge becomes extremely important during the process of social comparison because it is informative during the determination of one's similarity with the comparison target. It also eliminates any suspicions
that nonability factor differences are possible alternative explanations for observed ability differences.

Integration. How might these concepts, drawn from P-O-X theory and the related-attributes hypothesis, be assimilated within the proposed framework of indirect active downward comparison? The related-attributes hypothesis contributes to the present discussion because it highlights the idea that individuals engaging in social comparison do indeed pay attention to information concerning factors tangentially related to the primary comparison dimension. The balance concepts of P-O-X theory contribute to the indirect active DC conceptualization in that they suggest we react, at the affective level, to both the comparison other (O) and nonability factors (X). Moreover, Goethals and Darley (1977) contend that sometimes people distort (i.e., change) a comparison target's standing on nonability factors as a means of explaining or rationalizing that person's performance. Although these authors spoke of such distortion as a way of discounting a target's successful (superior) performance, this observation suggests that our interpretation of nonability factors or related attributes may be influenced by the motivational aspects of the social comparison situation. Moreover, such distortion suggests that our evaluations of ancillary information may change as our evaluations of comparison targets change. As we come to rate a person more
negatively, as often is the case in downward comparison situations, we may also view objects associated with the comparison target more negatively.

**Attitude Change as Indirect Active Downward Comparison**

The current study is conducted, in part, to test the assumption that changes in our attitudes toward an object associated with a downward comparison target represent a form of indirect active DC. In keeping with Wills' traditional definition of active downward comparison, direct active DC is defined as derogation of or negative attitudes expressed concerning a comparison target. Indirect active DC, on the other hand, is expected to occur via the derogation or development of negative attitudes toward objects, behaviors, etc. associated with a downward comparison target. In both cases, derogation is manifested through negative attitudes or evaluations--in one case, toward the target, in the other case, toward the associated object. More importantly, a negative change in attitude is interpreted as evidence of individuals engaging in active downward comparison processes. Consistent with earlier observations of individual differences in active DC, it may also be the case that individual differences exist in the use of direct and indirect active DC. At a general level, then, the study is designed partially to test the assumption that attitude change constitutes a form of
indirect active DC. In addition, it examines individual differences in the use of these two active DC processes.

**Preliminary support.** Some early evidence for attitude change as a form of indirect active DC was obtained in Reis, Gerrard, and Gibbons (1993). In that study, high and low self-esteem women who used effective or ineffective methods of contraception listened to information supposedly given by another member of a simulated discussion group on contraception. Some subjects heard information indicating that this woman used effective methods of contraception (i.e., the pill) whereas others heard information indicating that she was ineffective in her contraceptive practices (i.e., she used rhythm inconsistently). The manipulated target contraceptive comparison information, in juxtaposition to subjects' own contraceptive practices, created opportunities for upward, downward, or lateral comparisons. Prior to and following the comparison opportunity, subjects were asked to rate a variety of contraceptive methods, including the method used by the comparison target, in terms of effectiveness and likelihood of using the methods. Change in this type of rating was interpreted as evidence of indirect active DC as previously described.

Results from that study indicated that high self-esteem subjects in upward comparison conditions (i.e., ineffective contraceptors who listened to information about an effective
contraceptor) demonstrated significant negative reactions toward the comparison target's contraceptive method (i.e., their ratings of the target's contraceptive method became more negative). Those findings were not surprising given earlier research that indicated that high self-esteem persons tend to be more resistant to information that conflicts with their own attitudes or values (cf. Cohen, 1959; Linton & Graham, 1959). Reis et al. suggested that in this upward comparison situation the competence beliefs of these high SE participants were challenged by evidence that their performance was less effective than that of another person. Therefore, they reacted by derogating the comparison target's contraceptive method.

A marginally significant 4-way interaction (p < .07) was obtained in unreported analyses from that study on negative changes in reactions toward the ineffective comparison target's contraceptive method (i.e., the downward comparison conditions). Subjects in the low self-esteem, downward comparison condition were more likely to derogate the DC target's contraceptive method than were their high self-esteem counterparts (t(101) = 2.97, p < .004)—in other words, they tended to engage in indirect active DC. Although our ability to interpret this specific result more fully was diminished substantially by the lack of similar differences between this crucial cell and several other conditions within the design,
these results served as an impetus to further investigate the impact of social comparison processes on attitudes related to a comparison target. They provided some tentative support for the general hypothesis that attitude change can result from social comparison opportunities. Moreover, attitude change appeared to be moderated by factors such as the type of comparison and self-esteem. In addition to these findings, evidence of individual differences in the use of indirect social comparison has been reported recently by other authors.

**Individual differences.** In their description of an integrative model for self-enhancement strategies, Brown, Collins, and Schmidt (1988) suggested that both high and low self-esteem persons experience an identical "universal" motivation for developing a positive self-image. As a result, both engage in self-enhancing strategies but do so in different ways. According to these authors, persons with high self-esteem probably developed that positive self-image because it was "grounded in social reality"; they tend to be fairly skilled, competent individuals, and have experienced sufficient worldly success to support a positive self-view. Low self-esteem persons, on the other hand, tend to have experienced more negative feedback and frequently doubt their competence. Thus, those with low self-esteem are faced with a dilemma; they, like high self-esteem individuals, desire a
positive self-image but do not have the experiences to support such a self-belief.

The main thrust of Brown et al.'s argument is that high and low self-esteem individuals engage in different types of self-enhancing strategies in their effort to develop positive self-image. People with high self-esteem are more likely to engage in direct forms of self-enhancement strategies—those that will call attention to them as individuals, that accentuate their positive qualities and minimize any negative personal qualities. Examples would include inflating self-evaluations or ratings of personal performance. Low self-esteem persons, on the other hand, are more likely to attempt to direct the focus of attention away from the self. They are not likely to engage in self-aggrandizement because, in their case, they frequently don't have the skills to back up the self-promoting claims. Such a tactic simply could not withstand the forces of scrutiny. According to Brown et al., these individuals seek to self-enhance through indirect methods such as affiliating with skilled others or derogating the work of others. Neither technique focuses attention on the self per se but still has the ultimate impact of facilitating a favorable self image.

In studies designed to test these assumptions, these researchers provided participants with the opportunity to compare the work of a group to which they belonged (i.e., own-
group) with that of either a similar or dissimilar group (labeled in-group and out-group, respectively) or the work of a similar group with that of a dissimilar group. They expected that high self-esteem subjects would demonstrate the greatest differences in group performance ratings in the own-group vs. out-group conditions. These subjects would rate the work that they had personally helped to produce as superior to that of the out-group. Low self-esteem subjects, on the other hand, were expected to show evidence of favoritism only in the in-group vs. out-group condition—where the focus of the evaluation is not their work product, but rather that of a similar group. The authors argued that these favoritism biases represent direct and indirect self-enhancement, respectively. Results supported these hypotheses.

An additional finding from this research is particularly relevant for the current test of indirect active DC. Brown et al. posited that derogation of the outgroups' work would represent a form of indirect enhancement because the focus is not drawn to the performance of a group associated with personal performance but rather the work of an entirely unrelated group. Consistent with their earlier arguments on individual differences for indirect self-enhancement, Brown et al. hypothesized that low self-esteem persons would be most likely to engage in this type of indirect derogation and these expectations were supported empirically. The conclusion drawn
by these authors was that high self-esteem persons are more likely to engage in direct forms of self-enhancement (i.e., in-group favoritism) whereas low self-esteem persons are more likely to derogate the work of others (i.e., indirect self-enhancement.)

It is particularly important to note that, in Brown et al.'s study, low self-esteem individuals were derogating another group's work, not characteristics of the group members per se. Such a derogation is consistent with the operational definition of indirect active DC developed in the current study. Together, the theoretical conceptualizations and empirical findings of Brown et al. and Reis et al. provide support for the general concept of indirect self-enhancement and the specific hypotheses concerning individual differences; moreover, recognition of and acceptance for these concepts at the theoretical level has recently been advocated by Wills (1991) and other DC researchers (see Wood & Taylor, 1991).

Threat and Indirect Active DC

A final note considering the impact of threat in indirect self-enhancement strategies is called for at this point. In his original statement, Wills was emphatic that engaging in downward comparison was a characteristic of those persons facing physical or psychological threat (Wills, 1981; p. 246). Moreover, he has recently reaffirmed that assertion with evidence that people will shift from an upward to downward
comparison preference in the presence of threat (Amabile & Glazebrook, 1982; Levine & Green, 1984; Pyszczynski, Greenberg, & LaPrelle, 1985). Consistent evidence of the impact of threatening situations on the use of indirect self-enhancement has not been forthcoming, however.

For example, in a companion study to their indirect self-enhancement research, Brown et al. (1988) manipulated feedback about a personal skill such that half the participants believed the skill to be positive and the remaining participants believed it to be negative. The remaining procedural aspects of the study were identical to their initial study (i.e., the participants engaged in own-group vs. in-group or out-group work evaluations). Results indicated that individuals receiving the negative feedback replicated the self-enhancement biases noted in the first study whereas positive feedback produced far less favoritism bias. Although these data provide only weak support of the impact of threat (given that the results only replicate the effects obtained under no threat conditions), these authors argued that such differences suggest that in-group favoritism satisfies a self-enhancement motivation and occur in the presence of negative (threatening) information.

It should be noted that, in the only explicit test of attitude change as a form of indirect active DC (Reis et al., 1993), some qualified individual differences were observed in
indirect active DC in an experimental design that did not include a threat manipulation. It is certainly conceivable that low levels of self-esteem provide sufficient threat to motivate the indirect active DC activity, but the nature of attitude change under conditions of overt threat remains to be tested. It may be the case that "threat may merely heighten a prevailing tendency to make downward comparisons" (Wood & Taylor, 1991; p. 45.), thus leading to the expectation that attitude change, although probably experienced differently by high and low self-esteem persons, will be the greatest under conditions of threat. In keeping with the Brown et al. findings, however, it may be that attitude change under conditions of threat will simply replicate the findings observed in the no threat, downward comparison conditions of the Reis et al. study and that positive feedback reduces the tendency for attitude change entirely.

Summary

The current study is conducted, in part, to test assumptions concerning individual differences in the use of indirect and direct active DC, and the role of threat in indirect and direct self-enhancement strategies. The theoretical arguments and empirical evidence relevant to this portion of the current study support the contention that social comparers use several types of information about their comparison target. Few studies have assessed reactions to
direct and indirect forms of DC. The one study that has addressed attitude change toward an object associated with the DC target as a form of indirect self-enhancement did not include a measure of threat. Thus, a number of questions remain to be addressed. In the current study, both downward comparison information and threat will be manipulated and measures of direct and indirect active DC (derogation of the DC target or derogation of an object associated with the target) will be obtained. In keeping with the foregoing theoretical presentation, it is predicted that high self-esteem, threatened persons would be the most likely persons to derogate a DC target. Persons low in self-esteem were expected to engage in derogation of an object that has been associated with the DC target during the presentation of social comparison information. The effects of varying conditions of threatening feedback on attitude change will be assessed.

Social Comparison and Perceived Vulnerability

The second major focus of the current study involves the relationship between perceptions of vulnerability to negative life events and use of social comparison information, particularly downward comparison information. Recent empirical evidence suggests that these beliefs can be influenced by social information such as that found in social
Biases in Risk Perception

One consistent finding in the literature on risk perception is that nonvictims, those people who haven't experienced a particular negative life event, tend to systematically underestimate their personal chances of being involved in such an event (cf. Knopf, 1976; Weinstein, 1980). People also generate biased comparative risk estimates in that they underestimate their personal chances of being a victim of a negative event relative to those of other people (Harris & Guten, 1979; Weinstein, 1980). With respect to negative health events, this bias is most consistently demonstrated for events that people view as controllable. Several underlying motivational and cognitive causal mechanisms have been offered as explanations for such biased perceptions--one of which includes the process involved in the selection of a social comparison target (Perloff, 1983; Weinstein, 1980).

Causal Mechanisms for Perceptions of Vulnerability

Motivational mechanisms. Most motivational explanations of the comparative risk bias have in common the assumption that this phenomenon reflects some type of self-protective or self-serving function. For example, one such explanation argues that acknowledging that one is likely to encounter a negative event, such as an accident or serious illness, is
very anxiety provoking and the bias serves to reduce that anxiety (Kirscht, Haefner, Kegels, & Rosenstock, 1966). An additional motivational explanation suggests that the bias reflects a need for personal control. It is not uncommon for people to exaggerate their ability to control chance outcomes (Langer, 1975). Perloff (1983) argues that the need for control affects perceptions of vulnerability because people believe they are more capable than others of controlling random events, such as negative life events, and are therefore more likely to prevent such events from occurring.

A final motivational explanation for the bias combines this notion of personal control with Lerner's just world theory (Lerner & Miller, 1978). A belief in a just world underlies a common assumption that the victim of misfortune must have done something to deserve or had some amount of control over the events that lead to his/her mishap. We blame the victim for his/her problems. At the same time, acknowledging personal vulnerability to a similar negative event is an unsettling prospect. Lerner suggested that this tendency toward blame, in conjunction with the motivation to avoid fears of personal victimization, results in efforts to convince ourselves that we are different from the victim (and thus can avoid a similar mishap). According to Perloff (1983), our perception of vulnerability to negative events
stems partly from the belief that we are less deserving of misfortunes than were previous victims.

Cognitive mechanisms. As with the motivational explanations, several cognitive factors have been suggested as contributing to the bias. One very basic explanation is that we simply do not have information about what others do to protect themselves. Weinstein has suggested that even when information concerning the health-promoting activities of others is known, access to that information is restricted by a prevalent tendency for egocentric thought (Weinstein, 1982). Egocentrism, thinking almost exclusively about ourselves and not about others, results in reduced attention allocated to information concerning the activities of others. An additional type of selective recall has been observed in the tendency to emphasize personal "risk reducing" rather than "risk promoting" behaviors when making risk assessments (Gerrard, Gibbons, & Warner, 1991).

For the purposes of the current study, the most relevant cognitive explanation originated from Weinstein's (1980) suggestion that comparative risk assessments are biased because of the way in which people select a comparison other at the time of the risk assessment process. More specifically, Weinstein said that comparative risk differences occur because we compare ourselves to an inappropriate comparison standard or target—"an unrealistic stereotype of a
person who does nothing to improve his or her chances or even engages in counterproductive activity" (Weinstein, 1980; p. 819)—instead of comparing ourselves to a person doing the same amount and type of (non) risky behaviors as ourselves.

Errors in the selection of a comparison target are thought to result from an inappropriate dependence on the representativeness heuristic (Weinstein, 1980, 1982, 1983). When contemplating personal risks for a negative event, people supposedly call to mind a picture of the "typical" person who experiences such an event. Perceptions of vulnerability for the event are a function of our similarity to that "prototypical" victim—if we see ourselves as dissimilar to the prototypical victim then we rate our chances of experiencing the hazard as proportionately lower than his/hers. As similarity increases between self and another person (as is the case with a peer or relative), perceptions of risk differences decrease (see Perloff & Fetzer, 1986).

From a social comparison perspective, it is also important to keep in mind that when the prototypical hazard victim does nothing or engages in counterproductive efforts to prevent the negative event, he/she constitutes a downward comparison target, particularly since people have the tendency to think they're personally doing something to reduce personal risks. Thus, it appears that certain characteristics of the comparison target (in this case, similarity to self) affect
the magnitude of risk estimate differences. This further suggests that risk estimate biases are, to some extent, malleable depending on the type of information people consider at the time of the risk estimation.

**Eliminating Perceptions of Invulnerability**

Given the consistency with which findings of biases in comparative risk estimates appear in the perception of vulnerability literature, one particularly important empirical question has focused on the stability of the bias. Are people tenacious in their beliefs of comparative invulnerability or are there conditions under which it is possible to vary the strength of the bias (i.e., either intensify it or eliminate it completely)? In two studies, Weinstein found evidence that, although somewhat malleable, the bias appeared to be fairly persistent (Weinstein, 1980; Weinstein & Lachendorf, 1982).

In a third study, however, he was successful in totally eliminating the bias. Weinstein (1983) created an experimental treatment designed to test the degree to which people's lack of information about the self-protective behaviors of others contributed to perceptions of vulnerability. Subjects indicated their risk standings relative to those of average students at their university on the risk factors, such as number of hours spent exercising, number of eggs eaten weekly, etc., that are associated with 11
different health and safety risk events (e.g., heart attack, drinking problems, injury in an auto accident, etc.). Subjects in an "other-information" condition reported their personal risk on these 11 factors in addition to receiving information about the risk standing of typical students at their university on the 11 events. For all but one risk situation, Weinstein found no evidence of risk estimate bias for subjects in the self- and other-risk condition. In addition, he found that those persons who considered only their own risk reported the greatest self-other bias. These data support Weinstein's assumption that differences in self-other perceptions of invulnerability result, in part, from a tendency to underemphasize or ignore the nonrisky or preventive behaviors of others. Moreover, these results demonstrate that such information has a significant effect on individuals' comparative judgments.

For the current study, it is of particular interest that Weinstein's use of (social comparison) information about others was effective in reducing and even eliminating the bias. These results underscore the general assumption that comparative risk estimates, though consistently biased to favor the self, are clearly not stable, but rather are affected by, among other things, the presence and absence of certain information concerning the social comparison target.
Increasing Perception Bias

Up to this point, attempts to manipulate the bias have focused primarily on factors that result in its reduction or elimination and have been successful when information about the preventive behaviors of others has been emphasized. Weinstein's findings are of considerable practical importance because perceptions of vulnerability appear to be one factor that influences the adoption of preventive or restorative health behaviors (Janz & Becker, 1984; Weinstein, 1988). However, one unanswered empirical question concerns whether it is possible to manipulate social information so as to significantly increase, rather than reduce or eliminate, the bias. Bias change of this nature would also be of practical significance since it hints that there may be some naturally occurring circumstances (such as some temporary threat) during which people exaggerate the bias in order to feel even more invulnerable to the negative event than would normally be the case. One of the purposes of the current research was to explore the conditions under which self-other differences in risk estimation increase.

The basic logic of this portion of the current study is that if some kinds of social information are effective in eliminating the bias, then perhaps other types of information increase the bias. Reconsidering Weinstein's (1983) techniques for eliminating the bias, it is important to note
that he described the typical student's risk factor behaviors as "self-protective activities," rather loosely implying that these students were at least doing something behaviorally to protect their health. In short, he focused subjects' attention on another's risk-reducing behaviors--leaving open the question as to how his subjects might have reacted to information about another's risk-increasing behaviors.

This observation stands somewhat in contradiction to Weinstein's definition of the bias as the product of a downward comparison process in which the comparison target engages in "nothing to improve his or her chances or even engages in counterproductive activity" (Weinstein, 1980; p. 819). Argued in its weakest form, this definition implies that the bias can be initially created simply by finding out that another person is, at the very least, doing nothing to prevent a negative health occurrence. One of the purposes of the current study is to explore the stronger version of Weinstein's definition--that the perception of vulnerability is influenced by knowledge that another person is engaging in counterproductive activity. In short, if the perception of invulnerability can be partly based on simply knowing (or assuming) that a comparison other is doing nothing, then finding out that another person is counterproductive in his/her health behaviors could push the bias in an even more exaggerated (invulnerable) direction. Such an effect could
simply reflect a cognitive process involving the observation that one's health conduct is clearly superior to behavior of this counterproductive person. In the light of this information, our pre-existing beliefs about comparative risk may become temporarily bolstered. Bias increase could also serve a self-protective, motivational function, especially when a person feels threatened in some manner. Creating a greater risk estimate difference between self and comparison target might reduce feelings of threat.

To explore the conditions under which bias estimates might increase, one of the primary manipulations in the current study involves providing subjects with information that another person is engaging in a counterproductive health-related behavior. It is expected that this information will affect comparative health risk estimates so as to create more extreme differences in beliefs of self-other invulnerability. On a theoretical level, an observation of bias increase will provide researchers in the area with additional information concerning the dynamics of risk-bias development. The observation of bias increase would be important at a practical level as well. Some health researchers have indicated that perceptions of invulnerability are predictors of nonparticipation in preventive health regimen (cf. Janz & Becker, 1984). Thus, any tendency for people to engage in
attempts to actively increase self-other risk differences may compromise the effectiveness of health interventions.

**Bias Changes: Self-perception vs. Other-perception**

Although the malleability of risk estimates is pragmatically important to health researchers, another issue of growing theoretical importance is the degree to which bias changes involve changes in self-perception or other-perception. Throughout his research, one of Weinstein's common techniques of measuring comparative risk bias was to ask subjects to answer the question "Compared to other Rutgers students of my sex, my chances of developing [illness] are: much below average, below average, ......". In an early paper, Weinstein suggested that people presumably create mental lists of risk factors for both themselves and others and then use those lists when making comparative risk judgments (Weinstein, 1980). Since comparative risk estimates incorporate both types of information, changes in the bias could involve any of the following factors: changes in perceptions of risk unique to the self, changes in perceptions of risk unique to the comparison other, or some combination of both. The relatively few studies that have been done to address this question have produced inconsistent results.

For example, Weinstein has argued that "it was the feedback about peers that reduced unrealistic optimism" (Weinstein, 1983; p. 18) implying that changes in comparative
risk estimates reflect changes in perceptions of the comparison other. Weinstein's data are derived from a "self relative to other," or comparative perspective, however, rendering it impossible to directly observe any independent changes in perceptions of self or other. Weinstein's assumption, although not directly tested in his own work, has received support from other researchers who found that as behavioral differences between self and a comparison other increase, as might be the case in a DC situation, trait evaluations of that target were affected more than were similar evaluations for self (cf. Hansen & Donoghue, 1977; Sanders, 1982). This observation underscores the assumption that other-perception is the more malleable component of self-other estimates.

At the same time, the results of other research suggest the possibility that changes in either self-perceptions or other-perceptions may occur (and thus, affect comparative risk estimates,) but under different information conditions. For example, Weinstein and Lachendro (1982) had subjects make comparative risk estimates for 6 negative life events, 4 of which were health-related. Two experimental manipulations then followed. First, half the subjects elaborated on factors that increased or decreased their personal risk (i.e., personal review); the remaining subjects did not (i.e., no personal review). Then, subjects were asked either to (1)
read information about or (2) imagine the risk factors for other students at their college or (3) were not asked to consider information about others. Measures of comparative risk were assessed following these manipulations. Results revealed that subjects in the no personal review/other information conditions (i.e., social comparison information) tended to become less biased in their estimates. This trend is particularly interesting given the second finding that subjects in both the personal review/no other information and no personal review/no other information conditions tended to increase their comparative risk estimates.

The former finding suggests that instructions to focus explicitly on another's risk factors results in changes in other-perception. Thus, social comparison information may affect comparative risk estimates mainly through changes in other-perceptions. The latter finding supports the conclusion that the lack of social comparison information and a primary focus on self-risk results in bias change through change in self-perception. However, the results of Weinsten and Lachendro do not exclude the possibility that perceptions of self might be influenced by risk information about a comparison target. Research examining the impact of social comparison information on self- and other-perception in isolation would be necessary to address that question more specifically. So, although informative, these studies do not
provide a clarification of the dynamics of individual changes in self- or other-risk perceptions (and thus, the impact of such change on comparative risk estimates). Moreover, since the methods employed in these studies had subjects focus on a combination of risk factors for the comparison target, they also fail to enlighten us as to how self, other, and comparative risk estimates might be affected by information specifically concerned with another's risk-increasing behaviors.

The Role of Threat in Biased Risk Estimation

As reviewed earlier in the general section on downward comparison principles, both dispositional (i.e., low self-esteem, depression) and situational threats have traditionally been viewed as significant variables to be considered in DC processes. Although the social comparison perspective has been a primary cognitive explanation for vulnerability biases, threat variables have been conspicuously absent from risk bias studies. This exclusion fails to recognize the motivational forces underlying DC phenomena (Wills, 1980) and underemphasizes the argument that risk biases reflect motivational (as well as cognitive selection) processes (Perloff, 1983; Weinstein, 1982).

In traditional DC literature, situational threat inductions have been effective in decreasing subjective well-being and, ultimately, were shown to be related to subjective
well-being improvement even when such a threat is not specific to the comparison dimension (cf. Gibbons, 1986; Gibbons & Boney McCoy, 1991; Wills, 1981). In short, DC ameliorated the negative state induced by the situational and/or dispositional threats. If vulnerability biases reflect attempts to ameliorate anxiety produced by the recognition that negative health outcomes are possible, it might be expected that threat inductions in a risk bias study would result in attempts to reduce negative concerns by increasing ones' sense of invulnerability and thus widen the comparative risk estimate difference.

A separate line of literature concerning the relationship between self-esteem and social influence attempts is also relevant here. Cohen has argued that individual differences in reactions to threatening information can be observed such that persons with low self-esteem are more accepting of challenging or threatening information concerning the self, presumably because negative information is consistent with their self-image (Cohen, 1959). High self-esteem individuals, on the other hand, are more likely to react negatively toward such information because it doesn't fit with what they believe about themselves. Combining this observation with the hypothesis that comparative risk differences occur in response to a recognized threat from a negative event leads to the conclusion that high and low self-esteem persons may differ in
their patterns of risk estimation. Indeed, a study on risk estimates for lung cancer revealed that smokers high in self-esteem viewed themselves as less vulnerable to the disease than did their low self-esteem counterparts (Niles, 1964).

The presence of situational and dispositional threat may also affect changes in risk estimates in such a way that high self-esteem, threatened subjects would react with greater changes in risk estimates. These individuals may over-react to the threatening feedback and, thus, become even more adamant about their prior belief of invulnerability. Because low self-esteem or nonthreatened persons tend to be more accepting of threatening information, they may react to it with negligible change in risk estimates. Previous research on perceptions of vulnerability has not investigated the effects of either situational or dispositional threat on risk estimate change. Therefore, these dimensions will be included in the current study.

Summary

The selection of a downward comparison target has been implicated in the development of motivated biases concerning health threats. The long term implications resulting from such a process are of particular importance if, as some researchers believe, this bias interferes with preventive health practices (Weinstein, 1988). The current research tests the assumption that providing downward comparison
information can serve to strengthen the bias and does so differentially on the basis of situational and dispositional threat. In light of Cohen's observations of individual differences in reactions to threat, it is expected that high self-esteem, threatened persons would be most likely to demonstrate bias increases. The study was also designed to determine if changes in risk estimates reflect changes in self-risk perception or changes in other-risk perception.

**Downward Comparison and Subjective Well-being**

There can be no doubt that a great deal of empirical energy has been directed toward testing questions concerning the processes involved in downward comparison (i.e., target selection, motivations for DC, etc.). At the same time, considerable attention has been focused on the outcome of engaging in the process—how do we feel after comparing with a "worse off" other? In his theoretical statement, Wills predicted that improvement or restoration of subjective well-being should follow downward comparison experiences. Indeed, a growing number of studies have demonstrated that improvements in self-esteem and mood states follow DC opportunities. The third general focus of the present study concentrated on that evidence and the impact of DC on two measures of subjective well-being—mood and self-esteem.
Self-esteem and Downward Comparison

One of the first studies to demonstrate the impact of social comparison processes on self-esteem was Morse and Gergen's (1970) "Mr. Clean--Mr. Dirty" study. In their study, summer job applicants completed half the items of a modified Coopersmith (1959) Self-esteem Inventory as part of a job screening procedure and then casually encountered either a socially desirable (i.e., upward comparison target) or socially undesirable (i.e., downward comparison target) job competitor while they were waiting to complete their job interview. Following this comparison opportunity, the second half of the Coopersmith inventory was administered. Compared to subjects who engaged in an upward comparison situation, subjects who had engaged in downward comparison demonstrated more positive self-esteem.

Reis, Gerrard, and Gibbons (1993), described earlier, also demonstrated that social comparison situations (in particular, downward comparison opportunities) can positively influence self-esteem. The design and procedures for this study were discussed earlier in the section of this paper devoted to indirect active DC. In addition to the measures of attitudes toward the target's contraceptive method, subjects also responded to measures of self-esteem and mood. It was expected, based on Morse and Gergen's earlier findings, that the largest self-esteem improvements would be observed for low
self-esteem subjects in the downward comparison condition. The results supported this prediction, replicating Morse and Gergen's demonstration of the impact of DC on self-esteem. No significant effects were produced on the mood measures, however. That finding will be addressed shortly.

Mood and Downward Comparison

It has been hypothesized that, in addition to self-esteem, another dimension of subjective well-being— affective state—is influenced by DC opportunities. Ample support for the contention that downward comparison results in amelioration of negative mood states has been observed. The Hakmiller (1966) study, also described earlier, provided the first confirmation that the process resulted in affective benefits. In this study, subjects were assigned to high or low threat conditions through the provision of negative or positive trait information. Although the study was conducted primarily to test questions about comparison target preferences under differing conditions of threat, subjects were also asked to report the amount of "upset" they felt at two points in the procedure: after receiving their own trait information and after receiving the trait information of another group member who had more of this negative trait. Results indicated significant decreases in upset for high threat subjects after receiving the downward comparison
information whereas low threat subjects did not demonstrate significant changes in their affect.

More recently, Gibbons (1986) and Gibbons and Gerrard (1989) provided additional support for Hakmiller's mood findings. Gibbons (1986) found that threatened, depressed subjects demonstrated improved mood states after reading that a peer was having feelings of guilt over an accident whereas nondepressed subjects did not. Similarly, Gibbons and Gerrard (1989) found that mildly threatened, low self-esteem subjects demonstrated improved mood states after listening to information indicating that another student was having trouble adjusting to college, but they did not demonstrate mood improvement after hearing a statement about successful adjustment. Taken together, these three studies provide convincing evidence that downward comparison has a positive impact on subjective well-being as demonstrated by mood amelioration. It should be noted, however, that the mood studies to date have demonstrated mood differentials in downward vs. upward comparison situations or focused solely on the downward comparison situation. A straightforward test of the mood amelioration hypothesis would be demonstrated in a downward comparison/no comparison contrast. The design of the current experiment will allow for such a test.
Threat and Downward Comparison

The preceding self-esteem and mood findings support Wills' tenet that engaging in downward comparison results in improvements in subjective well-being. Upon closer examination, a noteworthy methodological inconsistency between the studies becomes apparent. Specifically, the self-esteem and mood studies appear to differ in their emphasis on threat as a mediating factor in subjective well-being enhancement. For example, although one could conceivably argue that subjects in the Morse and Gergen (1970) study felt some threat since they were trying to obtain a rather scarce summer job, threat per se was not manipulated, nor was it measured. Moreover, in the Reis et al. (1993) study, subjects were asked to describe their personal contraceptive histories and listened to the contraceptive history of another woman. Again, threat was not manipulated. Despite that absence, however, improvements in self-esteem did occur in the downward comparison situations.

By way of contrast, studies that have documented mood amelioration have all incorporated some form of threat induction in that subjects either wrote about personal problems or were told they didn't possess high levels of a desirable trait (cf. Gibbons, 1986; Gibbons & Gerrard, 1989; Gibbons & Boney McCoy, 1991). Mood change following downward comparison was also measured in the Reis et al. (1993) study.
but, interestingly, in this case no significant changes in mood were obtained. In the absence of a threat manipulation, social comparison failed to produce a significant impact on subjects' mood.

Admittedly, there were other minor methodological differences between the self-esteem and mood studies that might account for these discordant findings; none, however, appear as salient as the absence/presence of a threat induction. It is important to note that this observation has only recently become apparent as the number of studies incorporating mood and self-esteem as measures of subjective well-being have begun to appear (cf. Reis et al., 1993). Thus, the literature on downward comparison provides relatively few insights as to why changes in both dimensions are not equally dependent on the presence of threat. For that reason, it is necessary to turn to related theory for answers concerning the relative differences between self-esteem and mood measures under conditions of threat. Cohen and Leventhal's (1979) explication of problem-focused and emotion-focused coping mechanisms allows for the development of hypotheses concerning differences between mood and self-esteem responses in social comparison. This theory contributes to the current discussion of downward comparison principles because it explores how people are affected by and react to situational and psychological threat.
Coping Mechanism Literature

Reactions to threatening situations have been extensively studied by psychologists interested in topics other than downward comparison. In health psychology, for example, research conducted on coping mechanisms have focused primarily on how people respond to environmental and psychological stressors. According to Lazarus and Folkman (1984), when we regard consequences of an event as negative and potentially harmful, that event is classified as a stressor—something that threatens our mental and physical livelihood. These dynamics are similar to those hypothesized in the downward comparison literature in which psychological or physical threats have a direct, negative impact on feelings of subjective well-being. In both cases, actions are focused on alleviating the impact of that threat.

Although a variety of coping mechanisms have been proposed, two general categories outlined by Lazarus and his colleagues are of particular relevance for the current study (Lazarus, 1991). Problem-focused coping mechanisms include those techniques that concentrate on changing or eliminating the stressor or source of threat whereas emotion-focused coping mechanisms involve techniques designed to mitigate its emotional impact. Thus, one type of response seeks to change the situation whereas the other is directed toward changing how we feel about the situation. Either strategy might be
successful in reducing the stress involved in a situation and the selection of which form of coping to use depends on the characteristics of the situation. For example, some threats may require significant time, effort, and resources to change, and so the most effective coping mechanism, at least initially, may be to change how we feel about the situation. Of course, it would be expected that at some point effective coping would probably also include problem-focused coping to reduce the likelihood that the stressor will continue to tax our coping resources.

One important area of consideration in the selection of a coping technique involves the immediacy with which the chosen response would result in threat alleviation. Some cognitive psychologists have argued for the primacy of negative emotion alleviation under the assumption that once negative emotion is aroused "it won't let us go off and worry about other problems until something is done about this one" (Simon, 1983, p. 30). In other words, we might engage in emotion-focused coping before problem-focused coping because we need to get rid of our negative feelings before we can turn our attention to more practical issues involved in changing the situation.

This type of primacy effect may explain differences in mood and self-esteem reactions to threat inductions used in downward comparison studies. Participants who were subjected to threat manipulations in DC mood studies reported that they
were upset or dissatisfied with their results (cf., Hakmiller, 1966; Gibbons & Boney McCoy, 1991)—clearly they were experiencing a form of threat and the negative feelings that result from it. These subjects were also among those that demonstrated significant mood improvements following DC. Therefore, perhaps DC represented a form of emotion-focused coping. At the same time, it is important to note that in Reis et al. (1993) no threat inductions were manipulated, and there was no evidence of mood amelioration. These empirical findings provide support for the assumption that, in threatening social comparison situations, one of our primary concerns might be mood amelioration.

It is also important to point out that Reis et al. found significant improvements in self-esteem, and this was particularly the case for low self-esteem subjects. It might be the case that, in the absence of negative emotion-provoking threats, our primary focus is not mood. Rather, under those circumstances, we might be more able to pay attention to other (esteem relevant) information available in the downward comparison opportunity. Clearly, this assumption could only be answered through a DC study that incorporates both mood and self-esteem measures assessed under conditions of high or low threat. To date, such a study has not been conducted and therefore, this empirical test represents the third focus in the present study.
Summary

In his original personality and situational corollaries, Wills suggested that low self-esteem, threatened persons would be most likely to demonstrate the benefits of increased subjective well-being following downward comparisons. Research involving mood and self-esteem as operationalizations of subjective well-being has supported that contention but with a qualification. Self-esteem effects have been noted under conditions of minimal or no threat, whereas mood effects have been noted only when specific threat inductions have been manipulated. Moreover, the pattern of effects supports an assumption that the manifestation of the self-enhancement motivation under conditions of immediate threat results in efforts toward mood amelioration rather than self-esteem enhancement.

The empirical question that emerged from this observation was whether self-esteem and mood could be affected differentially under varying conditions of threat. The current study involved a downward comparison situation under varying levels of threat and, based on previous research, it is expected that mood improvements would be maximal for low self-esteem, downward comparison subjects under conditions of high threat. In contrast, self-esteem improvements are expected to occur for low self-esteem, downward comparison subjects at low levels of threat.
The Current Study

Purpose

Over the past decade a number of basic and applied questions have been tested concerning the motivation, process, and outcomes of engaging in downward comparison. The present research will continue that tradition. It will address theoretical issues concerning the relationship between threat and subjective well-being, and the nature of indirect downward comparison. The study will also have an applied focus involving the manipulation of vulnerability perceptions. The challenge and overall purpose of the current study is to coherently incorporate and investigate each of these issues in a unified downward comparison framework.

Comparison dimension. One key to the integrated study of these issues involves the selection of a comparison dimension that is highly meaningful to college subjects in a research setting, but yet is also one that is flexible enough to meet the unique demands of each of the intended empirical questions. As was the case with Reis et al. (1993), the comparison dimension for the present study is contraceptive use. This dimension has been selected for the following reasons.

Clearly, contraceptive use is a particularly salient issue to college-aged women, especially those who are sexually active and wish to avoid an unplanned pregnancy. Thus,
potential participants might find a research project on contraception to be high in "mundane realism" (Carlsmith, Ellsworth & Aronson, 1976). Second, by the time most people are in college, they are familiar with most methods of contraception and have formed opinions about them (Forrest & Henshaw, 1983). At the same time, it is likely that they have attitudes about people who use different contraceptive methods. Moreover, there is evidence that individual differences in self-esteem moderate attitude toward contraception (Herold, Goodwin, & Lero, 1979). These established attitudinal tendencies provide the opportunity to obtain measures of change in both indirect and direct active DC, as conceptualized for this study. Thirdly, the use of methods with high failure rates or inconsistent use of contraception carries with it a very real and, for a number of individuals, negative consequence—unplanned pregnancy. Thus, subjects in the current study could be about their perception of vulnerability to unplanned pregnancy as it related to their contraceptive use. Moreover, it was possible to ask similar risk perception questions for a sexually active comparison target who used an extremely ineffective method of contraception—nothing.

Finally, the contraceptive dimension works well in the current study because this is a dimension on which comparison target effectiveness can be manipulated in a straightforward
manner. Thus, a downward comparison opportunity, in the form of information about a peer who did not use any contraception, was easily created and provided to study participants. The preceding characteristics of the comparison dimension provided a great deal of procedural maneuverability with which to test the fairly disparate empirical issues of interest in the context of a single study.

Overview

High and low self-esteem, sexually-active female subjects who reported using an effective method of contraception were asked to provide tape-recorded information about their social and contraceptive use backgrounds as part of a simulated laboratory discussion group on the topic of contraception (cf. Gibbons & Gerrard, 1989; Reis, Gerrard & Gibbons, 1993). Subjects then listened to a similar statement they thought was recorded by another discussion group participant. Those subjects assigned to the downward comparison conditions listened to a standard pre-recorded social and contraceptive history of a woman whose contraceptive information indicated that she was using an "ineffective" contraceptive method (i.e., nothing). The remaining subjects listened only to the social history portion of the tape (i.e., they did not listen to the contraceptive history portion of the target's tape recorded comparison statement). Prior to the exchange of social comparison information, half the subjects received
threatening feedback concerning levels of a (bogus) personality trait, whereas the other half received low threat feedback. Pre- and post-social comparison measures of direct and indirect active DC (derogation of target and derogation of target's contraceptive method), perception of invulnerability to unplanned pregnancy, and self-esteem and mood were to be assessed. Follow-up measures of perceptions of vulnerability, target derogation, and target contraceptive method derogation were obtained approximately 6 weeks after the experiment and were used in exploratory analyses of attitude/perception persistence.

Design

The design for the study was a 2 (High vs. Low Self-esteem) × 2 (High vs. Low Threat) × 2 (Downward vs. No Downward Comparison Information) × time mixed factorial design. Time was the within subjects factor and tested the data collected at either 2 or 3 intervals depending on the dependent measure. The primary repeated measures analyses were conducted on the following pre- and post-DC manipulation dependent measures: mood, self-esteem, perceptions of vulnerability to unplanned pregnancy, direct active DC (i.e., the specific derogation of the comparison target) and indirect active DC (i.e., the derogation of the comparison target's stated contraceptive method).
The follow-up data were collected to provide the opportunity for exploratory analyses on the persistence of change in perceptions of vulnerability, and target and contraceptive method derogation. These measures were collected at 3 points over the course of the entire experiment (either mass testing, post-DC information, and follow-up session for the perception and method derogation variables or pre-DCI, post-DCI and follow-up session for the target derogation variables).

Hypotheses

Indirect vs. direct active DC. The first general set of hypotheses (see Table 1 for a summary of all hypotheses) was developed to test assumptions concerning indirect strategies of self-enhancement, specifically attitude change as a form of indirect active DC. Moreover, individual personality characteristics and varying levels of threat were expected to have an impact on subjects' reactions to indirect and direct active DC opportunities. Direct active DC was operationally defined as negative changes in evaluations of a downward comparison target, in this case, a woman who used no form of contraception. Indirect active DC involved negative changes in attitude toward the target's contraceptive method.

Persons high in self-esteem have been found to engage in self-esteem restorative techniques that involve both self-enhancement (in-group favoritism) and out-group derogation.
Table 1

Hypotheses

1. **Direct Active DC**
   - under conditions of high threat, high self-esteem, downward comparison subjects will engage in the greatest amount of comparison target derogation

2. **Indirect Active DC**
   - low self-esteem, downward comparison subjects are expected to demonstrate the greatest amount of target contraceptive method derogation

3. **Perceptions of vulnerability**
   a. high self-esteem, threatened, downward comparison subjects are expected to demonstrate the greatest increases in self-other risk differences for an unplanned pregnancy
   b. low self-esteem subjects, regardless of threat level, were expected to demonstrate the least change in their comparative risk bias
   c. subjects who reviewed the comparison target's risk (contraceptive) information in addition to reviewing their own behavior are expected to evidence the greatest changes in other-risk estimates.
   d. subjects who review only their own contraceptive risk behavior should demonstrate the greatest amount of self-perception change

4. **Self-esteem**
   - under conditions of low threat, low self-esteem, downward comparison subjects were expected to demonstrate improvements in self-esteem

5. **Mood**
   - under conditions of high threat, low self-esteem, downward comparison subjects were expected to demonstrate the greatest amount of mood improvement.
Specifically, Crocker et al. (1987) found that high self-esteem persons rated out-group members more negatively than their own group members (i.e., they engaged in derogation). Similar results were noted by Gibbons and Boney McCoy (1991). In keeping with these results, it is predicted that high self-esteem, downward comparison subjects who have received threatening feedback, will engage in the greatest amount of comparison target derogation—direct active downward comparison.

Brown et al. (1988) reported that low self-esteem individuals were more likely to derogate the work of out-group members and, in their study, this was especially true for threatened, low self-esteem individuals. However, Reis et al. (1993) found the low self-esteem persons engaged in attitude change (indirect derogation) without the presence of a threat manipulation. Therefore, the predictions for indirect active DC were that low self-esteem subjects who receive downward comparison information were expected to demonstrate the greatest amount of target contraceptive method derogation. A priori predictions concerning the impact of threat on target method derogation are not possible given inconsistent findings in previous literature.

Perceptions of vulnerability. The second major purpose of the current study was to explore the impact of a forced downward comparison opportunity on subject's perceptions of
vulnerability to a negative health event—in this case, unplanned pregnancy. More specifically, it was expected that providing subjects with information about the risky contraceptive practices of a comparison target would exaggerate self-other differences regarding the risks for unplanned pregnancy. Such information was expected to have particular impact on high threat, high self-esteem individuals since these persons are most likely to be affected by efficacy messages that affirm their beliefs about themselves (cf. Cohen, 1959). At the same time, the threat feedback may motivate needs for self-enhancement and thereby result in a temporary increase in their already positive beliefs that they are unlikely to experience an unplanned pregnancy. As a result, high self-esteem, threatened subjects were expected to demonstrate the greatest increases in self-other risk estimates for an unplanned pregnancy.

Low self-esteem persons, on the other hand, tend to be less responsive to evidence that they are more efficacious than another person. After all, such information doesn't tend to support their overall self-view (Cohen, 1959). Therefore, even in light of information that their contraceptive behavior is more effective than that of a downward comparison target, these subjects were expected to demonstrate less change in their comparative risk bias.
An additional test was designed to assess whether changes in comparative risk estimates involve changes in self- or other-perceptions. The procedures of the study are such that all subjects engage in an initial review of their own contraceptive practices. If the review of self and others' conduct disrupts peoples' usual egocentric tendency and thus affects perceptions of others' risk, as found by Weinstein (1980) and Sanders (1982), subjects who receive the downward comparison information following a review of their own behavior were expected to demonstrate the greatest changes in other-risk estimates. Review of only self-conduct capitalizes on individuals' egocentrism and is thought to be related to changes in self-risk estimates. In keeping with Weinstein and Lachendorf's (1982) results, subjects in the current study who review their own contraceptive behavior, but not that of the comparison target, were expected to demonstrate the greatest amount of self-perception change.

Self-esteem and mood. The final area of inquiry involved assessing the effect of DC, under varying conditions of threat, on subjects' self-esteem and mood. Consistent with the separate lines of research on the impact of DC on mood or self-esteem, it was expected that the presence of low or high threat information will affect subjects' mood states and global self-esteem differently. Specifically, under conditions of high threat, low self-esteem, downward
comparison subjects are expected to demonstrate the greatest amount of mood improvement. Under conditions of low threat, low self-esteem, downward comparison subjects are expected to demonstrate improvements in self-esteem.
METHOD

Subjects

Ethics Review

The Iowa State University Committee on the Use of Human Subjects in Research reviewed this project and concluded that the rights and welfare of the human subjects were adequately protected, that risks were outweighed by the potential benefits and expected value of the knowledge sought, that confidentiality of data was assured, and that informed consent was obtained by appropriate procedures.

Subject Selection

Subjects were selected from a pool of female undergraduates who participated in mass-testing sessions conducted during the 1990-91 school year. Approximately 23% of the women participating in mass testing refused to complete the screening questionnaires relevant to this study, reducing the sample pool from 850 to approximately 650 women. Additional screening on the basis of self-esteem, sexual activity, and contraceptive use (to be described in greater detail in the following paragraphs) further reduced the sample of potential participants to approximately 180. Of these women, 102 participated in the experiment portion of the current study.

The selection of potential subjects from the mass-testing pool was conducted in two phases. First, subjects were
selected on the basis of their global self-esteem scores as measured by the modified version of the Janis-Field (JF) "Feelings of Inadequacy Scale" (Eagly, 1967; Janis & Field, 1959). The classification of high and low self-esteem mass-testing subjects was made by using cutoff scores that were 2 points on either side of the distribution median (JF score of 50). Thus, the potential pool of high self-esteem subjects included women with JF scores less than 49 (n = 353; JF M = 41) whereas the potential pool of low self-esteem subjects included those women with JF scores greater than 51 (n = 407; JF M = 61; note: some participants who refused to participate are included in the self-esteem categorization ns). Women with scores between 49 and 51 were not eligible for selection in the current study. For the current study, fifty-four women (M JF = 41) were selected from the high self-esteem, mass-testing pool and forty-three women (M JF = 61) were drawn from the low self-esteem end of the distribution.

Potential subjects who met the self-esteem restrictions were screened a second time on the basis of their prior sexual activity and contraceptive use. Participants were selected for study participation if they (a) had engaged in sexual intercourse at least once per month over the three months prior to mass testing, and (b) had consistently used a contraceptive method with a "typical use" effectiveness rating greater than 90% (Hatcher et al., 1984). Thirty-four percent
of the mass-testing sample fit these criteria. For the sample of women participating in the study, birth control pills were the most frequently reported current contraceptive method (68%), followed by condom (25%), a combination of the pill and condom (6%), and a combination of the condom and contraceptive sponge (1%). Subjects reported an average number of 3.1 sexual partners over the course of their sexual history and had intercourse an average of 7.2 times per month prior to mass testing. All subjects were approximately 19 years old and were single (never married).

**Subject Attrition**

During experimental debriefing, five subjects reported suspicions about the study procedures, specifically stating that they felt either the threat manipulation or the social comparison information was contrived. These subjects were not included in the analyses, which produced a final experiment \( N \) of 97 subjects. Of those subjects, 82 agreed to return for the follow-up sessions. The primary reason for attrition at the time of follow-up was inability to contact study participants (nine subjects could not be contacted). Only two participants explicitly refused to participate in the follow-up, although four others declined follow-up participation because they "had enough extra credit" or reported having no time available during the week before final examinations to participate in an experiment.
Measures

The following description of the experimental dependent measures corresponds with four major data collection points (see Table 2 for an overview of questionnaire presentation) and has been adopted to coordinate the description of measures in the method section with the analyses reported in the results section. Measures administered at mass testing are referred to as Time 1 measures. Both Time 2 and Time 3 measures were administered during the experiment proper. Those measures given prior to the downward comparison opportunity constituted the Time 2 measures, whereas the measures given following the comparison information are labeled as Time 3 measures. All measures administered during the follow-up session are listed as Time 4 measures. It is important to emphasize that not all of the primary dependent measures were collected at all four time intervals. For example, the first measurement of subjects' moods occurred at Time 2 (the pre-comparison interval), not Time 1 (mass testing). Other variables, such as perceptions of vulnerability and attitudes toward contraceptives, were first collected at mass testing—largely to reduce the number of questionnaires to be administered at the time of the experiment but also because these attitudinal dimensions presumably aren't as susceptible to temporary situational
Table 2

Questionnaire Presentation

<table>
<thead>
<tr>
<th>Time 1 (Mass testing)</th>
</tr>
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<tbody>
<tr>
<td>- Modified Janis-Field (20-item scale)</td>
</tr>
<tr>
<td>- Contraceptive Use/Opinion Survey</td>
</tr>
<tr>
<td>a. Sexual/Contraceptive Use History</td>
</tr>
<tr>
<td>b. Perceptions of Unplanned Pregnancy</td>
</tr>
<tr>
<td>c. General Birth Control Opinion Survey</td>
</tr>
<tr>
<td>d. Specific Birth Control Opinion Survey</td>
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</tbody>
</table>

<table>
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<tr>
<th>Time 2 (Pre-comparison measures)</th>
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</thead>
<tbody>
<tr>
<td>- Wilder Social Awareness Inventory (threat manipulation)</td>
</tr>
<tr>
<td>- Recorded Statement Evaluation (includes self adjective rating)</td>
</tr>
<tr>
<td>- Wilder Social Awareness Evaluation</td>
</tr>
<tr>
<td>- Janis-Field (10 item scale - Version A or B)</td>
</tr>
<tr>
<td>- Mood I</td>
</tr>
<tr>
<td>- Group Member Evaluation I (target adjective rating)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time 3 (Post-comparison measures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Group Member Contraceptive Evaluation (target contraceptive effectiveness rating - done in DCI conditions only)</td>
</tr>
<tr>
<td>- Janis-Field (10 item scale - Version B or A)</td>
</tr>
<tr>
<td>- Mood II</td>
</tr>
<tr>
<td>- Discussion Group Questionnaire</td>
</tr>
<tr>
<td>a. Group Member Evaluation II (target adjective rating)</td>
</tr>
<tr>
<td>b. Specific Birth Control Opinion Survey</td>
</tr>
<tr>
<td>c. Perceptions of Unplanned Pregnancy</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Time 4 (Follow up)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Modified Janis-Field (20 item scale)</td>
</tr>
<tr>
<td>- Self adjective rating</td>
</tr>
<tr>
<td>- Modified Contraceptive Use/Opinion Survey</td>
</tr>
<tr>
<td>a. Sexual/Contraceptive Use History</td>
</tr>
<tr>
<td>b. Perceptions of Unplanned Pregnancy</td>
</tr>
<tr>
<td>c. Specific Birth Control Opinion Survey</td>
</tr>
<tr>
<td>- Group Member Evaluation I (target adjective rating)</td>
</tr>
</tbody>
</table>
factors as is mood. Thus the temporal (i.e., time) labels are intended as merely a descriptive device designed to distinguish time intervals within the study.

Mass testing (Time 1)

Two questionnaires relevant to this study were administered during departmental mass-testing sessions. Subjects' mass-testing responses to the modified version of the Janis-Field "Feelings of Inadequacy" (JF) self-esteem measure (Eagly, 1967; Janis & Field, 1959) were used as the basis for assignment to high and low self-esteem conditions. To isolate the sample of sexually-active, effective contraceptors, a modified version of the Contraceptive Use and Opinion Survey (Gerrard, 1989; Gerrard & Warner, 1990; Reis, Gerrard, & Gibbons, 1993) was administered. This questionnaire contained four subscales. The first assessed subjects' sexual activity and contraceptive practices whereas the three remaining subscales measured subjects' opinions concerning likelihood estimates of unplanned pregnancy for themselves and others as well as their general and specific beliefs about the use of contraceptive methods.

Janis-Field "Feelings of Inadequacy" scale. The modified Janis-Field (JF) contains 20 Likert type questions (see Appendix A). Ten questions reflect negative self-perceptions and 10 reflect positive self-perceptions (e.g., "How often do you have the feeling that there is nothing you can do well?")
"How often do you feel that you handled yourself well...". Individual item scores range from 1 to 5 and indicate the relative frequency or intensity of the self-perception (e.g., very often or very pleased to practically never or very displeased). Negative self-perception items were reverse scored. Possible total score ranged from 20 to 100. The scale has been found to be both a reliable and valid measure of global self-esteem. For instance, Eagly (1967) reported split-half reliabilities of .72 and .88. Campbell, Chew, and Scratchley (1991) found high temporal stability for the measure (e.g., 3-month test-retest reliability = .92). Convergent validity has also been demonstrated between the Eagly version and the Rosenberg Self-esteem scale as indicated by a correlation of .82 between the two scales (O'Brien, 1985). In the current study, the Time 1 reliability for this measure was also high (alpha = .90).

Contraceptive use and opinion questionnaire. The modified Contraceptive Use and Opinion Survey consists of four subscales (see Appendix B). The Contraceptive Use subscale assesses subjects' sexual activity and contraceptive practices (e.g., number of sexual partners, frequency of intercourse, type of contraception used, consistency of contraceptive use, etc.). As mentioned earlier, subjects' responses to questions concerning type of contraceptive used and consistency of method use were included to identify effective contraceptors.
The Perceptions of Unplanned Pregnancy subscale includes 8 questions that measure subjects' perceptions of their personal vulnerability to unplanned pregnancy while using their current contraceptive method, the vulnerability to unplanned pregnancy for other college women using a variety of contraceptive methods (i.e., current, birth control pills, nothing), subjects' personal vulnerability compared to that of other women using different methods of contraception, and the likelihood of unplanned pregnancy among the population of average college women (e.g., "What do you think the likelihood is that you will have an unplanned pregnancy within the next year ...?"). Subjects' perceptions of personal vulnerability using their current method as well as their vulnerability estimates for an average woman who uses no contraception were used as Time 1 measures in subsequent repeated measures analyses of self-other risk estimates.

The General Birth Control Opinion subscale is a 9-item Likert type scale that was designed for this study to assess subjects' religious/moral beliefs regarding contraception (e.g., "Using contraception is morally or religiously wrong."). Responses range from strongly disagree (1) to strongly agree (7). These items were included because all major religions have espoused doctrine concerning the morality of sexual conduct and, in more recent times, the morality of contraceptive use (Masters, Johnson, & Kolodny, 1985;
Parrinder, 1980). While the clergy debate over which contraceptive methods may be used by their parishioners, many researchers note a discrepancy between religious beliefs and contraceptive practice. Specifically, religious beliefs have not been found to be significant predictors of actual contraceptive use (Schirm, Trussell, Menken, & Grady, 1982; Westoff & Jones, 1977). However, it is still entirely plausible that an individual's religious or moral beliefs concerning contraceptive use could influence her judgments or beliefs surrounding a peer's contraceptive practice. Since indirect active DC in this experiment was expected to involve changes in subject's attitudes toward the target's contraceptive method, subjects' religious/moral beliefs about contraception were included as potential covariates (see Endnote 1).

The Specific Birth Control Opinion subscale consists of 8 Likert type questions that measured subjects' opinions concerning the likelihood that both they and the "average" college woman would use four different methods of contraception (e.g., "How likely would you be to use the pill if you were involved in a sexual relationship?", "How likely would the average college woman be to use the pill...."). The scale ranged from definitely would use (1) to definitely would not use (7). Subjects also indicated their approval of each of the four methods by placing a slash mark along a 12.7 cm
Subjects' responses to the likelihood and approval questions for "no contraceptive method," the method used by the comparison target, were intended to be used as the Time 1 measure of indirect active DC.

**Experiment (Times 2 and 3)**

The primary dependent measures in the experiment included:

1. Pre-comparison (Time 2) and post-comparison manipulation (Time 3) measures of self-esteem, mood, and direct derogation of the comparison target.
2. Post-comparison (Time 3) measures of indirect active DC of the comparison target (i.e., attitudes toward the target's contraceptive method) and perceptions of vulnerability to unplanned pregnancy.

**Self-esteem measures.** Two shortened versions of the modified Janis-Field (JF-Version A and JF-Version B) were created for use as the Time 2 and Time 3 measures of self-esteem. JF-Version A consisted of 10 randomly chosen items (5 positive and 5 negative items) from the Eagly modification whereas JF-Version B consisted of the 10 remaining items (see Appendix C). The administration of JF-Version A and JF-Version B were counterbalanced such that half the subjects received JF-Version A at Time 2 followed by JF-Version B at Time 3. The remaining half received the opposite presentation (i.e., JF-Version B followed by JF-Version A). The creation
of these two 10-item forms from the original 20-item scale was done to assess changes in self-esteem over time with less likelihood that subjects might suspect the empirical interest in self-esteem change. In a test of the psychometric properties of the split versions, the Time 1 20-item JF responses for a sample of 655 subjects drawn from the mass-testing pool were separated into the items selected for the Times 2 and 3 versions (JF-version A and JF-version B). The correlation obtained in this procedure (r = .79) was well within the range of split-half reliabilities reported by Eagly (1967). Moreover, a correlation of .79 was obtained in a similar analysis of Time 1 JF scores for subsequent experiment participants (see Endnote 2) and reliabilities for JF-Version A and JF-Version B were .86 and .78, respectively (see Endnote 3). Thus, the subscale splitting procedure was implemented in the current experiment.

Mood indices. Two mood indices, each consisting of four positive and four negative mood adjectives, were created to measure mood change from Time 2 to Time 3 (cf. Gibbons, 1986; Gibbons & Gerrard, 1989). The Time 2 mood adjectives were delivered following the threat manipulation, but immediately prior to subjects receiving any information concerning the comparison target (see Appendix C). The Time 3 mood adjectives, polar opposites of the Time 2 mood adjectives, were administered immediately following the downward
comparison information (DCI conditions; see Appendix D) or following a brief delay (No DCI conditions; see Appendix E). Subjects indicated the degree to which each adjective reflected their current emotional state by placing a slash mark along a line anchored with not at all and very. The use of the polar opposites and the measured line (as opposed to a Likert type scale) was implemented to reduce the possibility that subjects would purposefully duplicate their Time 2 mood responses. Computed indices for both Time 2 and Time 3 mood were calculated by adding the scores for the four positive adjectives and for the four negative adjective to create positive and negative mood subscales. An overall mood index was calculated by subtracting the negative item subtotal from the positive item subtotal. Possible scores on the mood indices at Time 2 and Time 3 range from -50.8, indicating a negative mood, to +50.8, a positive mood. Reliabilities for the indices were quite strong with alphas measuring .90 at both T2 and T3 (see Endnote 4).

Direct active DC measures. Two sets of measures relevant to the hypotheses concerning direct active DC (target derogation) were administered during the experiment—one measure assessed subjects' opinions of the comparison target whereas the other assessed opinions of self. The Time 2 rating of the comparison target was provided by an 8-adjective index that consisted of four positive adjectives (e.g.,
sincere, loyal) and four negative adjectives (e.g., unpleasant, reckless; see Endnote 5), whereas the Time 3 measure consisted of the polar opposite forms of these adjectives. Subjects were asked to rate the extent to which the comparison target possessed each disposition by placing a slash mark along a 10.2 cm line anchored by not at all and very. Item scores were subtotaled into separate positive and negative disposition subscales and an overall target rating index score was calculated by subtracting the negative subscale from the positive subscale. These indices were found to be internally consistent (alphas: T2 = .75 and T3 = .77). Subjects completed the Time 2 index after hearing the target's social history tape (see Appendix E) and the Time 3 index either after hearing the target's contraceptive history statement (DCI conditions) or after a brief waiting period (No DCI conditions). Scores for the Time 2 and Time 3 indices were analyzed for change in perceptions of the target as evidence of active downward comparison processes.

An index, similar to the one measuring subjects' ratings of the comparison target, was designed to measure their ratings of self at Time 2. The index was also found to be reliable (alpha = .71). Items on this scale were identical to those on the target rating index administered at Time 3 and was used to determine differences in perceptions of self versus comparison target prior to downward comparison.
Indirect active DC measure. Subjects' Time 3 responses to the Specific Birth Control Opinion sub-scale were obtained as part of the discussion group questionnaire at the end of the experiment (see Appendix F). This subscale, like the Time 1 version, contained approval and likelihood of use ratings for the birth control pill, the condom, withdrawal, and no contraception (unprotected sexual intercourse). Subjects' approval and likelihood of use ratings for "no contraception", the comparison target's method of contraception, were measured for use as a computed index of indirect active DC at Time 3.

Perceived vulnerability. The post-comparison (Time 3; see Appendix F) measure of perceived vulnerability to unplanned pregnancy was also administered as part of the discussion group questionnaire and contained queries of vulnerability specific to self, other college women using no contraception, and self compared to other college women using no contraception. These responses, in addition to the Time 1 perceptions of vulnerability estimates, were used in repeated measures analyses pertaining to bias increase, and alterations in self- vs. other-perceptions of risk.

Manipulation checks. Aside from these primary dependent measures, several questions were administered for the purpose of checking the effectiveness of the threat and DC information manipulation. Among the most important manipulation checks were subjects' responses to two questions measuring their
perceptions of the target's contraceptive effectiveness. In one case, subjects responded to the question "In your opinion, how effective is this woman's contraceptive behavior in preventing pregnancy?" by placing a slash mark along a 12.7 cm line. Low scores indicated that subjects viewed the target's contraceptive effectiveness as extremely ineffective, whereas high scores indicated ratings of her contraceptive practice as extremely effective. A manipulation check was also conducted on subjects' perceptions of the comparative contraceptive effectiveness between themselves and the target. This question was measured so that low scores on the 0 to 12.7 cm scale indicated that the target was the more effective contraceptive in this comparison and high scores indicated that the subject was more effective. Mid-range scores indicated similarity in contraceptive effectiveness.

On both theoretical and empirical grounds, it was important to measure the extent of subjects' perceived similarity to the comparison target prior to receiving DC information (cf. Festinger, 1954; Gibbons & Boney McCoy, 1991; Goethals & Darley, 1977). A similarity manipulation check was conducted on the question "How similar is this woman to you?", which was measured after subjects had heard the target's social history statements. Strong perceptions of similarity to the target were coded as high scores on the 12.7 cm scale whereas low scores on the scale indicated low similarity.
The primary manipulation check for threat involved measuring subjects' satisfaction with their scores on the Wilder Social Awareness Inventory. Like the previous manipulation checks, this question required that subjects make a slash mark on a 12.7 cm line but in this case the anchors were not at all satisfied (0) and extremely satisfied (12.7). Ratings of the importance of the social awareness trait were measured, again using a 12.7 cm line with high scores indicating greater ratings of importance and were used to provide additional information concerning the impact of the threat feedback. Although the primary threat manipulation check was the satisfaction question, it should be noted that the Time 2 mood measures would also indicate the effectiveness of the threat manipulation in that threatened subjects should respond with lower mood scores than those reported by non-threatened subjects.

All remaining questions administered during the experiment (e.g., subjects' perceptions of the ease of making the tape recorded presentation, their opinions about discussion groups) were intended solely to enhance the cover story provided at the introduction of the study and subjects' responses to them were irrelevant to the central empirical questions.
Follow up (Time 4)

Approximately six weeks after participation in the experiment, subjects who had consented to follow-up participation (at the time of experimental debriefing) were contacted to participate in a follow-up session. During the follow-up session they completed the following series of questionnaires: the modified version of the Janis-Field (full 20 item scale) and the Contraceptive Use and Opinion Survey (a brief form of the mass-testing version; see Appendices Q and R). The latter questionnaire contained questions about subjects' contraceptive practices since participation in the experiment as well as a Time 4 measure of their evaluations of themselves and the downward comparison target (i.e., direct active DC), their responses to the Specific Birth Control Opinion Survey (i.e., indirect active DC), and their perceptions of vulnerability for unplanned pregnancy for self, other college women not using contraception, and self compared to other college women not using contraception.

The self and comparison target indices of direct active DC were identical to those used at Time 2 and retained high levels of reliability (alphas: self index T4 = .74; comparison target index T4 = .80). Questions assessing indirect active DC and perceptions of vulnerability were identical to those used at all previous data collection points.
Procedure

Mass testing

Mass-testing sessions were conducted during the Fall and Spring semesters of the 1990-1991 academic year. The mass-testing subjects (approx. 640 male and 850 female) were undergraduate students taking introductory-level psychology courses who sought extra credit points for their mass-testing participation. Female subjects were provided with a brief verbal description of the mass testing (Time 1) questions for this experiment. Consent procedures also included verbal and written notification that they had the option to refuse to answer any part of or all of the screening questionnaire (see Appendix G).

Experiment

Approximately 1 to 4 weeks following mass-testing sessions, mass-testing participants who met the self-estimate and effective contraceptor classifications were contacted via telephone and asked if they were interested in earning extra credit points for participating in a psychology experiment lasting approximately 70 minutes. The study was described as a "simulated discussion group." Any questions concerning the study, which were rare, were addressed. Appointments for experiment participation were arranged after subjects had agreed to engage in the research.
**Introductory remarks.** Upon subjects' arrival at the laboratory, a female experimenter briefly described the study as one concerning discussion group processes (see Appendix H for experimenter's script). The basis for subject selection for participation in the study was explained (i.e., they had all participated in mass testing and were selected due to their mass-testing responses). The discussion topic, contraceptive use, was introduced and discussion group procedures were reviewed. More specifically, given the highly personal nature of the discussion topic, subjects were told that the discussion group procedure would not involve the face-to-face interaction frequently used in conventional discussion groups. Rather, they would be asked to make tape-recorded statements concerning their social and contraceptive use histories while seated in private laboratory rooms and then these tapes would be interchanged among the group members to simulate the exchange of information that typically occurs in discussion groups. Given the sensitive nature of the discussion material, particular care was taken to address subjects' concerns about confidentiality regarding this procedure and their personal statements. Additionally, subjects were given several opportunities to ask questions about the procedure. Consent forms were distributed following this explanation (see Appendix I). No subject refused further participation.
After completing their consent statements, all subjects were escorted by the experimenter to one of the 4 experiment rooms where, as a group, they were shown the use of the intercom system, the procedures for using the tape recorder, and the location of the experimental materials. Following this explanation, subjects were seated in individual rooms. The experimenter was seated in the laboratory control room where she presented the remainder of the experimental instructions over the intercom system. The first questionnaire was administered following a systems check of the intercom system.

**Social awareness.** The experimental design for the study included a manipulation of threatening/non-threatening information. To accomplish this manipulation, subjects were led to believe that one of the functions of the present study was to investigate how differing levels of a (fabricated) trait called "social awareness" affected discussion group interactions. With that in mind, subjects were told that research indicated that some individual participant characteristics have been found to play an important role in discussion group processes. One such individual difference, a trait described as "social awareness," was to be examined as part of the current experiment. Subjects were told that one measure of social awareness had been administered during mass testing. A second measure of social awareness, referred to as
the *Wilder Social Awareness Inventory*, was the first questionnaire to be completed in the current experiment (see Appendix J). After subjects completed the Wilder (which was actually a bogus questionnaire containing 7 face-valid questions about other peoples' attitudes and opinions on "current social issues"), the scale was collected, ostensibly to be scored.

**Personal history statements.** After the *Wilder* had been collected, subjects reviewed an information sheet containing the instructions for recording their social and contraceptive histories (see Appendix K). These instructions were also summarized by the experimenter. Subjects were asked to record 2-3 minute statements about their social history (e.g., family background, school activities, leisure preferences, etc.) and then, after a 5-second silence on the tape, record a 1-2 minute statement about their contraceptive use history (e.g., their sexual activity status, usual contraceptive method, use of their method, etc.). After recording their statements, subjects completed a *Recorded Statement Evaluation* (see Appendix L) that measured their evaluations of their own recorded statements for ease in presentation, perceived similarity to other persons making similar such statements, etc. These questions were designed solely to reinforce the cover story that the study was primarily concerned with
discussion group processes (i.e., how people feel about being in them, talking about themselves, etc.).

Threat manipulation. The tape-recorded statements were collected at this point and subjects waited under the pretense that their recorded statements were being rewound for the forthcoming tape information exchange. During the waiting period, the threat manipulation was administered. Subjects were again reminded that one of the purposes of the study was to examine important dimensions of discussion group functioning including an individual's trait levels of social awareness. Subjects were given a feedback sheet summarizing their combined responses to the questionnaire they completed at mass testing (referred to as "the Norman Social Acumen Scale") and during the experimental session (the "Wilder Social Awareness Inventory"; see Appendix M). Subjects assigned to the Low Threat condition were told that, in comparison with other ISU college students, they had performed fairly well on the two scales, obtaining scores at the 93rd and 89th percentiles (respectively) on the two measures. On the other hand, subjects in the High Threat condition were told they had not done very well (having received percentile scores of 39 and 34, respectively).

After allowing subjects time to review their scores, they were asked to complete a Wilder Inventory Evaluation form including two questions concerning the degree to which they
were satisfied with their scores on the scale and their rating of the general importance of the "social awareness" trait (refer back to Appendix C). Both questions were designed as manipulation checks for threat. Following their evaluation of the Wilder feedback, subjects also completed the Time 2 measures of the JF-Version A or B and the Mood I questionnaire.

Comparison manipulation. At this point, subjects received a "rewound" tape and were told that it contained the social and contraceptive history statements made by another member of the discussion group. As described earlier, the tape actually contained pre-recorded statements describing the social background of a fairly typical college woman and the contraceptive history statement of an ineffective contraceptive target (i.e., a woman who did not use a contraceptive method but who was sexually active; see Appendix N). Using headphones, participants listened first to the target's tape recorded social history and, in keeping with the cover story, then evaluated the information in that statement for ease of presentation, comparability to their own statement, etc. Manipulation checks on subjects' perceptions of social similarity to target and their evaluation of dispositional attributes of the target were measured using the Time 2 Opinion of Group Member scale (see Appendix E).
Subjects in the contraceptive information (DC) conditions then listened to the target's contraceptive history information and again evaluated that information for presentation style, etc. Manipulation checks on subjects' evaluation of the effectiveness of the target's contraceptive behavior in addition to their perceptions of the comparability of their contraceptive use to that of the target were also obtained (see Appendix D). Like subjects in the contraceptive information (DCI) conditions, subjects assigned to the no contraceptive information (No DCI) conditions listened to the social history portion of the recorded target statement and evaluated the comparison target's social history statement. They did not, however, listen to the contraceptive history portion of the tape nor did they complete the evaluation based on this information but rather these subjects waited without activity for a 2-3 minute time period. This waiting period was included to ensure that the time interval between Time 2 and Time 3 measures was similar for both DCI and No DCI subjects.

Concluding measures. Immediately following the No DCI or DCI manipulations, all subjects completed the Time 3 measures for the JF-Version A/B and Mood II (see Appendices E and D). The experiment was drawn to a close with the completion of the Discussion Group questionnaire, which contained the remaining Time 3 primary dependent measures: subjects' ratings of the
comparison target (direct active DC), their approval and likelihood of use ratings for the four specific contraceptive methods (indirect active DC), and their perceptions of vulnerability for unplanned pregnancy for self, other women not using contraception and self compared to other women (perception of vulnerability; see Appendix F).

Experiment debriefing. Participants were debriefed as a group and progressively probed for general and/or specific suspicions concerning experimental instructions or procedures. A structured debriefing concerning the comparison target tape manipulation was used. Subjects were told that the tape they heard was not made by any member of their group but that the information on the tape was true and provided by an actual ISU student describing her social and contraceptive histories. The bogus nature and purpose of the social awareness measures (the threat manipulation) was discussed. It was explained that subjects were deceived along this dimension so that different reactions to social information following negative or positive personal information could be studied and emphasized that no measures of their personal abilities regarding social awareness obtained during the experiment were valid. Consent to listen to the participants' recorded statements for the purpose of obtaining more specific information from their statements was requested and tape analysis consent statements distributed (see Appendix F).
Resource information concerning discussion groups and area service agencies providing information concerning contraception and additional personal conversation with the experimenter was offered.

Follow-up. Approximately six weeks after participating in the experiment, the subjects who had indicated during experiment debriefing that they would be willing to return for the follow-up session were contacted via telephone. Follow-up sessions were held in classrooms or the experimenter's office suite with 1 to 6 participants attending each session. Privacy was increased through alternate seating arrangements (i.e., placing empty seats between participants as they completed the questionnaires). Because six weeks had passed since subjects' participation in the experiment, the female experimenter or a female assistant reviewed the experimental procedure and the deceptions, including the threat manipulation and tape manipulation, upon their arrival at the follow-up session.

The follow-up questions were described as similar to those administered during mass testing and the experiment. Subjects were allowed ample time to ask questions concerning follow-up and experimental procedures. Resource information or further conversation with the experimenter was again offered. After completing a follow-up consent statement, subjects completed the 20-item modified Janis-Field and a
brief form of the Contraceptive Use and Opinion Survey questionnaire. The latter questionnaire contained post-experimental measures of sexual activity and contraceptive method use and the follow-up measures of perceived vulnerability to unplanned pregnancy, indirect active DC (contraceptive method derogation), and direct active DC (comparison target derogation; see Appendices P, Q, and R). No subject refused to complete the follow-up questionnaire after arriving for the session.

It should be reiterated that ethical debriefing practices obligated informing subjects of all major experimental manipulations and deceptions prior to their departure from the original experiment. Additionally, the review of the experiment was incorporated into the follow-up procedure so as to refresh subjects' memories of the comparison target because one of the follow-up questions focused on subjects' post-experiment impressions of this woman. It is possible that subjects' responses on Time 4 measures were affected by any number of factors including reactance to the information contained in the experimental debriefing procedures or the follow-up review of the experiment, the mere passage of time, or perhaps some other extraneous intervening events occurring between the time of the experiment and the follow-up. Therefore, all analyses concerning persistence of changes in attitudes toward the target, contraceptive methods, or
perceptions of vulnerability throughout follow-up were viewed as only exploratory.
RESULTS

Manipulation Checks

Two dimensions were manipulated in the current study: comparison information and threatening feedback. Separate analysis of variance (ANOVA) using unweighted means due to unequal cell sizes were conducted for the manipulation checks of these interventions.

Downward Comparison Manipulation

To establish the effectiveness of the downward comparison manipulation, it was first necessary to demonstrate that, prior to receiving any of her contraceptive information, subjects felt the target was similar to themselves (cf. Festinger, 1954; Gibbons & Boney McCoy, 1992). Festinger (1954) noted that the tendency for social comparison decreased as differences between self and a comparison other increased. Thus, if these participants felt they were significantly different from the comparison target on dimensions other than contraception, they might not regard her as a valid source of social comparison information. Second, since contraceptive practice constituted the primary comparison dimension, it was important to demonstrate that subjects viewed the target as a generally "ineffective" contraceptive and, more importantly, that they saw her contraceptive practice as clearly worse than their own.
Social similarity. A 2 x 2 x 2 (High/Low SE x High/Low Threat x DCI/No DCI) analysis of variance (ANOVA) was conducted to compare similarity ratings across conditions prior to the DC manipulation. No significant differences across conditions were noted (all $p$s > .1). Moreover, the cell means ranged from 6.3 to 8.5 (scale mid-point = 6.3) indicating that subjects rated the target as generally similar to themselves. The target was also viewed as fairly similar to (or typical of) other ISU women as suggested by the trends across means from a 2 x 2 x 2 (SE x Threat x DCI) ANOVA on subjects' ratings of the target's similarity to other ISU women (all $M$s > 7.9). These pre-downward comparison manipulation findings served as an important interpretive backdrop for determining the impact of the downward comparison (i.e., contraceptive) information.

Contraceptive effectiveness. Two manipulation checks for effectiveness of the DC manipulation were conducted. A 2 x 2 (SE x Threat) ANOVA was performed on ratings of the comparison target's contraceptive effectiveness provided by subjects in the DC information conditions. No main effects nor interactions were noted (all $F$s < 1.65, $p$s > .20) and, most important, subjects viewed the target as an extremely ineffective contraceptor ($M$s ranging from 1.2 to 2.7; scale midpoint = 6.3). Results from an additional 2 x 2 (SE x Threat) ANOVA revealed that, when asked to make a comparison
between the target's contraceptive effectiveness and their own, subjects' overwhelming response was that they were the more effective contraceptor (Ms = 11.5 to 11.7 on a 0 - 12.7 scale). In combination, these results provide fairly convincing evidence that subjects viewed the target as a highly ineffective contraceptor and, thus, a downward comparison target on this dimension.

**Threat Manipulation**

Threat was manipulated by providing subjects with fictitious personal "scores" on two social awareness trait measures. Clearly, the most straightforward, albeit obvious, check for this manipulation would have been to simply ask subjects how threatened they felt by this feedback. To avoid the demand that would result from such a question, however, a less transparent question was administered. Subjects' satisfaction with their social awareness score was assessed under the assumption that high threat subjects would report significantly lower satisfaction ratings than would low threat subjects. The anticipated threat main effect obtained from a 2 x 2 x 2 ANOVA conducted on the satisfaction ratings was highly significant, $F(1, 89) = 716.76, \ p < .001$, as high threat subjects were much less satisfied with their scores than were low threat subjects (Ms = 3.3 and 10.2, respectively).

Additional effects included a significant DCI main effect, $F(1, 89) = 4.84, \ p = .03$, as well as a SE x Threat
interaction, $F(1, 89) = 7.0, p = .01$. The main effect revealed that the DCI subjects were more satisfied with their scores than were No DCI subjects. Because the threat manipulation check occurred prior to the presentation of the downward comparison information, this main effect represents a nuisance effect but does suggest that expected results in the primary analyses might be weakened somewhat by these systematic differences in reactions to the threat feedback. The SE x Threat interaction revealed that low SE, high threat subjects rated the least satisfaction with their scores while low SE, low threat subjects rated the greatest satisfaction. This observation is consistent with Cohen's (1959) conclusion that low self-esteem individuals are particularly sensitive to feedback information.

Overall, the evidence from the satisfaction question suggested that the threat manipulation was reasonably effective. The significance of the threat main effect is amplified by an additional finding concerning subjects' ratings for the importance of social awareness as a personal trait. Results from a 2 x 2 x 2 ANOVA on importance ratings revealed a main effect of threat, $F(1, 89) = 31.42, p < .001$, such that high threat subjects rated the trait as less important than did their low threat counterparts. Moreover, the means across conditions were all well above the scale midpoint suggesting that the trait was, in fact, viewed as
important. This finding bolstered the differences noted earlier on the satisfaction ratings thereby implying that low scores would most likely have been viewed as particularly threatening by most subjects.

Primary Dependent Measures

The empirical questions of central importance in the current study involved assessing changes in subjects' subjective well-being, attitudes toward self, the comparison target, and the target's contraceptive method, and perceptions of vulnerability for unplanned pregnancy for self and others as a result of the downward comparison opportunity. Consequently, the primary statistical analyses consisted of repeated measures analysis of variance (ANOVA) using unweighted means. It was expected that the downward comparison opportunity would have an immediate impact on subjects' mood and self-esteem; therefore, repeated measures ANOVA were conducted on those variables at Time 2 (i.e., the pre-comparison level) and Time 3 (the post-comparison level of the variable). It was possible that downward comparison might have both immediate and long-term effects on the remaining dependent measures, target and target method ratings (direct and indirect DC) and perceptions of vulnerability. Consequently, in addition to the primary T1-T3 or T2-T3 repeated measures analyses for those variables, a set of exploratory repeated measures that included three time
intervals (T1-T3-T4 or T2-T3-T4) were conducted on these 3 variables.

**Mood**

It was expected that high threat, low self-esteem subjects in the downward comparison conditions would demonstrate the greatest amount of mood improvement (cf. Gibbons, 1986; Gibbons & Boney McCoy, 1991). The computed general mood indices for Time 2 and Time 3 were used as dependent measures in the repeated measures analysis of mood change. Potential differences in pre-comparison mood states prior to the downward comparison opportunity were also tested.

**Pre-comparison mood.** A 2 x 2 x 2 (SE x Threat x DCI) ANOVA was conducted on pre-comparison mood (T2), which had been assessed immediately following the threat manipulation. This analysis revealed main effects for SE, $F(1,88) = 21.41$, $p < .001$ and for Threat, $F(1,88) = 9.74$, $p = .002$. Subjects with high SE reported more positive mood than did those with low SE (Ms = 25.7 and 14.2, respectively). Low threat subjects reported more positive mood than did high threat subjects (Ms = 23.8 and 16.1). This latter finding appears consistent with the assertion that the threat manipulation was effective.

**Mood change.** A 2 x 2 x 2 x 2 (SE x Threat x DCI x Time) repeated measures ANOVA was performed to test the assumption that overall mood would improve following an opportunity for
downward comparison. This analysis compared mood responses from T2 and T3 and produced a significant main effect for time, \( F(1, 84) = 7.63, p < .01 \), as subjects tended to demonstrate improvements in mood (see Table 3). Two interactions were also noted. The first was a Threat x Time interaction, \( F(1, 84) = 9.22, p < .01 \), reflecting the fact that high threat subjects' moods became significantly more positive than that of low threat subjects (change scores = + 5.1 and −.3, respectively). In addition, there was a SE x Threat x Time interaction, \( F(1, 84) = 4.46, p < .04 \); the pattern was such that the mood change of low SE, high threat subjects tended to be greater than those of other subjects (see Endnote 6). The predicted SE x Threat x DCI x Time interaction was not significant (\( p = .35 \)). The additional variance that the responses from the No DCI (control) subjects contributed to the analysis may explain this observation.

It should be noted, however, that within-subjects t-tests revealed a significant change score only for low self-esteem, high threat, downward comparison subjects, \( t(84) = 4.44, p < .0001 \); ts for all other conditions were less than 1.68. Additionally, an a priori orthogonal contrast comparing the low self-esteem, downward comparison, threatened subjects (\( M = 11.1 \)) with the combined subjects from the remaining conditions (\( M = 1.2 \)) did produce a significant difference in the
Table 3  
Mean mood scores (Time 2, Time 3, and change score)

<table>
<thead>
<tr>
<th>DC information subjects</th>
<th>Time 2</th>
<th>Time 3</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat (n = 10)</td>
<td>23.4</td>
<td>25.2</td>
<td>+ 1.8</td>
</tr>
<tr>
<td>Low threat (n = 14)</td>
<td>26.9</td>
<td>27.5</td>
<td>+ .6</td>
</tr>
<tr>
<td><strong>Low self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat (n = 11)</td>
<td>9.3</td>
<td>20.4</td>
<td>+11.1*</td>
</tr>
<tr>
<td>Low threat (n = 7)</td>
<td>19.3</td>
<td>18.5</td>
<td>- .8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No DC information subjects</th>
<th>Time 2</th>
<th>Time 3</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat (n = 11)</td>
<td>27.0</td>
<td>30.3</td>
<td>+ 3.3</td>
</tr>
<tr>
<td>Low threat (n = 17)</td>
<td>28.6</td>
<td>29.8</td>
<td>+ 1.2</td>
</tr>
<tr>
<td><strong>Low self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat (n = 10)</td>
<td>7.8</td>
<td>12.2</td>
<td>+ 4.4</td>
</tr>
<tr>
<td>Low threat (n = 12)</td>
<td>18.7</td>
<td>16.7</td>
<td>- 2.0</td>
</tr>
</tbody>
</table>

**Notes:**
1. Possible scores on the mood indices at Time 2 and Time 3 range from -50.8, indicating a predominantly negative mood, to +50.8, a positive mood. Valence signs on the mood change score indicate the direction in which mood moved (i.e., negative sign = mood worsened; positive sign = mood improved).

2. * = within-subjects t-tests indicate mood change in this cell was significant at p < .05; between-subjects t-tests indicate this cell differed significantly from all remaining cells (all ps < .05).
predicted direction \((t(84) = 5.25; p < .0001)\). Thus, the pattern of results did conform to predictions. A significant difference was also noted in a specific contrast between low self-esteem, threatened subjects in DCI vs. the No DCI control condition, \(t(84) = 2.62, p < .01\)—a particularly noteworthy finding as it extends the results reported in previous research by more clearly indicating that it was the DC information that was responsible for mood improvement for these subjects (see Endnote 7). Most previous studies had provided upward or lateral comparison information and did not provide a "no comparison" opportunity for statistical contrast.

**Internal analyses.** To check the comparability of the current findings with the mood change findings demonstrated in previous studies conducted by Gibbons and colleagues, separate analyses were conducted on the mood responses from DCI subjects. Because No DCI (i.e., control) conditions were not included in those earlier studies, the most direct comparison of the results of the current study with previous findings would occur by analyzing the results for the DCI subjects only. A 2 x 2 (SE x Threat) repeated measures analyses revealed three significant findings. A main effect for Time, \(F(1,38) = 5.57, p = .02\), and a Threat x Time interaction, \(F(1,38) = 5.96, p = .02\), were obtained with trends identical to those obtained in the full design analyses. More
important, the expected SE x Threat x Time interaction, $F(1,38) = 4.07$, $p = .05$, was obtained. Trend analyses revealed mood improvements reported for low SE, high threat subjects that were significantly different from those of subjects in the three remaining conditions (all $t$s > 3.56, $p$s < .05). Thus, the pattern of results for the DCI subjects in the current study replicated the findings noted in previous studies that had not used control (No DCI) condition designs (cf., Gibbons, 1986; Gibbons & Gerrard, 1988; see Endnote 8).

Self-Esteem

As was the case in the Reis et al. (1993) study, self-esteem was assessed at T2 and T3 to investigate the impact of downward comparison on this measure of subjective well-being. Consistent with findings of that study, it was predicted that significant improvements in self-esteem would occur for low self-esteem, downward comparison subjects under conditions of low threat. This prediction reflects the assumption that changes in self-esteem that occur as a function of social comparison information are most likely to occur in the absence of threat-provoked emotional states.

Pre-comparison equivalences and scaling order effects. A series of analyses were conducted to eliminate concerns about the presence of randomization error at T2 (pre-comparison) and determine whether the JF-A and JF-B 10-item versions of the self-esteem measure, which were to be used later in the
repeated measures analysis, were equivalent. At Time 2, half the subjects completed the JF-A subscale whereas the remaining subjects completed the JF-B subscale. Therefore, the test for subscale equivalence at T2 involved a $2 \times 2 \times 2 \times 2$ (SE x Threat x DCI x Order) ANOVA with Time 2 JF-A and JF-B subscale scores as the dependent measure. Results revealed the expected main effect for self-esteem ($F(1,81) = 73.71, p < .001$), such that high and low self-esteem subjects differed significantly in their self-esteem levels. In addition, a marginal order (subscale) main effect was also observed ($F(1,81) = 3.29, p = .07$). Scores on the JF-B subscale tended to reflect higher self-esteem than the JF-A version; JF-B scores averaged .93 of JF-A scores. This finding suggested that the questions selected for JF-B and JF-A were tapping slightly different aspects of the self-esteem constructs measured by the Janis-Field modified scale.

It should be noted that a further exploratory analysis of the self-esteem scores at T1 (mass testing) was also conducted to determine if this order effect pre-existed the T2 self-esteem measure. All experimental subjects had taken the 20-item Janis-Field at mass testing so, to perform this analysis, subjects' 20-item JF responses were divided into the JF-A and JF-B subscales (identical to those subsequently used in the T2 analysis). Correlational analyses indicated that the JF-A and JF-B subscales at T1 were positively correlated ($r = .79$). A
2 x 2 x 2 x 2 (SE x Threat x DCI x Order) repeated measures ANOVA with subscale (or order) as the within-subjects variable was conducted to test for order differences. Results of this analysis also revealed an order main effect ($F(1,89) = 14.75; \ p < .001$) with the JF-B subscale scores indicating higher self-esteem than the JF-A subscale scores. In this analysis, JF-B averaged .95 of JF-A. This result serves to confirm the assumption that the two subscales measure self-esteem somewhat differently.

Because subscale differences at T2 would present a problem in subsequent repeated measures analyses for self-esteem change, a correction weighting factor of 1.084 was calculated using the following formula (JF-A/JF-B = weight) and the JF-B scores were then multiplied by that weight. To confirm that the weighting factor eliminated the order main effect noted in the original T2 repeated measures analysis, the 2 x 2 x 2 x 2 (SE x Threat x DCI x Order) ANOVA was conducted a second time. This analysis produced the expected SE main effect ($F(1,81) = 73.37, \ p < .001$), but no other main effects or interactions (all $p > .2$).

**Self-esteem constancy.** The T1 JF scores were used to classify subjects into the High and Low SE categories for experimental analyses. Thus, it was necessary to eliminate any concern that subjects might have been miscategorized due to changes in self-esteem during the time interval between
mass testing (T1) and the experiment (T2). A 2 x 2 x 2 x 2 x 2 (SE x Threat x DCI x Order x Time) repeated measures ANOVA was performed with self-esteem as the dependent measure and T1 and T2 as the Time within-subjects factor. At this point in the experiment the only anticipated significant result would have been a Threat x Time interaction, which would have provided additional support for the effectiveness of the threat manipulation. Instead, this analysis produced a main effect for Time, \( F(1,81) = 39.5, \ p < .001 \). The trend was for most subjects to evidence improvements in self-esteem, even those individuals who had received the threatening feedback. Because it would be expected that an effective threat manipulation would have a negative impact on self-esteem, one plausible conclusion was that this particular threat manipulation, although it appeared to affect mood, did not have an impact on self-esteem. The absence of within-subjects interactions involving the self-esteem variable in these results did reduce concerns about miscategorization of subjects at T2, however.

Self-esteem change: T2 and T3. Consistent with the findings in Reis et al. (1993), it was expected that significant changes in self-esteem would occur for low self-esteem, low threat subjects following a DC opportunity. Consequently, the primary change analysis was a 2 x 2 x 2 x 2
x 2 (SE by Threat by DCI by Order by Time) repeated measure ANOVA with self-esteem as the dependent measure and Time as the within-subjects factor. The T2 weighting factor (1.084) was used for the JF-B subscale at both T2 and T3. Results for this analysis revealed a significant Order x Time interaction ($F(1,81) = 8.61, p = .004$) in which subjects who completed the A/B order presentation demonstrated more negative self-esteem at T3 (change score = + .98) whereas those subjects who completed the B/A presentation improved in self-esteem (change score = - .94). It should be noted that this interaction was obtained in spite of the T2 adjustment for the JF-B scale. No further main effects nor interactions were obtained (see Table 4). It would appear that, despite the use of the weighting factor, the order presentation of these subscales has an impact on subjects' responses. Similar effects were noted in a 2 x 2 x 2 repeated measures ANOVA conducted on the T2 and T3 self-esteem scores for DC information subjects.

In separate analyses conducted on the full design and on the DC information subjects only, the critical interactions (SE x Threat x DCI x Time and SE x Threat x Time, respectively) were not significant, $p > .30$. It should be noted that the trends in means across the DC information conditions were similar to that found in Reis et al. (1993) in that the low self-esteem, low threat, downward comparison subjects demonstrated the largest increase in self-esteem.
Table 4
Means for self-esteem

<table>
<thead>
<tr>
<th></th>
<th>Change (T3-T2)</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC Information</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>High threat</em> (n = 12)</td>
<td>-.2</td>
<td>20.7</td>
<td>20.5</td>
</tr>
<tr>
<td><em>Low threat</em> (n = 14)</td>
<td>+.4</td>
<td>19.5</td>
<td>19.9</td>
</tr>
<tr>
<td><strong>Low self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>High threat</em> (n = 11)</td>
<td>-.4</td>
<td>27.9</td>
<td>27.5</td>
</tr>
<tr>
<td><em>Low threat</em> (n = 10)</td>
<td>-.7</td>
<td>28.8</td>
<td>28.1</td>
</tr>
<tr>
<td><strong>No DC Information</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>High threat</em> (n = 11)</td>
<td>+.2</td>
<td>17.9</td>
<td>18.1</td>
</tr>
<tr>
<td><em>Low threat</em> (n = 17)</td>
<td>0</td>
<td>19.1</td>
<td>19.1</td>
</tr>
<tr>
<td><strong>Low self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>High threat</em> (n = 10)</td>
<td>+1.4</td>
<td>27.9</td>
<td>29.3</td>
</tr>
<tr>
<td><em>Low threat</em> (n = 12)</td>
<td>0</td>
<td>27.6</td>
<td>27.6</td>
</tr>
</tbody>
</table>

**Notes:**
1. Index scores range from 10 to 50 with lower scores indicating higher self-esteem; higher scores represent low self-esteem. Thus, negative change scores indicate an increase in self-esteem whereas positive change scores indicate a decline in self-esteem.

2. Although these means are collapsed across order, it is important to note that JF-Version B scores were calculated using the weighting factor.
Perceptions of Vulnerability

Subjects were asked to estimate both their personal risk for an unplanned pregnancy as well as that for an average college woman who does not use a contraceptive method (a person whose contraceptive conduct was similar to that of the comparison target for the current study). These measures were taken at three points during the experiment (Time 1, Time 3, and Time 4). Two analyses, one of subjects' perceptions of risk for self and the other of their perceptions of risk for other, were conducted on Time 1 dependent measures of these risk perceptions (see Endnote 9). Neither analysis revealed significant main effects nor interactions ($p > .09$) indicating that participants did not systematically differ in their self or other perceptions prior to participation in the study. The means in the self-risk analysis revealed that these subjects, all of whom used effective methods of contraception consistently, held fairly accurate perceptions of their personal risk for an unplanned pregnancy ($M$s ranged from 3.6 to 9.9 on a scale of 1 to 100 where lower numbers indicated low likelihoods for pregnancy). On the other hand, the means for the risk perceptions of the average woman who uses no contraception reflected this type of target's likelihood of pregnancy ($M$s ranged from 79.7 to 95.5)—particularly if subjects were assuming that this woman was sexually active on a regular basis.
Perception change. To test the impact of downward comparison on changes in perceptions of individual and comparative risk for unplanned pregnancy for both self and the average woman who uses no contraception, a 2 x 2 x 2 x 2 x 2 (SE x Threat x DCI x Time x Target) repeated measures analyses with time (T1 and T3) and risk perception target (self or other woman using no contraception) as within-subjects factors was conducted. It was predicted that the information provided in the DC condition would result in the greatest changes (i.e., toward perceptions of less vulnerability) for high SE, high threat subjects--in other words, a SE x Threat x DCI x Time interaction. The extent to which the difference between self and other was a result of change in self or change in other-perception was also explored and a significant 5-way interaction was anticipated--a prediction that would require a fairly large effect size given the cell ns obtained in this particular study.

These analyses revealed main effects for target \((F(1,88) = 1226.44, p < .001)\) and time \((F(1,88) = 3.52, p = .06)\) such that risk perceptions for self were significantly lower than were those for other and there was a trend for subjects to report less vulnerability over time for both self and other (see Table 5). Three unanticipated interactions were also revealed. A significant Threat x Time x Target interaction \((F(1,88) = 4.61, p = .03)\) indicated that high threat subjects
Table 5
Means for perceptions of vulnerability (self and other woman using no contraception)

<table>
<thead>
<tr>
<th></th>
<th>Self</th>
<th>Self</th>
<th>Other</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time 2</td>
<td>Time 3</td>
<td>Time 2</td>
<td>Time 3</td>
</tr>
<tr>
<td><strong>DC Information</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat (n = 12)</td>
<td>2.1</td>
<td>2.1</td>
<td>9.2</td>
<td>8.9</td>
</tr>
<tr>
<td>Low threat (n = 14)</td>
<td>1.9</td>
<td>1.9</td>
<td>9.4</td>
<td>9.1</td>
</tr>
<tr>
<td><strong>Low self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat (n = 11)</td>
<td>3.1</td>
<td>2.9</td>
<td>9.8</td>
<td>9.2</td>
</tr>
<tr>
<td>Low threat (n = 10)</td>
<td>2.7</td>
<td>2.0</td>
<td>9.7</td>
<td>9.2</td>
</tr>
<tr>
<td><strong>No DC Information</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High self-esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat (n = 11)</td>
<td>2.5</td>
<td>2.0</td>
<td>9.7</td>
<td>9.7</td>
</tr>
<tr>
<td>Low threat (n = 17)</td>
<td>1.9</td>
<td>2.1</td>
<td>8.9</td>
<td>9.7</td>
</tr>
<tr>
<td>Low self-esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat (n = 9)</td>
<td>1.9</td>
<td>3.1</td>
<td>9.5</td>
<td>7.6</td>
</tr>
<tr>
<td>Low threat (n = 12)</td>
<td>3.1</td>
<td>2.5</td>
<td>9.7</td>
<td>9.7</td>
</tr>
</tbody>
</table>

**Notes:**
1. Due to skewed scores, square root transformations were performed on item scores; Transformed index scores range from 1 to 10 with lower scores indicating low probability for unplanned pregnancy.
tended to show the greatest reduction in risk perception for other. This observed result was further qualified by a SE x Threat x Time x Target interaction, \((F(1,88) = 3.93, \ p = .05)\), which revealed a tendency for low SE, high threat subjects to reduce their risk perception for others. The last of the three noted interactions, a SE x DCI x Time x Target interaction \((F(1,88) = 3.94, \ p = .05)\) was potentially the most noteworthy of the three since it involved the DC information factor. The pattern of effects across conditions lacked interpretable consistency, however. The predicted interactions, SE x Threat x DCI x Time and SE x Threat x DCI x Time x Target, failed to reach significance \((ps of .55 and .16, \text{ respectively})\).

**Exploratory analyses: T1-T3-T4 perception change.** An exploratory 2 x 2 x 2 x 3 x 2 (SE x Threat x DCI x Time x Risk Perception Target) repeated measures ANOVA was conducted to determine if changes in perceptions of vulnerability would emerge at any point over the mass testing (T1), experiment (T3), and follow-up (T4) time intervals (see Endnote 10). Results of this analysis revealed effects generally similar to those of the T1/T3 repeated measure \((i.e., \text{ main effects for Time and Risk Perception Target})\). The overall sample trend was for increasing levels of invulnerability across time. Differences between self- and other-perception continued to reveal low perceptions of vulnerability for self but
relatively high levels of vulnerability for other. The SE x Threat x Time x Target interaction indicated that, across the 3 time measures, self-risk estimates tended to be increasingly less vulnerable whereas T3-T4 other-risk estimates remained consistent or tended toward minor regression to prior levels of vulnerability.

**Direct Active Downward Comparison**

To test the hypothesis that high SE, high threat subjects would engage in direct, active DC (i.e., derogation of the comparison target), subjects were asked to evaluate themselves and the comparison target during the experiment and at follow-up. Time 2 adjective ratings for self were collected immediately following their tape recorded social and contraceptive histories—prior to the DC/No DCI manipulation. Ratings for the comparison target were collected at three times—twice during the experiment (pre- and post-comparison, T2 and T3) and once at follow-up (T4). Comparison target ratings indices for T2 and T4 were similar to those used for self-ratings. However, polar opposite forms of the adjectives were used at T3 to reduce the chances that subjects would observe that self and other ratings were an aspect of the study, which might have been the case if the same list was used repetitively.
Initial evaluations: self and target. To assess differences between subjects in their evaluations of self and of the comparison target prior to the DC opportunity, separate 2 x 2 x 2 (SE by Threat by DCI) ANOVAs were conducted on T2 self and target ratings. The analysis conducted on the self evaluation measure resulted in a main effect for self-esteem ($F(1,89) = 3.91$, $p = .05$) such that high self-esteem individuals rated themselves more favorably than did low self-esteem individuals. No other main effects nor interactions were noted. The analysis conducted on the target evaluation produced no main effects nor interactions (all $p$s $> .08$).

Initial differences in self vs. target. To determine the nature of subjects' self-perceptions compared to their perceptions of the comparison target prior to the DC opportunity, a 2 x 2 x 2 x 2 (SE by Threat by DCI by Rating Target) repeated measures ANOVA was conducted using T2 self- and comparison target ratings as the repeated measure. No main effects nor interactions were obtained (all $p$s $> .20$) in this analysis. The means across all conditions ranged from 24.0 to 29.5 (on a scale of 0 to 41), suggesting that subjects were rating both themselves and the comparison target in a very positive light. This finding is consistent with the similarity finding noted earlier in the manipulation checks analyses and indirectly supports the assertion that, prior to
any DC information about the target, subjects viewed themselves and the target generally as equals.

Change in target ratings. In a test of the direct derogation hypothesis, a $2 \times 2 \times 2 \times 2$ (SE x Threat x DCI x Time) repeated measures ANOVA was conducted on subjects' ratings of the target at T2 (pre-comparison) and T3 (post-comparison). It was expected that high threat, high SE, downward comparison subjects would engage in the greatest amount of target derogation—their ratings of the comparison target should evidence the largest decline over time. Results of this analysis revealed a main effect for Time ($F(1,87) = 41.58, p < .001$); subjects tended to change their impression of the target over the course of the experiment—most became less favorable toward her. This effect was qualified by a DCI x Time interaction ($F(1,87) = 56.94, p < .001$), which indicated that subjects in the DCI conditions reported negative change in opinions of the target from T2 to T3 whereas subjects in the no-DCI conditions tended to develop more favorable opinions (see Table 6). All remaining main effects and interactions failed to reach significance (all $p$s > .2). In particular, the expected 4-way interaction (SE x Threat x DCI x Time) was not significant ($p = .74$).

Exploratory analyses: persistence in ratings change. A $2 \times 2 \times 2 \times 3$ (SE x Threat x DCI x Time) repeated measures ANOVA with Time (T2, T3, and T4) as the within-subjects variable was
Table 6
Means for direct active DC target ratings

<table>
<thead>
<tr>
<th>DC Information</th>
<th></th>
<th>Time 2</th>
<th>Time 3</th>
<th>(T3-T2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat (n = 12)</td>
<td></td>
<td>27.4</td>
<td>14.9</td>
<td>-12.5*</td>
</tr>
<tr>
<td>Low threat (n = 14)</td>
<td></td>
<td>26.2</td>
<td>16.5</td>
<td>-9.7*</td>
</tr>
<tr>
<td><strong>Low self-esteem</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat (n = 11)</td>
<td></td>
<td>29.1</td>
<td>14.6</td>
<td>-14.5*</td>
</tr>
<tr>
<td>Low threat (n = 10)</td>
<td></td>
<td>24.9</td>
<td>14.5</td>
<td>-10.5*</td>
</tr>
<tr>
<td><strong>No DC Information</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High self-esteem</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>High threat (n = 10)</td>
<td></td>
<td>29.7</td>
<td>31.2</td>
<td>+1.5b</td>
</tr>
<tr>
<td>Low threat (n = 17)</td>
<td></td>
<td>27.4</td>
<td>27.6</td>
<td>+.2b</td>
</tr>
<tr>
<td>Low self-esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat (n = 9)</td>
<td></td>
<td>26.6</td>
<td>26.5</td>
<td>-.1b</td>
</tr>
<tr>
<td>Low threat (n = 12)</td>
<td></td>
<td>24.0</td>
<td>26.1</td>
<td>+2.1b</td>
</tr>
</tbody>
</table>

**Notes:**
1. Index scores Times 2 and 4 range from +41.2 to -40.8; index scores for Time 3 range from +40.8 to -41.2. Differences in scale endpoints were due to the scale adjustment required by the necessary removal of one of the subscale adjectives (see Endnote 5). The Time 3 index items were the polar opposite forms of the T2 and T4 index adjectives; thus the difference in ranges.
2. Negative change scores indicate a decline in favorability in target rating whereas positive change scores indicate an improvement in favorability for target ratings.
3. Asterisk (*) indicates this cell demonstrated significant change on within-subject t-test (p < .05); cells with different subscripts indicate between-subject differences at p < .05.
performed on comparison target rating indices (see Endnote 11). Like the T2-T3 repeated measures findings, analyses revealed a highly significant main effect for Time ($F(2,144) = 25.25, p < .001$), again reflecting the decline in target ratings from Time 2 to Time 3. These analyses also revealed that those ratings generally tended to remain at that level at Time 4. A DCI x Time interaction was also noted, $F(2,144) = 30.01, p < .001$, such that experimental subjects gave the comparison target significantly less positive ratings at Time 3 and Time 4 than at Time 2 whereas control subjects varied less dramatically in their comparison target ratings. A marginally significant SE x DCI x Time interaction ($p = .065$) revealed a tendency toward some movement within conditions across time; in particular high SE, downward comparison subjects became more positive toward the target at T4. Once again, the expected 4-way interaction (SE x Threat x DCI x Time) was not significant ($p = .697$)

**Indirect Active Downward Comparison**

To test the indirect active DC hypothesis, subjects were asked to indicate their approval for and likelihood of using four different contraceptive methods including the pill, condom, withdrawal, and, the DC target's method—nothing. They were asked to provide these ratings at three time intervals; mass testing (T1), experiment (T3), and follow-up (T4). Previous research has demonstrated that low self-esteem
individuals are the most likely to engage in indirect self-enhancement techniques (Brown et al., 1988), thus the hypothesis was that low SE subjects would demonstrate the greatest decline in their ratings of the target's contraceptive method.

"No method" index. It was expected that the most straightforward test of the indirect active DC hypothesis would involve a $2 \times 2 \times 2$ ($SE \times Threat \times DCI$) repeated measures ANOVA with the computed likelihood of use/approval index for no method of contraception as the dependent measure and Time (T1-T3) as the within-subjects factor. However, reliability analyses indicated very weak associations between the two items at both time intervals (alphas = .15 and .34, respectively) suggesting that such a computed index could not be justified statistically and therefore negating the use of the index in further analyses.

Since indirect active DC was conceptualized to be an attitudinal variable, likelihood ratings were dropped from the index and approval ratings alone were used as the dependent measures in the initial set of analyses. A $2 \times 2 \times 2 \times 2$ ($SE \times Threat \times DCI \times Time$) repeated measure ANOVA was performed with "no method" approval ratings as the dependent measure and Time (T1 and T3) as the within-subjects variable. This analysis revealed a marginal main effect for Time, $p = .08$ such that all subjects tended to report less approval for "no
method" at the end of the experiment. All remaining main effects and interactions failed to approach significance (all remaining ps > .20). Results for this analysis were affected by a "floor effect" in that subjects' responses at T1 were quite unfavorable (Ms = .8 to 2.1 on a 0 to 12.7 scale). As a result, there was little room for subjects to lower their approval for "no method" even further at T3.

"Ineffective" methods index analyses. As originally hypothesized, the concept of indirect active DC was expected to extend to items relevant to the comparison dimension and it was expected that beliefs about the effectiveness of the comparison target's contraception and contraceptive method would meet that criterion. It was also plausible, however, that indirect active DC could extend to a more negative rating toward ineffective contraceptive methods as a class. Therefore, an index was computed combining subjects' approval ratings for no method with those from the other "ineffective" contraceptive method, withdrawal. Reliabilities for this index, although still very weak, tended to be higher than those for the "no method" index (alphas = .43 and .47 at T1 and T3, respectively).

A 2 x 2 x 2 (SE x Threat x DCI) ANOVA on T1 responses for this index was conducted to assess pre-experiment differences in opinions between subjects. A marginal SE x DCI interaction was obtained in this analysis (F(1,88) = 3.62, p = .06).
Internal analysis revealed that low SE, DCI subjects reported significantly more favorable ratings than did their high SE, DCI counterparts. This effect represents randomization error since assignment to the DC conditions had not occurred at T1. No other main effects nor interactions were noted.

Change in "ineffective" methods index ratings. Again, a 2 x 2 x 2 x 2 (SE x Threat x DCI x Time) repeated measures ANOVA was performed, this time with subjects' computed scores on the "ineffective" methods index as the dependent measure. Results of this analysis indicated a significant main effect for time ($F(1, 88) = 4.73, p = .03$), with the pattern of means suggesting that subjects' approval ratings of the ineffective methods tended to decline from T1 to T3 (see Table 7). No other main effects nor interactions were noted ($p > .10$).

Exploratory analyses: approval over extended time. Persistence in approval ratings for the "no method" and "ineffective" indices over time was tested in two separate 2 x 2 x 2 x 3 (SE x Threat x DCI x Time) repeated measures ANOVA (see Endnote 12). In both analyses, no main effects nor interactions were noted ($p > .1$). Trends in both suggested that the movement toward method derogation that had been demonstrated in the T1-T3 analyses (the main effects for time) was reversed—subjects were tending toward less derogation at T4.
Table 7
Means for "ineffective" methods index

<table>
<thead>
<tr>
<th></th>
<th>Change</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Time 1</td>
<td>Time 3</td>
<td>(T3-T1)</td>
</tr>
<tr>
<td>Time 1</td>
<td>2.8</td>
<td>2.8</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Time 3</td>
<td>3.1</td>
<td>3.0</td>
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<td></td>
</tr>
<tr>
<td>Change</td>
<td>0</td>
<td>-0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High self-esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat</td>
<td>5.1</td>
<td>2.9</td>
<td>-2.2</td>
<td></td>
</tr>
<tr>
<td>Low threat</td>
<td>5.2</td>
<td>6.5</td>
<td>+1.3</td>
<td></td>
</tr>
<tr>
<td>No DC Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High self-esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat</td>
<td>5.3</td>
<td>2.5</td>
<td>-2.8</td>
<td></td>
</tr>
<tr>
<td>Low threat</td>
<td>3.0</td>
<td>2.2</td>
<td>-0.8</td>
<td></td>
</tr>
<tr>
<td>Low self-esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High threat</td>
<td>2.9</td>
<td>1.9</td>
<td>-1.0</td>
<td></td>
</tr>
<tr>
<td>Low threat</td>
<td>4.7</td>
<td>4.3</td>
<td>-0.4</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Index scores range from 0 to 25.4 with higher scores indicating greater approval.
2. Negative change scores indicate a decrease in approval.
DISCUSSION

The current study was undertaken to explore three distinct extensions of downward comparison theory. The results concerning the hypotheses in each of the major conceptual areas will be discussed in terms of their contribution to a previously unresolved empirical question or a newly developed theoretical issue.

Mood

The fundamental principle guiding Wills' theory of downward comparison is that DC is a process motivated by decreased subjective well-being following situational or chronic dispositional threat. Empirical hypotheses extending from this premise have posited that persons who have been situationally threatened and who have low self-esteem or who are depressed will demonstrate a preference for and benefit from DC opportunities. As noted earlier, previous research has produced evidence to support these hypotheses (Gibbons, 1986; Gibbons & Gerrard, 1989). However, the designs implemented in these early studies have compared the mood change under DC conditions with that observed in upward or lateral comparison alternatives. Although the use of these designs has provided researchers with information about how people respond differently to a variety of social comparison opportunities, it has not provided basic information about how DC-elicited mood changes contrast with those observed in a no
DC, or control, situation. Since such a contrast would provide a baseline from which to compare the impact of downward comparison information, one goal of the current study was to incorporate such a control condition into a DC study.

At the onset, it is important to note that the t-test results for the mood change data from the current study are consistent with earlier empirical findings: the low self-esteem, high threat participants in the DCI conditions were the only group of individuals in the study to demonstrate significant improvements in mood across time. In addition to supporting earlier findings, this pattern of results challenges an alternative explanation that subjects' moods were simply returning to their baseline or normal "pre-threat induction" mood level because other subjects in threat conditions did not demonstrate significant mood improvements.

More importantly, the t-test results derived from the full design analyses provided new evidence that the mood improvements demonstrated by low self-esteem, threatened, DCI individuals were significantly different from those obtained by persons who had not received any DC information. Admittedly, the strength of the argument is weakened by the absence of the expected 4-way interaction in the full design analyses. That observation may be accounted for, however, by the variance contributed to the analysis by the responses
given by the No DCI subjects. Overall, the t-test results both support and extend previous findings.

This design also provided important comparative information about the mood change observed in the three remaining DCI conditions contrasted with that observed in the four No DCI conditions. It has been noted in previous research that subjects who were provided DC opportunities but who were not threatened or low in self-esteem have not evidenced mood amelioration (cf. Gibbons & Boney McCoy, 1991). Again, the results of the current study support that observation, but also contribute to the empirical literature by demonstrating that the mood changes for these individuals were not significantly different from the No DCI (control) participants.

The role of threat. The results obtained in the full design analysis of this study provide some additional evidence concerning the relative importance of situational and chronic threat in downward comparison situations. Specifically, the fact that only low self-esteem, high threat, DCI subjects evidenced mood change suggests that it was the combination of DC information with situational and dispositional threat that was instrumental in the mood amelioration. Although Wills (1981) made an explicit point of hypothesizing that both situational and chronic threat are involved in the process, these data suggest that the chronic threat involved in low
self-esteem is not sufficient, in and of itself, to result in the observed mood improvements. If only situational or chronic threat were necessary to motivate the process and result in mood amelioration, then subjects in the low self-esteem, low threat and high self-esteem, high threat DCI conditions might have been expected to show some change in mood levels. In this study, these individuals experienced only minimal (nonsignificant) affect changes. Therefore, these data suggest that the unique combination of chronic threat, situational threat, and downward comparison contributed to the mood amelioration in both this and similar downward comparison studies.

Limitation. Although the mood results are consistent with the predictions made for the current study and the empirical findings of previous research, it is important to note that the low threat conditions provided in this study are not the same as a "no" threat condition. The feedback delivered in the low threat conditions was originally intended to simply provide a contrasting (nonthreatening) type of performance information. However, subjects in these conditions reported high levels of satisfaction with their "social awareness" inventory performances and may have interpreted this information as success feedback. Therefore, any interpretations of the specific comparisons between high and low threat conditions in this study could be considered
from a threat vs. success, rather than a threat vs. no (or low) threat, perspective. This distinction is particularly important when comparing the differences between the mood and self-esteem results of the current study with those obtained in Reis et al. (1993) because the self-esteem results in that study were observed in the absence of any threatening feedback. It is not as problematic when discussing the mood results in the current study, however, because mood change was predicted only under conditions of high threat.

**Self-esteem**

Only two studies to date have directly tested the impact of downward comparison on global self-esteem (Morse & Gergen, 1967; Reis et al., 1993). In both cases, threat was not a manipulated variable. The current study was designed to explore the effects of different levels of threat on self-esteem in DC situations. It was expected that a partial replication of Reis et al. (1993) would be obtained such that low self-esteem, low threat, DC participants would evidence improvements in self-esteem. The assumption was made that the low threat manipulation in the current study was analogous to the absence of threatening information in Reis et al. It was suggested that self-esteem improvement occurs primarily because individuals in nonthreatening situations are able to focus on the esteem-relevant information contained within a downward comparison opportunity. Although the means tended to
be in the predicted direction, results did not support that expectation, however. The absence of main effects and interactions in the T2-T3 repeated measures analyses suggested that the nonsignificant self-esteem changes were not moderated by subjects' global self-esteem, varying levels of threat, or downward comparison opportunity.

One possible alternative explanation for the absence of the expected interaction in the DCI conditions might relate to subjects' reactions to or interpretations of the low threat information. If subjects interpreted the low threat information as success information, the conditions established prior to the downward comparison opportunity in the current study may have been different than those created by the no information conditions in Reis et al. Specifically, the self-esteem of low self-esteem individuals may have been sufficiently bolstered by the success information (which was administered prior to the DC opportunity) so that the information contained in the downward comparison opportunity was less necessary to satisfy a self-enhancement motivation. This post hoc interpretation was supported by the fact that subjects in the low threat, low self-esteem condition demonstrated significant improvement in self-esteem from T1 to T2 (following the low threat manipulation). Thus, it may be that these subjects did not react to the self-enhancing properties of the downward comparison information (and, as a
result, experience improvements in self-esteem at T3) as might be expected in the absence of this additional positive feedback.

**Self-esteem subscale psychometrics.** A second issue to consider in the self-esteem results in the current study is the order effect created by the subscale division technique. Although the weighting of the JF-B version eliminated all order effects at Time 2, it is important to note here that the Order x Time effect reoccurred in the T2/T3 repeated measures analysis (despite the use of the weighting factor for both the T2 and T3 JF-B scales). Subjects were clearly responding differently to the different subscales. However, the cause of these differences is not readily apparent. It seems unlikely that practice effects were occurring since subjects completing the A/B order demonstrated declines in their self-esteem scores whereas self-esteem improvements were noted in those individuals who completed the B/A order. If practice effects were occurring, both orders would have produced self-esteem improvements at T3. It may simply be that the different subscales tapped different self-esteem related domains (such as reactions to social evaluation or perceptions of skill competence). The reoccurring subscale order effects in the T2-T3 analysis arouses concern that the Janis-Field 20-item version does not measure self-esteem as a unitary construct.
and that the subscales were not created with an equal distribution of questions from the different constructs.

Other than the Order x Time interaction, there was no evidence of interactions of subscale order with the other independent variables in this study (i.e., all ps for interactions including order were greater than .1). Of greater relevance, the nonsignificant outcome of the SE x Threat x DCI x Order x Time interaction (p = .3) suggests that the subscale orders created for this study were not related to the absence of the anticipated SE x Threat x DCI x Time interaction (p = .86). In combination, these observations reduce concern about the effects of the psychometric properties of the subscales and redirect the explanation for the absence of anticipated self-esteem change to the concern with subjects' interpretations of the low threat feedback noted earlier.

The Negative Mood Primacy Effect

The mood and self-esteem change hypotheses for the current study were generated assuming that a threat manipulation would affect each of these dimensions of subjective well-being differently. Specifically, it was suggested that highly threatening feedback would generate a negative mood primacy tendency for low self-esteem, DCI subjects such that the amelioration of their negative mood states would take precedence over other forms of self-
enhancing activities provided within the comparison opportunity. Thus, these individuals should experience improvements in mood but not self-esteem. When negative mood was not created (i.e., in the low threat conditions), it was suggested that low self-esteem, DCI subjects would be more likely to attend to the self-esteem relevant information and, thus, experience improvements in self-esteem. No significant mood improvements were anticipated in the low threat conditions because mood was not likely to be lowered by positive feedback concerning subjects' acuity at social acumen.

Data from the current study provide partial support for these hypotheses. First, it is important to re-emphasize that a main effect for threat was noted for mood but not for self-esteem at T2. Mood scores for highly threatened subjects were lower than those for low threat subjects, whereas self-esteem scores did not differ significantly across threat conditions. These findings suggest that the threat manipulation affected these measures of subjective well-being differently. This observation will be elaborated on shortly.

More importantly, results obtained in the T2-T3 repeated measures analyses for mood partially supported the negative mood primacy hypothesis. As expected, significant mood changes, but not self-esteem changes, occurred for low SE, high threat, DCI subjects suggesting that high levels of
threat influence improvements in mood but not self-esteem. These results were consistent with the hypothesized negative mood primacy effect but would have been more fully supported if the low SE, low threat, DCI subjects had demonstrated improvements in self-esteem and not mood. Although the anticipated absence in mood change was noted for these subjects, the expected change in self-esteem did not occur. As noted in the previous section, the absence of self-esteem change may be attributed to the success (rather than no threat) interpretation of the social acumen information. However, at best, these results only partially support the negative mood primacy effect. Given subjects' reactions to the low threat information, a more adequate test of this hypothesis should be conducted using a threat/no threat design with a DC opportunity.

**Effects of high threat on mood and self-esteem.** Although a central focus of the mood and self-esteem analyses involved the negative mood primacy effect, one of the secondary questions that arises from the T2 ANOVAs on mood and self-esteem is why mood and self-esteem were affected differently by the high threat information. Specifically, why was there a T2 main effect for threat in the mood analysis but not in the self-esteem analysis? One explanation for the difference in these results involves a consideration of the dynamic
characteristics of each conceptualization of subjective well-being.

Many conceptualizations of mood and self-esteem have emphasized the "trait-like" qualities of these psychological dimensions (cf. Costa & McCrae, 1988; McCrae & Costa, 1987; Janis & Field, 1959; Kaplan & Pokorny, 1971). For example, Costa and McCrae have isolated neuroticism (i.e., emotionality) as one of five basic elements or traits of personality. Similarly, self-esteem has been described as an integral, self-evaluative component of an intricate, well-developed cognitive network referred to as an individual's self-schema (Markus, 1977; Markus & Nurius, 1986). From this perspective, both conceptualizations of subjective well-being are argued to reflect relatively stable, enduring evaluations of self-regard.

Although there has been considerable acceptance that mood and self-esteem represent stable individual differences, some researchers are careful to note that these dimensions also possess a labile quality. They are affected by situational events. For example, Cattell (1985) noted that emotions and mood are partly determined by the "provocative power" of situations. In other words, individuals' emotional states may be somewhat dependent on the positive and negative qualities of the immediate environment. Positive moods are associated with the presence of positive events and surroundings;
negative moods with negative events. Moreover, Lewinsohn and his colleagues have suggested that as situations change, so does mood (Lewinsohn & Graf, 1973; Lewinsohn, Youngren & Grosscup, 1979). In summary, these researchers have found that mood tends to fluctuate with the type of positive or negative events recently experienced. Other researchers have noted that self-esteem can also be temporarily enhanced or decreased under certain conditions. For example, good evaluations of a person's performance may raise self-esteem whereas poor evaluations may lower it (Flippo & Lewinsohn, 1971). Moreover, negative mood inductions may lower self-esteem (Esses, 1989). Taken together, these empirical findings would suggest that the threat manipulation in the current study should have had a negative impact on both mood and self-esteem at T2 (i.e., a main effect for threat should have been noted). Why, then, was this effect not observed?

One plausible explanation for the differential impact of threat on mood and self-esteem requires a review of the methods for measuring mood and self-esteem in the current study. Mood scores were calculated using ratings of current mood assessments (i.e., "Please indicate the extent to which the following adjectives reflect your current mood.") whereas self-esteem scores were obtained from participants' responses to a measure of global self-esteem. In other words, for the assessment of mood state, participants were asked to reflect
on their immediate affective reactions following the threatening information. The self-esteem assessment required that participants consider their overall or general self-evaluations—a methodological difference that might have required that they consider their self-esteem across a variety of situations, not just this one. The threatening information contained in this particular social comparison situation might have been viewed as either consistent or inconsistent with this more general self-evaluation. Specifically, a poor social acumen score might represent inconsistent information for high self-esteem individuals and, thus, be rejected. Alternatively, this score could have been viewed as consistent information for individuals low in self-esteem—it didn't tell much new about themselves. In either case, what was intended to be threatening information might not have affected global self-esteem. This could have been the case particularly if subjects viewed the social acumen dimension as a relatively minor (albeit important) element of their overall self-schema. No data were collected in the current study that might clarify this question, however. Moreover, the change in self-esteem noted in Reis et al. (1993) would provide a counter-argument that subjects are capable of demonstrating (at least) temporary change in general self-evaluations based on information from an immediate social comparison situation. That observation not withstanding, future research on this
issue should be sensitive to this state vs. trait dimension and should also determine the overall importance of the threatening information to participants' self-definition. With respect to the current study, it appears that the threatening information was sufficient to affect immediate reactions (i.e., mood) but not sufficient to affect overall self-evaluations (i.e., self-esteem).

Perceptions of Vulnerability

**Self-other risk estimate bias.** Previous research has established that there may be a number of reasons that people believe they are less likely than others to experience a negative event. One of the cognitive mechanisms thought to influence this phenomenon is an egocentric tendency to focus on one's own risk-reducing behaviors. Weinstein (1980) has also suggested that, when people do think about another person's vulnerability for negative events, they tend to focus on the risks for someone who is "doing nothing" to protect his or her health. Requiring people to think about the risk-reducing behaviors of others has been a successful technique in decreasing self-other risk estimate bias (Weinstein, 1983). In the current study, an attempt was made to expand this self-other bias by providing people with information about the risk-increasing conduct of a downward comparison target. It was suggested that people may engage in similar activity under naturally-occurring circumstances in which they temporarily
feel threatened in an effort to preserve their feelings of invulnerability.

The primary interest in the current study was to assess the impact of threat and downward comparison on self and other perceptions of vulnerability to unplanned pregnancy in high and low self-esteem women. In particular, it was predicted that individuals who have been threatened and are high in self-esteem, as opposed to their low self-esteem counterparts, would be more likely to change their self or other risk estimates. This result was anticipated due to individual differences in reaction to both threatening and downward comparison information. Specifically, high SE persons are more resistant to (negative) information that conflicts with their view of themselves (Cohen, 1959). In the current study, the feedback concerning poor social acumen performance fits that description--high SE individuals most likely would not expect to do poorly on such a dimension. Because these individuals were expected to react negatively to this information, it was anticipated that they might overreact to subsequent downward comparison information indicating that they were a more effective contraceptor than the DC target. The predicted result was that these high SE individuals would temporarily overestimate (i.e., increase) self-other differences in risk thus reaffirming their self-definition as a successful person.
Low self-esteem individuals, on the other hand, are more accepting of failure feedback (Cohen, 1959). Therefore, the threat feedback provided in this study should be more consistent with what these persons expect for their performance, and might not elicit the same negative effects as it does for individuals with high self-esteem. Moreover, low SE individuals might be somewhat cautious about accepting information that they are performing better than someone else (as would occur in a DC situation) because it doesn't fit with their overall self-concept (cf. Rothbaum, Weisz, & Snyder, 1982). In combination, these reaction tendencies were expected to result in negligible change in self-other perceptions of vulnerability following threat and downward comparison.

The results of this study indicated that, at mass testing, participants did view themselves as less likely to experience an unplanned pregnancy than women who don't use contraception. This difference does not represent a bias so much as it is an accurate reflection of the pregnancy probabilities for different groups of women who use effective vs. ineffective contraceptive methods. They rated their own risk for unplanned pregnancy to be minimal, which it is for someone who uses effective contraceptive methods regularly, and rated women who don't use contraception as considerably
more at risk. At Time 1, therefore, these data represent an accurate self-other assessment of risk.

The primary question of interest in the current study was whether the threat and downward comparison manipulations would produce changes in self and other risk estimates. As expected, low SE, threatened, DCI participants did not change their self-other risk estimates significantly. However, this finding becomes less informative when the expected T1-T3 change in self-other risk did not occur for high SE, DCI participants. Given these data, it remains unclear whether the absence of expected effects were due to the ineffectiveness of the threat manipulation to evoke self-enhancing change in perceptions of vulnerability due to the use of either insufficient level of threat or the wrong kind of threat. Alternately, perhaps the downward comparison information was ineffective in producing larger self-other risk differentials.

It is important to note that subjects' perceptions of risk for unplanned pregnancy for self and other were highly skewed—there was little room for their estimates of their own invulnerability to become smaller or the risk of women who use no contraception to become larger. Both "floor" and "ceiling" effects occurred. As pointed out earlier, these self-other perceptions were probably relatively accurate given subjects' personal contraceptive practices compared with those of women
not using contraceptives. Given the sample of women included as participants and the comparison target selected, this accuracy would work against the expected change in self-other risk estimates just as would other kinds of floor/ceiling effects. With so little room for self-risk estimates to decrease and other-risk estimates to increase, the most probable way for the difference self-other risk estimates to become greater is if changes occurred in both types of risk estimate. The results from previous research would not support the assumption that this type of risk-estimate change tends to occur (cf. Gerrard et al., 1991; Weinstein, 1982).

For future research, one solution to the problem of ceiling and floor effects might be to select participants and the comparison target along less extreme contraceptive effectiveness levels. For example, by selecting participants who use contraceptives that are less effective (i.e., contraceptive sponge or withdrawal) and therefore have greater probabilities for "contraceptive failure," more possibility for a decrease in perception of self-risk following a DC opportunity might occur. Conversely, by selecting a comparison target who used a slightly more effective method, there would be more possibility for an increase in other-risk. Either situation might produce the anticipated change in self-other risk estimates and, on a practical level, provide more
information about the perception changes that occur in a significant proportion of women actually using contraception.

**Self- vs. other-risk change.** If we specifically seek evidence of change in other-risk estimates, we might suspect, based on previous literature such as Weinstein (1983), that such a tendency would occur in women who have had the opportunity to review their own conduct and that of a comparison target. Such a condition mirrors Weinstein's (1983) "other information" condition in which he had people review their own risk behaviors and then consider another's risk-relevant behaviors. In that study, subjects who engaged in self and other review demonstrated more comparative risk change than did women who merely considered their own risk factors—suggesting that the change in perceptions was caused more by change in perceptions of other-risk estimates than in self-risk estimates. Moreover, changes in self-risk estimates might occur for women who had only reviewed their own behavior, as was the case for Weinstein and Lachendro's (1982) subjects. In either case, we might expect to observe a DCI x Target x Time interaction. Support for the other-risk hypothesis would be obtained if other-risk estimates for subjects in the DCI conditions increased from T1 to T3. Support for the self-risk hypothesis would be obtained if T1/T3 increases in self-risk estimates for subjects in the No DCI conditions were observed. Neither of these trends
occurred, however. Although the SE x DCI x Target x Time interaction was significant, the trends in means did not support these hypotheses. More important, no predictable pattern of changes in self- or other-risk estimates were obtained from this downward comparison opportunity.

**Target characteristics and self-other risk.** Another issue with respect to this specific sample of women is that subjects in the DCI condition reported that their contraceptive practices were significantly more effective than were those of the comparison target. Although they initially reported social similarity to this woman, it could be that the contraceptive information changed that perception such that she became too dissimilar for meaningful social comparison. If she was not viewed as a relevant source of information for determining one's comparative risk for pregnancy, subjects might not have been affected by this comparison information. The issue of similarity to the comparison target is a significant one as a number of researchers have pointed out.

For example, Wills (1991) argues that the affective consequences of engaging in downward comparison will vary depending on the degree of similarity with the downward comparison target. Specifically, he states that as the difference between self and target increases, individuals become increasingly less comfortable with the process. Others have found that, as people identify less with comparison
targets, DC opportunities become less impactful (cf. Miller, 1984; Tesser, 1988) and less helpful (cf. Sanders, 1982). Although these observations are more directly relevant to preferences for DC targets or the benefits derived from engaging in the process, there is little reason to doubt that similarity holds less importance when perceptions of vulnerability are the dependent measures under consideration. Although this issue can not be resolved directly since no specific data on change in similarity ratings were obtained in the current study, this remains a plausible explanation for the lack of expected results. This post hoc interpretation has to remain largely speculative, however.

In a related concern, subjects in this experiment had been asked to provide their perceptions of vulnerability for the average ISU woman who doesn't use contraception—*not* for the specific target whose contraceptive behavior they reviewed. Weinstein (1980) has suggested that part of the development of perceptions of invulnerability involves calling to mind a prototypical victim for a negative event. When subjects are asked to compare with a typical other, they supposedly refer to this prototypical image. It is entirely plausible that, even though the comparison target fit in the general category of "women who do not use contraception," she may not be a good match for subjects' prototype for this category (cf. Kahneman & Tversky, 1972). She may differ along
other social dimensions, in her sexual activity levels, in her personal contraceptive history from what participants expect of an ineffective contraceptor. She may be viewed as a unique case of a woman who doesn't use contraception but who varies due to her other personal characteristics. An analogous situation occurs when a member of a minority group is viewed as an unusual example of a member in that group—information about that particular individual doesn't change the overall impression of that group of persons (cf. Weber & Crocker, 1983). To the extent that she doesn't fit that image, her specific contraceptive information may not have a direct relationship to subjects' expectations about members of this category. Therefore, when asked to consider the risk for average women who don't use contraception, subjects may rely more on their prototype than on the information this woman's contraceptive behaviors provide. If nothing has occurred to change their prototype, then changes in self-other risk estimates may not occur.

**Direct and Indirect Active Downward Comparison**

Previous researchers have suggested that individuals differ in their use of passive and active forms of DC (Gibbons & Boney McCoy, 1991). Recently, similar individual differences have been suggested regarding direct and indirect forms of self-enhancement (Brown et al. 1988). Brown et al. (1988) hypothesized that high self-esteem persons may engage
in more direct forms of self-enhancement such as in-group favoritism. This line of reasoning is consistent with Crocker et al.'s (1987) observation that these individuals are likely to engage in both in-group favoritism and out-group derogation. Low self-esteem persons, on the other hand, were hypothesized to engage in indirect forms of self-enhancement such as the derogation of an out-group's work or the selection of a less-skilled comparison target—methods that don't focus attention on self-superiority.

**Target derogation.** In the current study, direct active downward comparison was expected to take the form of change in the favorability of trait ratings for the downward comparison target. The hypothesis was that high self-esteem, threatened downward comparison subjects would demonstrate the greatest amounts of derogation. The results from the current study indicated that subjects who received DC information tended to change their opinions of the comparison target over the course of the experiment. In particular, individuals who received information about the target's ineffective contraceptive practices became more negative toward her than did those persons who hadn't received this information, which indicates that the downward comparison manipulation did have an impact on subjects' opinions of this target. It must be stressed, however, that none of the anticipated interactions were obtained.
The threat manipulation did have an impact on subjects' opinions of the target in that participants who experienced high threat tended to derogate the target more than did low threat, DCI subjects. These analyses also suggested that low self-esteem, high threat, DCI participants tended to derogate the target the most, followed by their high self-esteem counterparts. This finding indicates that, under certain conditions, even low self-esteem persons are likely to derogate another person severely. As noted earlier, the contraceptive differences between self and target were perceived to be highly significant. It is possible that there are some levels of performance that are so clearly ineffective that the impact of that information overwhelms other interactive effects of personality and situational threat.

**Target method derogation.** In the current study, indirect active downward comparison was expected to occur via the development of more negative attitudes toward the comparison target's method of contraception. Based on Brown et al.'s (1988) observations, it was expected that low self-esteem, high threat, DC subjects would be most likely to engage in this form of active DC. However, the Time main effects from T1/T3 repeated measures analyses revealed that there was a general trend across all participants to develop increasingly more negative views on both the "no method" and "ineffective methods" indices. This observation could suggest two
different dynamics were occurring. First, perhaps the DC information did not provide any unique contribution to attitude change in this situation or, second, the development of more negative attitudes toward these methods might have been due primarily to subjects' efforts to provide socially acceptable responses. Prior to arriving at the laboratory, these participants knew the study pertained to contraceptive use and opinions. It is possible that their responses were somewhat influenced by social desirability (either in an attempt to create a positive impression on the experimenter, who was obviously interested in contraceptive issues, or so they wouldn't be embarrassed for advocating the use of ineffective contraceptives if an actual discussion of contraception did occur).

As was the case with the data on perceived vulnerability, it should be noted that the method derogation data were also skewed such that subjects held generally negative opinions about the use of no contraception. Therefore, the lack of (negative) change in opinions toward this contraceptive practice could have been due to a floor effect. Persons with polarized ideas, either highly positive or extremely negative, may be fairly inflexible to change in the face of social information—there is little room for their opinions to become more favorable in the former case or less favorable in the latter. It might be the case that changes in attitudes would
occur in a sample of women who hold more moderate views toward a particular contraceptive practice. For such individuals, there would be more opportunity for opinions to become more or less negative under the influence of information gained from others. Therefore, attitude change as a form of indirect active DC may only be applicable for persons who do not hold extreme opinions.

Conclusions

Conceptual Contributions

In spite of the lack of empirical support for its hypotheses, the current study makes a number of conceptual contributions to the research in downward comparison through its effort to expand the theory and by introducing several new concepts to the literature. Most notably, the conceptualization of attitude change as a form of indirect active DC allows for a form of derogation that serves the purpose of self-enhancement. Because people might feel some ambivalence about engaging in target derogation (Wills, 1981), attitude change on a tangential dimension may produce the self-enhancing effect without producing negative feelings about derogating another person.

Moreover, this process allows low self-esteem people to engage in derogation, albeit in a more socially acceptable manner. The suggestion that attitude change represents a type of downward comparison is consistent with an expanding list of
techniques available for engaging in the process. Moreover, many aspects of the indirect active DC process are analogous to ideas developed to explain the dynamics of dimensional comparisons. For example, some researchers investigating dimensional comparisons suggest that when comparison along one dimension will prove less favorable to the self, people may actually switch to comparison dimensions upon which they rate more favorably (Taylor, Wood, & Lichtman, 1983). The process of indirect active DC is consistent with such a dimension shift.

The current study also contributes to the downward comparison literature through its investigation of the impact of threat on self-esteem and mood. Given the problems with interpreting subjects' reactions to the "low" threat information, it remains difficult to determine the basis for the absence of self-esteem effects. However, the trends in the self-esteem and mood data in this study suggest that threat does have different effects on different measures of subjective well-being. The suggestion that "state" vs. "trait" variables respond differently to threat manipulations expands the interpretations of the mood/self-esteem findings in the current DC literature. It may be these very differences that produce inconsistent findings across the relatively few studies that have incorporated both dimensions. Moreover, the possibility that negative-emotion primacy may
influence mood and self-esteem changes in DC provides a means for studying differences in these dimensions under threatening, downward comparison situations. Further research is needed to provide support of these hypotheses, however.

The final contribution, but perhaps one that would be of particular importance to health psychologists, involves the dynamics underlying increases in perceptions of invulnerability. To the extent that illusions of safety concerning personal health interfere with initiating health preventive programs (Weinstein, 1988), it becomes incumbent upon researchers to determine the mechanisms that sustain these biased perceptions. The hypothesized process described in the current study provides one explanation of why these illusions or biases can be so persistent. People may be motivated, at times, to temporarily strengthen those biased views and may accomplish that by adopting a more extreme position or perception. The ceiling effects noted in the current study did not allow for much change in perceptions. Work with a different sample of subjects, however, might produce more meaningful results.

Limitations

Although the current study has several conceptual merits, some limitations should also be noted. The first relates to the comparison target selection; the second, to the sample selected for the study. In an effort to create a downward
comparison opportunity, the selection of a comparison target who used nothing for contraception might have been too powerful a contrast to meet the basic requirement of similarity thought to be an integral part of social comparison processes. Subjects' reactions to such a target were clearly negative--so negative, in fact, that all persons thought less positively of the target upon finding out about her contraceptive practices. The manipulation, though powerful, may have undermined the direct active DC hypothesis. Moreover, when asking subjects to provide an approval rating for using no methods of contraception, social desirability alone is likely to create very skewed data.

The use of effective contraceptors as the sample for this study also brought with it some generalization limitations. People who are already engaging in the most efficacious behavior possible (i.e., the sample was mostly pill users who reportedly used it consistently) are not likely to think of themselves as vulnerable to an unplanned pregnancy, nor are they likely to be as affected by information about someone who doesn't use any method at all--they are very different than that person.

It is also important to point out that, in the current study, subjects received feedback that could essentially be considered as "success" and "failure" information--a "no" information condition was not provided. Both forms of
feedback have the potential to produce emotional reactions, which may serve to focus their reactions to social comparison information to an emotional dimension. In a "no" information situation, they might have more opportunity to focus on social comparison information itself. Under these circumstance, it might be more likely that such SC would affect self-esteem. This distinction might be an important in the pursuit of the negative-emotion primacy hypothesis.

Implications

The basic rationale for the current study appears sound. The questions of the impact of threat on self-esteem and mood have yet to be resolved. The data from this study suggest that focusing on the dynamic aspects of these dimensions might be a fruitful line of investigation. Perceptions of vulnerability and flexibility in changing optimistic bias also continue to be important issues. More research is again indicated here—perhaps using samples that do not have overly skewed perceptions of vulnerability. The study of indirect active DC also may have an impact on the theory of downward comparison by clarifying and expanding scientific knowledge about the variety of ways in which people engage in self-enhancing strategies. Although the skewed distribution of attitudes in the current study did not allow an adequate test of this question, change in attitudes less firmly held might
still be influenced by such a process. Again, further work will be required to test this question.
ENDNOTES

1. A factor analysis was conducted on the 9-item General Birth Control Opinion Survey to determine if a specific morality factor could be extracted. Three items from the questionnaire produced a moral issues factor: "The whole idea of contraception is unpleasant to me.", "Using contraception is morally or religiously wrong", and "I would be ashamed if others important to me knew I use contraception". A morality index was created by adding the scores for each response (alpha = .67) and this index was subsequently used as a covariate in reanalyses of each of the major dependent variables to determine if subjects' moral beliefs are significant mediating variables in contraceptive comparison situations. Results of these ANCOVAs did not reveal any significant or meaningful differences between the original findings and those using a moral index covariate.

2. Correlational analyses indicated that the T1 and T2 measures of JF-A and JF-B were positively correlated, \( r_s = .80 \) and .86, respectively. Self-esteem scores at T2 and T3 on the different orders were positively correlated (JF-A/B order, \( r = .89 \) and JF-B/A order, \( r = .88 \)).

3. Reliabilities for the 10-item JF versions were also high at T2 and T3 (alphas JF-Version A = .87 and .88, and JF-Version B = .84 and .85).
4. Correlational analyses of T2 and T3 mood scores revealed a positive correlation, $r = .78$, suggesting reasonable reliability between these measures.

5. Reliability analyses were conducted on both self and target indices at all time intervals. Based on these analyses, the adjectives "sincere" and "insincere" were eliminated from the computed index to increase the overall alphas, which subsequently ranged from .71 to .80. Indices were balanced by multiplying the 3-item subscale at each Time interval by 4/3 before that subscale was entered into the index formula.

6. This interaction appears to be driven by the fact that the low self-esteem, DC, threatened subjects tended to experience the largest decrease on the negatively-valenced adjectives (those items comprising the negative adjective subscale). Repeated measures analyses on the negative subscale revealed a main effect for Time ($F(1,84) = 10.69$, $p = .002$) such that subjects in all conditions reported less negative mood state. Additionally, a marginal SE x Threat x DC x Time interaction ($F(1,84) = 3.30$, $p = .07$) was observed with the trend just mentioned. Separate repeated measures (T2-T3) analysis conducted on positive subscales revealed a significant Threat x Time interaction ($F(1,85) = 16.86$, $p < .001$) and a SE x Threat x Time interaction ($F(1,85) = $
3.86, $p = .05$). Threatened subjects reported more positive moods at Time 3. Moreover, the threatened, low self-esteem individuals tended to report more positive mood than subjects in the remaining SE and threat conditions.

7. A 2 x 2 x 2 ANCOVA on T2 mood (controlling for possible differences in T1 mood levels) for all experiment subjects revealed a main effect for Threat, $F(1,84) = 11.97, p = .001$. As in the repeated measures ANOVA, the 4-way interaction failed to reach significance, $p = .602$. T-tests similar to those conducted on T2-T3 mood change results did not reveal similar trends as those noted in the repeated measures. In this case, the T2 mood levels (controlling for T1 mood levels) for low SE, threatened, DCI subjects was significantly different from that of subjects in 3 contrasting conditions ($ps < .2$). The $ps$ in the remaining 4 conditions exceeded .2.

8. A 2 x 2 (SE x Threat) ANCOVA on DCI subjects' T2 mood (controlling for differences in T1 mood levels) revealed a marginal SE x Threat interaction ($F(1,37) = 3.1, p = .09$) in which the tendency was for low SE, high threat subjects to demonstrate the most positive mood.

9. Data for perceived vulnerability ratings were skewed and thus all analyses were performed using square root transformation (cf. Howell, 1987; p.302).
10. Sphericity tests indicated that the sphericity assumption was not violated for these repeated variables (sph test $p = .25$). Therefore, results were obtained from univariate F-tests (cf. Vasey & Thayer, 1987).

11. Sphericity tests indicated that the assumption of sphericity was not violated ($p > .13$). Therefore results are drawn from univariate analyses.

12. Sphericity tests indicated that the assumption of sphericity was violated ($p > .001$) for the "No method" repeated measure but not for the "Ineffective" index repeated measure. Therefore, results are drawn from multivariate analyses for the former and univariate analyses for the latter.
REFERENCES


ACKNOWLEDGMENTS

I gratefully acknowledge the following individuals for their intellectual and emotional support during the course of this project and throughout graduate school:

To Rick Gibbons & Meg Gerrard - Thank you for EVERYTHING. You've both taught me so much about the research and professional world of social psychologists. How I truly miss your guidance and, especially, seminars!

To Wendy Harrod, Gary Wells, and Ken Koehler - Thank you for your participation on my dissertation committee and being willing to defend during "the Great Flood".

To my colleagues at Eastern Washington University - Thank you for your patience and willingness to look ahead. Special thanks to Gail Hicks, Connie Raybuck, Lee Swedberg, and Pam Elkind for cups of hot tea and conversation.

To Nancy Weigand & Sue Boney McCoy - Thanks for your patience, support, and insights. Always remember to check your compute statements.

To my mother and children without whose love and support none of this would really matter. Especially my love to Rebekah, who is still wondering if Mommy will get her nurse now.

To my darling Roger - you inspire me now and always.

And, finally, to the participants in my doctoral study - I appreciate your good-natured cooperation in telling your stories for my doctoral work.
APPENDIX A
MODIFIED JANIS-FIELD
PLEASE NOTE

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176-178, Appendix A

University Microfilms International
APPENDIX B
CONTRACEPTIVE USE AND OPINION QUESTIONNAIRE
Contraceptive Use and Opinion
Questionnaire

Background
1. Your age at last birthday ______

2. Marital Status
   ___ single ___ married ___ divorced ___ separated

Sexual/Contraceptive Use History
Please answer the following questions concerning your sexual and contraceptive use history. Be assured that all answers to these questions are confidential and will not be used by anyone besides the experimenter involved in this research.

3. Have you ever engaged in sexual intercourse? yes no

If your answer to question 3 was "no", skip to question 10. If it was "yes", please also answer questions 4 through 9.

4. How many sexual partners have you had? ______

5. On the average, how often were you engaging in sexual intercourse in the 6 months prior to now (answer in terms of average number of times per month): ______ per month.

6. On the average, how often were you engaging in sexual intercourse in the 3 months prior to now (answer in terms of average number of times per month): ______ per month.

7. Over the past 6 months, what contraceptive method did you use most often? __________________________

8a. Over the past 3 months, what contraceptive method did you use most often? __________________________

8b. How consistently did you use that method (one listed in 8a)?

   ___ used every time
   ___ used most of the time (approximately 80% of the time)
   ___ used half the time (approximately 50% of the time)
   ___ used occasionally (approximately 30% - 40% of the time)
   ___ seldom used (less than 20% of the time)

8c. Again considering the method you listed in 8a, what percent of the time during which you were sexually active and using this method did you feel that you were using the method exactly as it was intended to be used (i.e., followed instructions accurately, etc)? ________ %

   If you can think of any times when you think you or your partner did not use this method exactly right, how frequently did this happen? ________ (times per month)
8d. How important were the following factors in your selection of this method? (Please rate each of the following using a scale where 1 = not at all important and 7 = extremely important)

- effectiveness of method
- moral/religious beliefs
- low sexual intercourse activity levels
- partner's preference for method
- your preference for method
- availability of method
- cost of method
- convenience of method
- medical "side effects" associated with method
- opinions/advice of friends

9. If there is additional information that you feel might be of importance in describing your contraceptive practices but which has not been covered in the preceding questions, please briefly provide that information below.

Perceptions of Unplanned Pregnancy

We would now like you to consider for a moment the issue of unplanned pregnancy. Then answer the following questions using a 1 - 100 scale where 1 = not at all possible and 100 = extremely likely, most definitely will happen.

10a. What do you think the likelihood is that you will have an unplanned pregnancy within the next year if you had sexual intercourse at the same rate you did in the past six months and if you used your current method of contraception as you usually do? (1 - 100 scale) ______

10b. What do you think the likelihood is that you will have an unplanned pregnancy within the next year if you had sexual intercourse at the same rate you did in the past six months, but did not use any method of contraception? (1 - 100 scale) ______

10c. What is the likelihood that the average college woman your age will have an unplanned pregnancy in the next year if she continues using the contraceptive method she is currently using? (1-100 scale) ______

10d. What is the likelihood that the average college woman your age will have an unplanned pregnancy in the next year if she used the birth control pill? (1-100 scale) ______
10e. What is your likelihood of having an unplanned pregnancy in the next year compared to the average college woman your age who uses the birth control pill? (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

<table>
<thead>
<tr>
<th>You are more likely to become pregnant next yr.</th>
<th>Average woman who uses pill is more likely to become pregnant next yr.</th>
</tr>
</thead>
</table>

10f. What is the likelihood that the average college woman your age will have an unplanned pregnancy in the next year if she used no method of contraception? (1-100 scale) ________

10g. What is your likelihood of having an unplanned pregnancy in the next year compared to the average college woman your age who uses the no method of contraception? (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

<table>
<thead>
<tr>
<th>You are more likely to become pregnant next yr.</th>
<th>Average woman who uses no contraception is more likely to become pregnant next yr.</th>
</tr>
</thead>
</table>

10h. What percent of average college women become pregnant in a typical year? ________ (0 to 100%)
General Birth Control Opinion Survey

In this section of the survey, we are interested in some of your general opinions concerning contraception. Please think carefully about each statement and then indicate your opinion about the statement by circling the number which best reflects your opinion.

11. The whole idea of contraception is unpleasant to me.

   1  2  3  4  5  6  7
   strongly disagree
   strongly agree

12. The most important thing about contraception is that it makes sex worry free and enjoyable.

   1  2  3  4  5  6  7
   strongly disagree
   strongly agree

13. Using contraception is morally or religiously wrong.

   1  2  3  4  5  6  7
   strongly disagree
   strongly agree

14. Anyone engaging in sexual intercourse definitely should use contraception of some kind.

   1  2  3  4  5  6  7
   strongly disagree
   strongly agree

15. I would be ashamed if others important to me knew I used contraception.

   1  2  3  4  5  6  7
   strongly disagree
   strongly agree

16. It is morally imperative that contraception is used with each and every sexual interaction.

   1  2  3  4  5  6  7
   strongly disagree
   strongly agree
17. The importance of contraception has been greatly exaggerated.

1 2 3 4 5 6 7
strongly disagree strongly agree

18. If a person uses or has available methods of contraception, it is like admitting to everyone that s/he is planning to have sex.

1 2 3 4 5 6 7
strongly disagree strongly agree

19. Having contraceptive methods readily available invites sexual behavior.

1 2 3 4 5 6 7
strongly disagree strongly agree

Specific Birth Control Opinion Survey

In this section of the survey we are interested in your opinions about several specific birth control methods. Please answer each question even if you do not know much about the method and/or have never used it. For each question, circle the number which best represents what you know or believe.

20. How likely would the average college woman be to use the pill if she was involved in a sexual relationship?

1 2 3 4 5 6 7
would definitely use the pill
definitely would not use the pill

21. How likely would you be to use the pill if you were involved in a sexual relationship?

1 2 3 4 5 6 7
would definitely use the pill
definitely would not use the pill
22. Please indicate your opinion about using the pill as a contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

approve of
strongly

approve of
strongly

23. How likely would the average college woman be to use the condom if she was involved in a sexual relationship?

1 2 3 4 5 6 7
would
definitely
use the condom
definitely
would not use
the condom

24. How likely would you be to use the condom if you were involved in a sexual relationship?

1 2 3 4 5 6 7
would
definitely
use the condom
definitely
would not use
the condom

25. Please indicate your opinion about using the condom as a contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

approve of
strongly

approve of
strongly

26. How likely would the average college woman be to use withdrawal if she was involved in a sexual relationship?

1 2 3 4 5 6 7
would
definitely
use withdrawal
definitely
would not use
withdrawal

27. How likely would you be to use withdrawal if you were involved in a sexual relationship?

1 2 3 4 5 6 7
would
definitely
use withdrawal
definitely
would not use
withdrawal
28. Please indicate your opinion about using withdrawal as a contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

approve of strongly disapprove of strongly

29. How likely would the average college woman be to use no contraception if she was involved in a sexual relationship?

1 2 3 4 5 6 7

would definitely go would not go
without contraception without contraception

30. How likely would you be to use no contraception if you were involved in a sexual relationship?

1 2 3 4 5 6 7

would definitely go would not go
without contraception without contraception

31. Please indicate your opinion about using no contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

approve of strongly disapprove of strongly
APPENDIX C
WILDER SOCIAL AWARENESS INVENTORY
FEEDBACK EVALUATION
(VERSIONS A AND B)
WILDER SOCIAL AWARENESS INVENTORY
FEEDBACK EVALUATION
(Version A)

1. To what extent are you satisfied with your score on the Wilder Social Awareness Inventory?

Not at all Satisfied
Extremely Satisfied

2. In your opinion, how important is it to have social awareness as a personal trait?

Not at all Important
Extremely Important

Please answer the following questions about yourself (by circling the response of your choice).

3. How often do you have the feeling that there is nothing you can do well?
   A. very B. fairly C. sometimes D. once in a E. practically often often great while never

4. How often do you feel that you have handled yourself well at a social gathering?
   A. very B. fairly C. sometimes D. once in a E. practically often often great while never

5. How often do you worry about whether people like to be with you?
   A. very B. fairly C. sometimes D. once in a E. practically often often great while never

6. How often do you feel that you are a successful person?
   A. very B. fairly C. sometimes D. once in a E. practically often often great while never

7. How often do you feel self-conscious?
   A. very B. fairly C. sometimes D. once in a E. practically often often great while never

8. How confident are you that your success in your future job or career is assured?
   A. very B. fairly C. somewhat D. fairly E. very confident confident confident unconfident unconfident
9. How often do you feel inferior to most of the people you know?
   A. very    B. fairly  C. sometimes  D. once in a E. practically
   often  often  great while  never

10. When speaking in class discussions, how sure of yourself do you feel?
    A. very    B. fairly  C. somewhat  D. fairly  E. very
    sure  sure  sure  unsure  unsure

11. How much do you worry about how well you get along with people?
    A. very    B. fairly  C. sometimes  D. once in a E. practically
    often  often  great while  never

12. In general, how confident do you feel about your abilities?
    A. very    B. fairly  C. somewhat  D. fairly  E. very
    confident  confident  confident  unconfident  unconfident

MOOD
Please indicate the extent to which the following adjectives reflect your current mood.

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Hopeful</td>
<td></td>
</tr>
<tr>
<td>14. Discontented</td>
<td></td>
</tr>
<tr>
<td>15. Happy</td>
<td></td>
</tr>
<tr>
<td>16. Encouraged</td>
<td></td>
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<tr>
<td>17. Dissatisfied</td>
<td></td>
</tr>
<tr>
<td>18. Insecure</td>
<td></td>
</tr>
<tr>
<td>19. Optimistic</td>
<td></td>
</tr>
<tr>
<td>20. Gloomy</td>
<td></td>
</tr>
</tbody>
</table>
WILDER SOCIAL AWARENESS INVENTORY
FEEDBACK EVALUATION
(Version B)

1. To what extent are you satisfied with your score on the Wilder Social Awareness Inventory?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
</tbody>
</table>

2. In your opinion, how important is it to have social awareness as a personal trait?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Extremely</th>
</tr>
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<tbody>
<tr>
<td>Important</td>
<td>Important</td>
</tr>
</tbody>
</table>

Please answer the following questions about yourself (by circling the response of your choice).

3. When you have to talk in front of a class or a group of people your own age, how afraid or worried do you usually feel?
   A. very  B. fairly  C. somewhat  D. fairly  E. very afraid  afraid  afraid  unafraid  unafraid

4. How often do you have the feeling that you can do everything well?
   A. very  B. fairly  C. sometimes  D. once in a E. practically often  often  often  great while  never

5. How often are you troubled with shyness?
   A. very  B. fairly  C. sometimes  D. once in a E. practically often  often  often  great while  never

6. When you talk in front of a class or a group of people your own age, how pleased are you with your performance?
   A. very  B. fairly  C. somewhat  D. fairly  E. very pleased  pleased  pleased  displeased  displeased

7. How often do you think that you are a worthless individual?
   A. very  B. fairly  C. sometimes  D. once in a E. practically often  often  often  great while  never

8. How comfortable are you when starting a conversation with people whom you don't know?
   A. very  B. fairly  C. somewhat  D. fairly  E. very comfortable  comfortable  comfortable  uncomfortable  uncomfortable
9. How often do you feel that you dislike yourself?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically
   often        often        great while        never

10. How sure of yourself do you feel when among strangers?
    A. very  B. fairly  C. somewhat  D. fairly  E. very
    sure       sure       sure       unsure       unsure

11. How often do you feel so discouraged with yourself that you wonder
    whether anything is worthwhile?
    A. very  B. fairly  C. sometimes  D. once in a  E. practically
    often        often        great while        never

12. How confident do you feel that some day the people you know will look
    up to you and respect you?
    A. very  B. fairly  C. somewhat  D. fairly  E. very
    confident     confident     confident     unconfident     unconfident

Mood
Please indicate the extent to which the following adjectives reflect your
current mood.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Very</th>
</tr>
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<tbody>
<tr>
<td>13. Hopeful</td>
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<tr>
<td>17. Dissatisfied</td>
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<tr>
<td>18. Insecure</td>
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<td>19. Optimistic</td>
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<tr>
<td>20. Gloomy</td>
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</tbody>
</table>
APPENDIX D
GROUP MEMBER EVALUATION
CONTRACEPTIVE HISTORY
(VERSIONS A AND B)
Group Member Evaluation
Contraceptive History
(Version A)

Please indicate your answer to each of the following questions concerning the group member's contraceptive history information.

1. Would you feel comfortable making similar comments in a small group setting?

| Extremely Uncomfortable | Extremely Comfortable |

2. In your opinion, how effective is this woman's contraceptive behavior in preventing pregnancy?

| Extremely Effective | Extremely Ineffective |

3. How effective is this woman's contraceptive behavior compared to average, sexually-active ISU undergraduate woman?

| Woman is more Effective | Average ISU is More Effective |

4. How effective is this woman's contraceptive behavior compared to yours?

| You are more Effective | Woman is More Effective |

Please explain briefly your answer to question 4.

Please answer the following questions about yourself (by circling the response of your choice).

5. How often do you have the feeling that there is nothing you can do well?
   A. very often  B. fairly often  C. sometimes  D. once in a great while  E. practically never
6. How often do you feel that you have handled yourself well at a social gathering?
   A. very B. fairly C. sometimes D. once in a E. practically
   often often great while never

7. How often do you worry about whether people like to be with you?
   A. very B. fairly C. sometimes D. once in a E. practically
   often often great while never

8. How often do you feel that you are a successful person?
   A. very B. fairly C. sometimes D. once in a E. practically
   often often great while never

9. How often do you feel self-conscious?
   A. very B. fairly C. sometimes D. once in a E. practically
   often often great while never

10. How confident are you that your success in your future job or career is assured?
    A. very B. fairly C. somewhat D. fairly E. very
     confident confident confident unconfident unconfident

11. How often do you feel inferior to most of the people you know?
    A. very B. fairly C. sometimes D. once in a E. practically
     often often great while never

12. When speaking in class discussions, how sure of yourself do you feel?
    A. very B. fairly C. somewhat D. fairly E. very
     sure sure sure unsure unsure

13. How much do you worry about how well you get along with people?
    A. very B. fairly C. sometimes D. once in a E. practically
     often often great while never

14. In general, how confident do you feel about your abilities?
    A. very B. fairly C. somewhat D. fairly E. very
     confident confident confident unconfident unconfident
**AFFECTIVE ASSESSMENT**

Using the following adjective, please indicate your current feelings.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Satisfied</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Secure</td>
<td></td>
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<tr>
<td>17. Sad</td>
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<tr>
<td>18. Hopeless</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Fessimistic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Cheerful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Discouraged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Contented</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Group Member Evaluation
Contraceptive History
(Version B)

Please indicate your answer to each of the following questions concerning the group member's contraceptive history information.

1. Would you feel comfortable making similar comments in a small group setting?

   Extremely Uncomfortable
   Extremely Comfortable

2. In your opinion, how effective is this woman's contraceptive behavior in preventing pregnancy?

   Extremely Effective
   Extremely Ineffective

3. How effective is this woman's contraceptive behavior compared to average, sexually-active ISU undergraduate woman?

   Woman is more Effective
   Average ISU is More Effective

4. How effective is this woman's contraceptive behavior compared to yours?

   You are more Effective
   Woman is More Effective

Please explain briefly your answer to question 4.

Please answer the following questions about yourself (by circling the response of your choice).

5. When you have to talk in front of a class or a group of people your own age, how afraid or worried do you usually feel?

   A. very afraid     B. fairly afraid     C. somewhat afraid     D. fairly unafraid     E. very unafraid
6. How often do you have the feeling that you can do everything well?
   A. very B. fairly C. sometimes D. once in a E. practically
   often often often great while never

7. How often are you troubled with shyness?
   A. very B. fairly C. sometimes D. once in a E. practically
   often often often great while never

8. When you talk in front of a class or a group of people your own age, how pleased are you with your performance?
   A. very B. fairly C. somewhat D. fairly E. very
   pleased pleased pleased displeased displeased

9. How often do you think that you are a worthless individual?
   A. very B. fairly C. sometimes D. once in a E. practically
   often often often great while never

10. How comfortable are you when starting a conversation with people whom you don't know?
    A. very B. fairly C. somewhat D. fairly E. very
    comfortable comfortable comfortable uncomfortable uncomfortable

11. How often do you feel that you dislike yourself?
    A. very B. fairly C. sometimes D. once in a E. practically
    often often often great while never

12. How sure of yourself do you feel when among strangers?
    A. very B. fairly C. somewhat D. fairly E. very
    sure sure sure unsure unsure

13. How often do you feel so discouraged with yourself that you wonder whether anything is worthwhile?
    A. very B. fairly C. sometimes D. once in a E. practically
    often often often great while never

14. How confident do you feel that some day the people you know will look up to you and respect you?
    A. very B. fairly C. somewhat D. fairly E. very
    confident confident confident unconfident unconfident
AFFECTIVE ASSESSMENT

Using the following adjective, please indicate your current feelings.

<table>
<thead>
<tr>
<th>Number</th>
<th>Adjective</th>
<th>Not at all</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.</td>
<td>Satisfied</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Secure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Sad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Hopeless</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Pessimistic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Cheerful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Discouraged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Contented</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E
GROUP MEMBER EVALUATION
SOCIAL HISTORY
(DCI AND NO-DCI VERSIONS)
Group Member Evaluation
Social History
(DCI Version)

Please indicate your answer to each of the following questions concerning the group member's social information by placing a slash (/) at the point on the line that best represents your answer. YOUR ANSWERS WILL BE KEPT STRICTLY CONFIDENTIAL.

1. Would you feel comfortable making similar comments in a small group setting?

   Extremely / Extremely Comfortable
   Uncomfortable / Comfortable

2. How typical of Iowa State undergraduate women is this woman?

   Not at all / Extremely Typical
   Typical / Typical

3. How similar is this woman to you?

   Not at all / Extremely Similar
   Similar / Similar

Please indicate the extent to which the following adjectives describe the group member whose tape you just listened to.

   Not at all / Very

4. Sincere

5. Unpleasant

6. Loyal

7. Reckless

8. Intelligent

9. Unkind

10. Capable

11. Unobservant
Please indicate your answer to each of the following questions concerning the group member's social information by placing a slash (/) at the point on the line that best represents your answer. YOUR ANSWERS WILL BE KEPT STRICTLY CONFIDENTIAL.

1. Would you feel comfortable making similar comments in a small group setting?

| Extremely Uncomfortable | Extremely Comfortable |

2. How typical of Iowa State undergraduate women is this woman?

| Not at all Typical | Extremely Typical |

3. How similar is this woman to you?

| Not at all Similar | Extremely Similar |

Please indicate the extent to which the following adjectives describe the group member whose tape you just listened to.

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Sincere</td>
<td></td>
</tr>
<tr>
<td>5. Unpleasant</td>
<td></td>
</tr>
<tr>
<td>6. Loyal</td>
<td></td>
</tr>
<tr>
<td>7. Reckless</td>
<td></td>
</tr>
<tr>
<td>8. Intelligent</td>
<td></td>
</tr>
<tr>
<td>9. Unkind</td>
<td></td>
</tr>
<tr>
<td>10. Capable</td>
<td></td>
</tr>
<tr>
<td>11. Unobservant</td>
<td></td>
</tr>
</tbody>
</table>
Please answer the following questions about yourself (by circling the response of your choice.

12. How often do you have the feeling that there is nothing you can do well?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically
   often  often  often  often  never

13. How often do you feel that you have handled yourself well at a social gathering?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically
   often  often  often  often  never

14. How often do you worry about whether people like to be with you?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically
   often  often  often  often  never

15. How often do you feel that you are a successful person?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically
   often  often  often  often  never

16. How often do you feel self-conscious?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically
   often  often  often  often  never

17. How confident are you that your success in your future job or career is assured?
   A. very  B. fairly  C. somewhat  D. fairly  E. very
   confident  confident  confident  confident  unconfident

18. How often do you feel inferior to most of the people you know?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically
   often  often  often  often  never

19. When speaking in class discussions, how sure of yourself do you feel?
   A. very  B. fairly  C. somewhat  D. fairly  E. very
   sure  sure  sure  unsure  unsure

20. How much do you worry about how well you get along with people?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically
   often  often  often  often  never

21. In general, how confident do you feel about your abilities?
   A. very  B. fairly  C. somewhat  D. fairly  E. very
   confident  confident  confident  confident  unconfident
### AFFECTIVE ASSESSMENT

Using the following adjective, please indicate your current feelings.

<table>
<thead>
<tr>
<th>Number</th>
<th>Adjective</th>
<th>Not at all</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.</td>
<td>Satisfied</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Secure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>Sad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Hopeless</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Pessimistic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Cheerful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Discouraged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Contented</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Group Member Evaluation
Social History
(NO-DCI Version B)

Please indicate your answer to each of the following questions concerning the group member's social information by placing a slash (/) at the point on the line that best represents your answer. YOUR ANSWERS WILL BE KEPT STRICTLY CONFIDENTIAL.

1. Would you feel comfortable making similar comments in a small group setting?
   
<table>
<thead>
<tr>
<th>Extremely Uncomfortable</th>
<th>Extremely Comfortable</th>
</tr>
</thead>
</table>

2. How typical of Iowa State undergraduate women is this woman?
   
<table>
<thead>
<tr>
<th>Not at all Typical</th>
<th>Extremely Typical</th>
</tr>
</thead>
</table>

3. How similar is this woman to you?
   
<table>
<thead>
<tr>
<th>Not at all Similar</th>
<th>Extremely Similar</th>
</tr>
</thead>
</table>

Please indicate the extent to which the following adjectives describe the group member whose tape you just listened to.

<table>
<thead>
<tr>
<th>Adjective</th>
<th>Not at all</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Sincere</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Unpleasant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Loyal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Reckless</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Intelligent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Unkind</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Capable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Unobservant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please answer the following questions about yourself (by circling the response of your choice.

12. When you have to talk in front of a class or a group of people your own age, how afraid or worried do you usually feel?
   A. very  B. fairly  C. somewhat  D. fairly  E. very afraid  afraid  afraid  unafraid  unafraid

13. How often do you have the feeling that you can do everything well?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically often  often  often  great while  never

14. How often are you troubled with shyness?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically often  often  often  great while  never

15. When you talk in front of a class or a group of people your own age, how pleased are you with your performance?
   A. very  B. fairly  C. somewhat  D. fairly  E. very pleased  pleased  pleased  displeased  displeased

16. How often do you think that you are a worthless individual?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically often  often  often  great while  never

17. How comfortable are you when starting a conversation with people whom you don't know?
   A. very  B. fairly  C. somewhat  D. fairly  E. very comfortable  comfortable  comfortable  uncomfortable  uncomfortable

18. How often do you feel that you dislike yourself?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically often  often  often  great while  never

19. How sure of yourself do you feel when among strangers?
   A. very  B. fairly  C. somewhat  D. fairly  E. very sure  sure  sure  unsure  unsure

20. How often do you feel so discouraged with yourself that you wonder whether anything is worthwhile?
   A. very  B. fairly  C. sometimes  D. once in a  E. practically often  often  often  great while  never

21. How confident do you feel that some day the people you know will look up to you and respect you?
   A. very  B. fairly  C. somewhat  D. fairly  E. very confident  confident  confident  unconfident  unconfident
AFFECTIVE ASSESSMENT
Using the following adjective, please indicate your current feelings.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>22. Satisfied</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Secure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Sad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Hopeless</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Pessimistic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Cheerful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Discouraged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Contented</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX F
DISCUSSION GROUP QUESTIONNAIRE
Discussion Group Questionnaire

Now I'd like you to answer some questions concerning discussion groups in general. Some questions will require placing a slash along the line while other questions require short comments.

1. What is the likelihood that you would join a discussion group (regardless of subject content)?
(Please indicate your answer by placing a slash (/) along the line.)

<table>
<thead>
<tr>
<th>Definitely Would</th>
<th>Definitely Would</th>
</tr>
</thead>
<tbody>
<tr>
<td>Join</td>
<td>Not Join</td>
</tr>
</tbody>
</table>

Now I'd like you to answer some questions specifically concerning contraception and contraceptive discussion groups.

2. What is the likelihood that you would join a discussion group if the topic was contraception?
(Please indicate your answer by placing a slash (/) along the line.)

<table>
<thead>
<tr>
<th>Definitely Would</th>
<th>Definitely Would</th>
</tr>
</thead>
<tbody>
<tr>
<td>Join</td>
<td>Not Join</td>
</tr>
</tbody>
</table>

Please describe the extent to which the following adjectives describe the woman whose tape you just listened to.

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Unintelligent</td>
<td></td>
</tr>
<tr>
<td>4. Kind</td>
<td></td>
</tr>
<tr>
<td>5. Incapable</td>
<td></td>
</tr>
<tr>
<td>6. Observant</td>
<td></td>
</tr>
<tr>
<td>7. Insincere</td>
<td></td>
</tr>
<tr>
<td>8. Pleasant</td>
<td></td>
</tr>
<tr>
<td>9. Disloyal</td>
<td></td>
</tr>
<tr>
<td>10. Careful</td>
<td></td>
</tr>
</tbody>
</table>
In this section of the survey we are interested in your opinions about several specific birth control methods. Please answer each question even if you do not know much about the method and/or have never used it. For each question, circle the number that best represents what you know or believe.

11. How likely would you be to use the pill if you were involved in a sexual relationship?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>would definitely use the pill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>definitely would not use the pill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Please indicate your opinion about using the pill as a contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location which best represents your answer).

approve of disapprove of
strongly strongly

13. How likely would you be to use the condom if you were involved in a sexual relationship?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>would definitely use the condom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>definitely would not use the condom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. Please indicate your opinion about using the condom as a contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

approve of disapprove of
strongly strongly

15. How likely would you be to use withdrawal if you were involved in a sexual relationship?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>would definitely use withdrawal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>definitely would not use withdrawal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
16. Please indicate your opinion about using withdrawal as a contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

approve of
strongly

disapprove of
strongly

17. How likely would you be to use no contraception if you were involved in a sexual relationship?

1 2 3 4 5 6 7

would
definitely
go
definitely
would not go

without contraception
without contraception

18. Please indicate your opinion about using no contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

approve of
strongly

disapprove of
strongly

We would now like you to consider for a moment the issue of unplanned pregnancy. Then answer the following questions using a 1 - 100 scale where 1 = not at all possible and 100 = extremely likely, most definitely will happen.

19. What do you think the likelihood is that you will have an unplanned pregnancy within the next year if you had sexual intercourse at the same rate you did in the past six months and if you used your current method of contraception as you usually do? (1 - 100 scale) ________

20. What do you think the likelihood is that you will have an unplanned pregnancy within the next year if you had sexual intercourse at the same rate you did in the past six months, but did not use any method of contraception? (1 - 100 scale) ________

21. What is the likelihood that the average college woman your age will have an unplanned pregnancy in the next year if she continues using the contraceptive method she is currently using? (1-100 scale) ________

22. What is the likelihood that the average college woman your age will have an unplanned pregnancy in the next year if she used the birth control pill? (1-100 scale) ________
23. What is your likelihood of having an unplanned pregnancy in the next year compared to the average college woman your age who uses the birth control pill?

You are more likely to become pregnant next yr. Average Woman who uses pill is more likely to become pregnant next yr.

24. What is the likelihood that the average college woman your age will have an unplanned pregnancy in the next year if she used no method of contraception? (1-100 scale) 

25. What is your likelihood of having an unplanned pregnancy in the next year compared to the average college woman your age who uses the no method of contraception?

You are more likely to become pregnant next yr. Average Woman who uses no contraception more likely to become pregnant next yr.

26. What percent of average college women become pregnant in a typical year? (0 to 100%)
APPENDIX G
MASS-TESTING CONSENT STATEMENT
Mass-testing Consent Statement

The Department of Psychology supports the practice of protection for participants in research. The following information is provided so that you can decide whether you wish to complete the following questionnaire.

During mass testing, you have been asked to complete several questionnaires about yourself. An earlier questionnaire (the Janis-Field) asked you to describe how you feel about yourself and how often you feel that way. The following questionnaire asks a number of questions about your opinions and perceptions about contraception in addition to some specific questions about your personal contraception practices. Be assured that your responses to these questions will be kept confidential. Your name will not be associated directly with your responses. Each mass testing packet is numbered and after mass testing, this consent statement will be removed from the packet. All completed questionnaires will be stored under double-locked conditions and all identification numbers removed within two months after the completion of the study. No one other than the experimenters associated with this research will have access to your responses. Some participants from today's mass testing session will be called for participation in additional experiments. If you give your permission for experimenters to call you for these experiments, you will need to sign the second signature line and provide your telephone number.

You should be aware that even if you agree to participate, you are free to withdraw from the study at any time without prejudice. Do not hesitate to ask questions about the study. If you feel uncomfortable answering any questions, skip them. Your participation is solicited, but is strictly voluntary. We appreciate your cooperation very much.

Signature

******************************************************************************
******************************************************************************
"I agree to allow the experimenter to call me for additional experiments if I am eligible"

Signature

telephone number

/ / a copy of this consent form is available upon request
APPENDIX H
EXPERIMENTER'S SCRIPTS
Introduction

Hello, my name is ______________________ and I am a graduate student in the psychology department. (This is my assistant, __________, who will be helping me out with the experiment today.) The first thing I'm going to do is explain briefly what we will be doing in today's experiment. As you were told when you were called, you are going to participate in a simulated discussion group. In fact, this study is one of several we have conducted in the department which involves discussion groups. What we are doing is looking at different aspects of how discussion groups work. Our discussion groups have had different groups of people as participants and have looked at a variety of different topics; I'll tell you more about today's topic in a few moments. I want to tell a little bit about how you were selected for today's experiment. You were picked on the basis of some of your responses on mass-testing questionnaires and, as a group, you tended to have similar response patterns to some questions.

The topic for our simulated discussion group is a rather personal one - contraceptive use. Because I realize this topic may be a sensitive issue, I want to alleviate any apprehensions by describing how our discussion group will operate. First of all, as in any discussion group, you will be asked to give some information about yourselves. In this case, you'll be asked to provide some background statements concerning your personal social history and contraceptive use history. Because this is very personal information, you will not be asked to interact with one another in a face-to-face group. Instead you will interact with the other group members indirectly, through the use of tape-recorded statements. Specifically, you'll go back to individual rooms in the laboratory and tape record both a social and contraceptive history statement. Because you will be recording personal information, your recording will remain anonymous. In other words, you will be asked not to give any identifying information (such as your name) on your tape. Your tape will be identified only by a number and only the principal experimenter will know which number goes with a particular name. After answering some questions concerning your tape, I will collect all the tapes and then give each of you a tape from one of the other members of the group. This exchange of the tapes represents the "simulation" of typical discussion group processes. I want to emphasize that you will not know whose tape you are listening to. I also want to stress to you that when you are recording these history statements, the idea is for you to make statements similar to those you would make in an actual discussion group. Please do not feel pressure to say anything which makes you feel uncomfortable or which you normally wouldn't want to say.

Are there any questions? OK, now I'll pass out the consent forms. Please read it over carefully and then sign it if you still agree to participate. (Experimenter passes out consent form and has subjects keep with them when going to individual cubicles.)

Now we'll go back into the lab. I will be giving you most of the remaining instructions over an intercom system so right now I'd like us all to go into one of the rooms where I will show how this system works. Then you will go to your individual room so we can begin. (Experimenter escorts
subjects to one of the cubicles and shows intercom and answers any questions. Experimenter then has subjects separate into individual rooms.)

**Experiment Proper**

1. **To start with, I'd like you all to test your intercom system by pressing the call light button.** (Experimenter pauses until all call lights tested.) Please remember if you have any questions throughout the experiment, please press your call button several times and we'll come to answer your question.

2. As I mentioned earlier, in this experiment I'm interested in how groups (particularly discussion groups) function. Right now I want to focus briefly on one particular factor which I believe affects how discussion groups work. That factor is called "Social Awareness" or the extent to which people are aware of others' attitudes and opinions about current social issues. A number of scales have been developed to measure social awareness. One of these scales, called the Norman Social Acumen Scale, was embedded in the many questions that you completed at mass testing so I already have some information about your abilities of social awareness. In today's group I want to look more closely at this trait called Social Awareness. I'd like you to take the questionnaire out of envelope #1. This measure is called the Wilder Social Awareness Inventory and it will provide me with additional information about the extent to which you are socially aware. When you fill out this questionnaire, please make sure to follow the instructions to each question very carefully. You'll notice that you are asked to respond to each question according to how you think the group listed would respond. You will have 4 1/2 minutes to complete this measure. When you are done, return the measure to envelope #1 and press your call button. (Experimenter waits approximately 4 1/2 minutes while subjects complete Wilder. Once all Ss have pressed call buttons, exp. collects envelope #1).

3. The next step will be to make your recorded social and contraceptive history statements. I'd like you to take the written instructions for recording your statements out of envelope #2. You will have approximately 2-3 minutes to read over those instructions. (Experimenter pauses briefly to allow subjects time to take instructions out of the envelope and read them.)

4. I'd like to summarize those instructions briefly. To make your recording I'd like you to start the tape recorder, state the title "social history" and then make a brief 2 minute statement. After you're done with your social history statement, let the tape recorder run for 5 seconds and then state the title "contraceptive history" followed by a 1 minute statement. Are there any questions? (Experimenter pauses briefly to allow questions.) OK, I'd like you to take the next 60 seconds to consider what you're going to say in your social and contraceptive history statements. I would suggest that you jot down some notes on the blank piece of paper provided in
the envelope and use your notes and this instruction sheet when your making your recording. Please begin thinking about your statements. (Experimenter waits 60 seconds.) OK, now I'd like you to begin recording your history statements. Please make sure to pause for approximately 5 seconds between the social and contraceptive history statements. Press your call light buttons when you are done with your recordings.

(Experimenter waits approximately 3 minutes while subjects record statement.)

5. (Once all subjects have pressed their call button)...Now that you are done with your recordings, please take the questionnaire out of envelope #3. Please read the instructions carefully before you start to answer the questions. When you are finished, return the questionnaire to the envelope, set the envelope aside, and press your call button so that I'll know that you are done. Please do not look ahead to any upcoming envelopes. (Once all subjects press the call button, collect tapes and gives subjects envelope #4, which contains the Wilder Feedback sheet.)

6. While we are rewinding your tapes, I want to return your attention to the issue of Social Awareness. As I said earlier, both the Norman Social Acumen Scale (which you completed at mass testing) and the Wilder Inventory, which you completed today, measure the extent to which a person is socially aware of other peoples' attitudes and opinions on current social issues. This particular trait has been found to be highly predictive of success in various professions that involve interpersonal interactions (such as law, business, medicine, and education for example). In addition, I believe that a person's level of social awareness affects their behavior in a wide variety of social settings (such as a discussion group) and this is why I am looking at this variable in this experiment. While you have been recording your social and contraceptive history statement, I scored your responses on the Wilder and compared them to your earlier performance on the Norman Social Acumen Scale. By comparing the two scales, we are able to obtain a fairly reliable picture of the extent to which you are socially aware. I would like to provide you with some feedback about your performance on these measures right now so I'd like you to take your feedback sheets out of envelope #4 and read over the information about your scores.

"The Wilder Social Awareness Inventory is a highly reliable measure that provides information about the extent to which a person is aware of other people's attitudes and opinions about important current social issues. Often the Inventory is combined with other measures of social awareness (such as the Norman Social Acumen Scale or the Miller Awareness SubScale of Social Skills) that results in a fairly accurate diagnostic assessment of the degree to which a person has the trait of social awareness (usually accurate to within 9 to 10 percentage points).
Scores on the Wilder and the comparison measure of social awareness are reported below in percentile rankings and are based on the overall scores obtained by students at your university who have taken the measures. On both measures for example, if you scored at the 55th percentile, 54 students obtained scores lower than yours while 45 students obtained scores higher than yours. High percentile ranks on these scales, those ranks greater than 80th percentile, are good indicators that you have high levels of social awareness. Low percentile ranks, those ranks less than 40th percentile, indicate that it is probably likely (but not entirely definite) that you have low levels of this trait. Additionally, if the percentile ranks on both measures are within 10 percentile points of each other, the probability of any errors in the scoring of these scales is very low. In other words, the percentile rankings are probably accurate.

Below that explanation you will notice that we have written your percentile score on the Wilder and also your percentile for the comparison social awareness scale, the Norman Social Acumen Scale (from mass testing). Keep in mind that your percentile score indicates how your performance compares with other ISU students who have completed the measure. We will be talking more about your social awareness scores later but for now I'd like you to simply review your scores and answer the questions that follow it. Please press your call light buttons when you're finished with this step of the experiment. (Experimenter pauses until all subjects have pressed call button. Once all have pressed call button, target tape (experimental or control version) is delivered to each subject.)

7. You have just received a tape made by another group member. For this part of the experiment I'd like you to imagine that the other group member is talking about herself just as she would in a small group discussion and that you are listening to this person as another member of the same group. When I tell you, I'd like you to put on the headphones and start listening to the social history information. Once you've listened to the social history, shut the recorder off and press the call button. OK...put on the headphones and begin listening to the social history portion of the tape. Please do not go on to the contraceptive history part of the tape yet. (Experimenter pauses until all subjects have listened to target's social history and pressed call button.)

8. Please take the questionnaire out of envelope #5. When you are done answering those questions, return the questionnaire to envelope #5, set it aside, and press the call button. (Experimenter pauses until all subjects have pressed call button.)

9. (EXPERIMENTAL CONDITIONS ONLY) Now I'd like you to listen to the rest of the other group member's tape which should consist of a brief contraceptive history. Again, please put on the headphones while listening to the tape and when you are finished, shut off the recorder and press the call button. Please begin listening to the contraceptive history portion of the tape. (Experimenter pauses
until all subjects have listened to target's contraceptive history and pressed call button.)

10. Please take the questionnaire out of envelope #6. After you answer the questions, return the questionnaire to envelope #6, set it aside, and press your call button. Please do not go back to any previous envelopes.

11. Please take the questionnaire out of envelope #7 (# 6 FOR CONTROLS) and answer those questions. When you are done with this questionnaire, return it to envelope #7 (# 6 FOR CONTROLS), set it aside, and press your call button. Please do not go back to any previous envelopes. (Experimenter pauses until all subjects have pressed call button. Once all subjects are done with questionnaires in envelope #7 (#6 FOR CONTROLS), experimenter requests that subjects return to lobby.)
Experiment Debriefing Script

Before I continue, does anyone have any questions? Did you have any difficulty understanding or following any of the directions during the study? (Experimenter pauses for comments.) Did all of you have enough time to complete all your questionnaires? (Experimenter pauses for comments and to allow questions.)

As I mentioned at the beginning of the experiment, I am studying psychological processes involved in discussion groups. In particular, I'm looking at what people feel and think about telling information about themselves and receiving information about others in a discussion group setting. To look at these sorts of issues, I asked you to give information about yourselves and then evaluate how comfortable you felt doing so. Then you were asked to listen to another group member's tape and evaluate it much like you might do when making silent, personal evaluations of that person during an actual group setting.

At any time in the experiment did you find yourself trying to figure out what I was doing in the experiment? (Experimenter pauses for comments.) Were any of you suspicious that I might be trying to deceive you in any way just because this was a psychology experiment? (Experimenter pauses for comments.)

After you made your tapes, you were given some feedback about your performance on the Wilder Social Awareness Inventory. What did you think about that inventory? about your scores? Did you agree with the feedback? Were you at anytime suspicious of the feedback? (Experimenter pauses for subjects' comments, probes & clarifies any suspicions). In fact, the Wilder Social Awareness Inventory is not real. It is a fictitious scale that I made up for this experiment. Some of you would be told that you hadn't done very well on this scale while the rest of you would be told that you had done well. I did this so I could later test to see if people react differently to social information (such as what we had in this discussion group) when they are made to feel somewhat threatened or successful. Once again, I want to emphasize that the Wilder does not exist...I do not have any information about how socially aware any of you are. Do you have any questions on this aspect of the study?

Another important procedure in this study included making personal tapes and then listening to the tape from another person. What did you think of this procedure? Did it seem awkward or did it make you feel more comfortable when describing your contraceptive histories? Did you think about this procedure? What did you think about the other person's tape? Was there anything out of the ordinary? (Experimenter pauses--if any subjects respond "yes" during these pauses, experimenter asks further questions to determine extent of problem, confusion, or suspicion.) In fact, the tape you listened to were not made by anyone in this group. I want to emphasize, however, that the information on the tape is real and was provided by a female student here at ISU. I've had someone read her information so that her confidentiality will be protected however. One of the things I'm interested in looking at in this study is how different people react to similar information, therefore it was necessary to make certain that you all heard the same information. You all heard similar social information and some of you heard the woman describing a phase in
her contraceptive history where she used no contraception. Others of you did not listen to the contraceptive history at all. Again, I want to emphasize that while there was a minor deception here in that the tape was not made by one of your group members, the information is about a woman who really exists.

I'd like to explain a little more about what we'd like to do with your tapes now. I would like to listen to each of your recordings for different types of information such as the types of contraception you prefer and the consistency with which you indicate that you use that method. To do this I will have the help of an experimental assistant and only this person and myself will listen to your tapes. No one else will hear what you had to say on those tapes and when we are all finished listening to the tapes, they will be erased. I want you to know, however, that if you do not want your particular tape listened to, you do have the right to refuse to let us do so. If you decide that you don't want your tape listened to, it will be erased immediately.

Do any of you have any questions? Does anyone have any questions about the tape procedures and do you all understand about the tape? Sometimes when people participate in this experiment they have questions about discussion groups that are available on campus or tell me that they are interested in getting more information about contraception. Additionally, being in an experiment sometimes gets people to start thinking about personal issues. If you find that you have any questions of this sort I'll be happy to provide you with information about resources in the Ames and ISU campus communities or talk with you further personally. Finally, because I will be running this experiment more during the semester and because subjects won't respond naturally to the tape if they know ahead of time that it isn't made by one of their group members, I am asking that you not talk about the experiment with people once you leave the experiment today. (Experimenter passes out credit slips and expresses thanks to subjects for participating in the experiment.
Follow-up Introduction and Debriefing Script

The questionnaires you will be asked to complete today are part of a follow-up to the discussion group experiment you participated in 6 weeks ago. As I mentioned at the debriefing for that part of the experiment, I am studying psychological processes involved in discussion groups. In particular, I'm looking at how people feel and think about telling information about themselves and receiving information about others in a discussion group setting. To look at these issues during the experiment, I asked you to give information about yourselves and then evaluate how comfortable you felt doing so. Then you were asked to listen to another ISU student's tape and evaluate what was said much like you might do when making silent, personal evaluations of that person during an actual group setting. At that time, I told you that the tape was not made by one of your group members but the information was describing an actual ISU woman. Do any of you have any further questions concerning that taped information?

Today you will be asked to complete several questionnaires that are very similar to those you completed during mass testing and at the experiment. Are there any questions? Once again, I would like to reiterate something I said at the end of the lab portion of this experiment--if you have any questions about discussion groups or contraception or find some personal issues were brought up as a result of being in the experiment I will be happy to talk with you further about those issues or provide you with some resource information. (After subjects complete the questionnaire, they are again asked if they have any questions. If so those are addressed and then the experimenter passes out credit slips and thanks subjects for participating.)
APPENDIX I
INFORMED CONSENT FORM
(EXPERIMENT)
Informed Consent Form

The Department of Psychology supports the practice of protection for participants in research. The following information is provided so that you can decide whether you wish to participate in the present study.

During this experiment, you will participate in a simulated discussion group concerning contraceptive use. You will be asked to make a brief tape recording of your personal social and contraceptive history and will then be asked to listen to another group member’s tape. You will also be asked to express a number of personal opinions regarding discussion groups and issues related to contraception use. Your name will not be associated with your tape recording and the other members of the “discussion” group will not know whose tape they have been given. If you feel uncomfortable answering any of the questions involved in the study, skip them.

You should be aware that even if you agree to participate, you are free to withdraw from the study at any time. Your participation is solicited, but is strictly voluntary. Do not hesitate to ask questions about the study. Be assured that your name will not be associated in any way with the research findings. We appreciate your cooperation very much. This experiment will require approximately 1 hour to complete.

Signature

/ / a copy of this consent form is available upon request
THE WILDER SOCIAL AWARENESS INVENTORY

The Wilder Scale measures awareness of social attitudes; in other words, it is an assessment of how you perceive the attitudes and opinions of others on a number of current social issues. Please answer each question by indicating how you think that the people specified in each question would respond. Time Allotted: 5 min.

1. Please put a 1 next to the political/social topic listed below that you think matters most to American adults and put a 5 next to the topic that you think matters least to them. (Only rate these two alternatives).

   ___________ the environment
   ___________ the economy
   ___________ foreign affairs
   ___________ social programs
   ___________ national defense

2. Please rank order all of the following concerns in the order that you think that they matter to college students who graduated in the top 25% of their classes. (Using the numbers from 1 to 5, where 1 = issue of most concern and 5 = issue of least concern.)

   ___________ family
   ___________ grades
   ___________ dating
   ___________ relationships with friends
   ___________ money

3. Put a 1 next to the statement that you think is most likely to be supported by people who have done well professionally, (regardless of their field), and put a 5 next to the statement that you think is least likely to be supported by them. (Only rate these two alternatives.)

   ___________ "Success is 5% luck and 95% effort."
   ___________ "The ability to get along with others is critical in any field."
   ___________ "Leadership ability is the best predictor of success."
   ___________ "A good education is one's most valuable possession."
   ___________ "Anyone can make it if they try."

Please continue on the next page.
4. Put a 1 next to the statement that you think is most descriptive of the attitude of the average college student toward cheating, and put a 5 next to the least descriptive statement. (Only rate these two alternatives.)

_______ "Cheating on anything at any time is totally wrong."
_______ "It's O.K. to cheat if you know that several other people in the class are also doing so."
_______ "It's O.K. to cheat if you know that you could have done the work honestly if only you'd had enough time."
_______ "It's O.K. to cheat if you're sure you won't get caught."
_______ "It's O.K. to help someone else cheat even though it's not O.K. for you to cheat."

5. Put a 1 next to the quality that you think most American adults would emphasize most in choosing their friends, and put a 5 by the quality they would emphasize least. (Only rate these two alternatives).

_______ social contacts of a potential friend
_______ physical attractiveness of a potential friend
_______ financial standing of a potential friend
_______ interests and preferred activities of a potential friend
_______ political beliefs of a potential friend

6. Please rank order all of the following concerns in the order that you think that they concern couples who have stayed married for more than 20 years. (Using the numbers from 1 to 5, where 1 = issue of most concern and 5 = issue of least concern.)

_______ spouse relationship
_______ family relationships
_______ career success
_______ financial success
_______ personal health

7. Put a 1 next to the characteristic that you think matters most to successful business managers when they evaluate an employee, and put a 5 by the characteristic they would emphasize least. (Only rate these two alternatives).

_______ employee works hard
_______ employee is on time
_______ employee takes initiative
_______ employee takes orders exactly
_______ employee gets along well with co-workers
The tape recorded statement you are about to make consists of two parts: your social history and your contraceptive history. The social history should consist of a brief 2 minute statement describing personal details such as your:

a.) family relationships (e.g., numbers of brothers & sisters, how you get along with them, etc.)
b.) school activities (e.g., extracurricular activities)
c.) recreational activities (e.g., types of things you like to do in your free time)
d.) dating backgrounds (e.g., when you started dating, frequency of dates, what types of things you like to do on dates, etc.)

When I tell you to begin recording, begin your social history statement by starting the recorder and stating "Social History" at the beginning of your tape. Follow this title by approximately 2 minutes of personal social information. After you are done recording your social history statement, let the tape run for about 5 seconds and then begin your contraceptive history statement.

The contraceptive history statement should consist of a brief 1 minute statement indicating, first of all, if you have ever had sexual intercourse.

a.) if you have never had sexual intercourse - what method of contraception do you think you probably will use when you do become sexually active.

b.) if you have had sexual intercourse - have you ever used a contraceptive method? If you have used a contraceptive, what method(s) did you usually use and how consistently did you use that method.

Begin your contraceptive history statement by stating "Contraceptive History" at the beginning of this portion of your tape. Follow this title by approximately 1 minute of personal contraceptive information. When you are through, shut off the recorder and press your call button. You will have a total of 3 minutes to make your social and contraceptive history recordings. Please remember that the idea here is for you to make statements similar to what you would typically say in an actual discussion group. Please do not feel as though you have to say anything which might make you feel uncomfortable.
APPENDIX L
SUBJECTS' RECORDED STATEMENT EVALUATION
Subjects' Recorded Statement Evaluation

For each of the following questions concerning the social and contraceptive information you've just given, please indicate your answer by placing a slash (/) at the point on the line that best represents your answer.

1. Would you feel comfortable making similar comments about your social history in a small group setting?

<table>
<thead>
<tr>
<th>Extremely Uncomfortable</th>
<th>Extremely Comfortable</th>
</tr>
</thead>
</table>

2. How similar do you think you are to the average Iowa State undergraduate woman?

<table>
<thead>
<tr>
<th>Not at all Similar</th>
<th>Extremely Similar</th>
</tr>
</thead>
</table>

3. Would you feel comfortable making similar comments about your contraceptive history in a small group setting?

<table>
<thead>
<tr>
<th>Extremely Uncomfortable</th>
<th>Extremely Comfortable</th>
</tr>
</thead>
</table>

4. How effective is your contraceptive behavior in preventing pregnancy?

<table>
<thead>
<tr>
<th>Extremely Effective</th>
<th>Extremely Ineffective</th>
</tr>
</thead>
</table>

5. How conscientious is your use of your usual contraceptive method?

<table>
<thead>
<tr>
<th>Extremely Conscientious</th>
<th>Not at all Conscientious</th>
</tr>
</thead>
</table>

6. Compared to the average ISU undergraduate woman, how effective is your contraceptive behavior?

<table>
<thead>
<tr>
<th>You are more Effective</th>
<th>Average ISU More Effective</th>
</tr>
</thead>
</table>
7. How effective do you think the average ISU undergraduate woman is with regard to her contraceptive use?

<table>
<thead>
<tr>
<th>Extremely Effective</th>
<th>Extreme Ineffective</th>
</tr>
</thead>
</table>

Please indicate the extent to which the following adjectives describe you.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Unintelligent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Kind</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Incapable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Observant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Insincere</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Pleasant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Disloyal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Careful</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX M
WILDER SOCIAL AWARENESS INVENTORY
FEEDBACK SHEET
"The Wilder Social Awareness Inventory is a highly reliable measure that provides information about the extent to which a person is aware of other people's attitudes and opinions about important current social issues. Often the Inventory is combined with other measures of social awareness (either the Norman Social Acumen Scale or the Miller Awareness SubScale of Social Skills) that results in a fairly accurate diagnostic assessment of the degree to which a person has the trait of social awareness.

Scores on the Wilder and a comparison measure of social awareness are reported below in percentile rankings and are based on the overall scores obtained by students at your university who have taken the measures. On both measures for example, if you scored at the 55th percentile, 54 students obtained scores lower than yours while 45 students obtained scores higher than yours. High percentile ranks on these scales, those ranks greater than 80th percentile, are good indicators that you have high levels of social awareness. Low percentile ranks, those ranks less than 40th percentile, indicate that it is probably likely (but not entirely definite) that you have low levels of this trait." Additionally, if the percentile ranks on both measures are within 10 percentile points of each other, the probability of any errors in the scoring of these scales is very low. In other words, the percentile rankings are probably accurate.

Subject name: __________________

Wilder Percentile Score: ____________  Comparison Scale: ____________  Percentile Score: ____________
APPENDIX N
RECORDED TARGET SOCIAL/CONTRACEPTIVE HISTORIES SCRIPT
Recorded Target Social/Contraceptive Histories Script

Social History
"I came to school here from a sort of mid-sized city where my dad and my mom both have full-time jobs. I have three sisters and a brother and I guess you could say that we get along fairly well...although sometimes we do get into some disagreements.

"As far as school goes, I'd describe myself as a good student mainly I guess because I can get good grades in classes I'm pretty fired up about and get average grades in other courses that I think are more difficult. When I first came to ISU, I felt a little lonely because I didn't know a lot of people and really felt overwhelmed by all I had to do here for school and everything. I guess, though, once I got used to things around here, I got more comfortable and met more people. Since then I've really enjoyed school a lot more. As far as leisure activities go, I like to go to the show and talk with my friends. Sometimes we go to parties but I don't always have alot of time for that."

"Let's see...as far as dating is concerned, I dated a few guys in high school, but those relationships turned out to be more just good friendships than romantic relationships. During my senior year, I got into a pretty serious relationship with a guy and we dated pretty much through senior year, and up until right before I came to school here. Guess we both kinda decided that a long-distance relationship wasn't going to work out real well and decided to date other people."

Contraceptive History
"Well...about my contraceptive history...let's see...I don't really know what to say....I don't talk about this alot you know. I have had sex and I have thought about going on contraception but never seemed to get around to getting anything. Every once in a while I do think about using something. You know...come to think of it...there are time when I do try to avoid having sex...but I guess to be truthful I probably have had sex when I shouldn't have. I guess that pretty much describes my contraceptive history cause I haven't really ever used anything."
APPENDIX O
TAPE ANALYSIS CONSENT STATEMENT
TAPE ANALYSIS CONSENT STATEMENT

During this experiment you have been asked to make a tape consisting of your social and contraceptive histories. As part of the data analysis for the experiment, we would like to analyze the information you provided on this tape. Your tape will be listened to by the principal experimenter and a trained rater. Your name will not be identified at any time on the tape and at the conclusion of the analysis your tape will be erased.

Your permission for this analysis is solicited but it is strictly voluntary. If you choose not to allow your tape to be analyzed, it will be erased immediately following the experimental session. Your extra credit earnings will not be affected by your refusal to allow this analysis.

"I have read and understand the above statement and allow my tape to be analyzed."

____________________
signature
APPENDIX P
FOLLOW-UP CONSENT STATEMENT
Follow-up Session
EXPERIMENT #12

The Department of Psychology supports the practice of protection for participants in research. The following information is provided so that you can decide whether you wish to participate in the present study.

This follow-up session is part of the simulated discussion group in which you participated earlier this semester. During this session you will be asked to complete a series of questions concerning your feelings about yourself, your sexual and contraceptive use history, and your opinions about the likelihood of unplanned pregnancy. If you feel uncomfortable answering any of the questions involved in the study, skip them.

You should be aware that even if you agree to participate, you are free to withdraw from the study at any time. Your participation is solicited, but is strictly voluntary. Do not hesitate to ask questions about the study. Be assured that your name will not be associated in any way with the research findings. We appreciate your cooperation very much. This experiment will require approximately 1/2 hour to complete.

Signature (both signed and printed)  

__________________________  

date
APPENDIX Q
MODIFIED JANIS-FIELD
PLEASE NOTE

Copyrighted materials in this document have not been filmed at the request of the author. They are available for consultation, however, in the author's university library.

242-244,
Appendix Q

University Microfilms International
APPENDIX R
FOLLOW-UP
CONTRACEPTIVE USE AND OPINION
QUESTIONNAIRE
Sexual/Contraceptive Use History

Please answer the following questions concerning your sexual and contraceptive use history. Be assured that all answers to these questions are confidential and will not be used by anyone besides the experimenter involved in this research.

1. How many sexual partners have you had over the past 6 - 8 weeks?

2. On the average, how often were you engaging in sexual intercourse in the 6 - 8 weeks prior to now (answer in terms of average number of times per month): _____ per month.

3. Over the past 6 - 8 weeks, what contraceptive method did you use most often?

4. How consistently did you use that method (the one listed in 3)?
   ___ used every time
   ___ used most of the time (approximately 80% of the time)
   ___ used half the time (approximately 50% of the time)
   ___ used occasionally (approximately 30% - 40% of the time)
   ___ seldom used (less than 20% of the time)

5. Again considering the method you listed in 3, what percent of the time during which you were sexually active and using this method did you feel that you were the method exactly as it was intended to be used (i.e., followed instructions accurately, etc)? ________%

   If you can think of any times when you think you or your partner did not use this method exactly right, how frequently did this happen? ________ (times per month)

6. How important were the following factors in your selection of this method? (Please rate each of the following using a scale where 1 = not at all important and 7 = extremely important)
   ___ effectiveness of method
   ___ moral/religious beliefs
   ___ low sexual intercourse activity levels
   ___ partner's preference for method
   ___ your preference for method
   ___ availability of method
   ___ cost of method
   ___ convenience of method
   ___ medical "side effects" associated with method
   ___ opinions/advice of friends


7. If there additional information that you feel might be of importance in describing your contraceptive practices but that has not been covered in the preceding questions, please briefly provide that information below.

We would now like you to consider for a moment the issue of unplanned pregnancy. Then answer the following questions using a 1 - 100 scale where 1 = not at all possible and 100 = extremely likely, most definitely will happen.

8. What do you think the likelihood is that you will have an unplanned pregnancy within the next year if you had sexual intercourse at the same rate you did in the past six months and if you used your current method of contraception as you usually do? (1 - 100 scale) ________

9. What do you think the likelihood is that you will have an unplanned pregnancy within the next year if you had sexual intercourse at the same rate you did in the past six months, but did not use any method of contraception? (1 - 100 scale) ________

10. What is the likelihood that the average college woman your age will have an unplanned pregnancy in the next year if she continues using the contraceptive method she is currently using? (1-100 scale) ________

11. What is the likelihood that the average college woman your age will have an unplanned pregnancy in the next year if she used the birth control pill? (1-100 scale) ________

12. What is your likelihood of having an unplanned pregnancy in the next year compared to the average college woman your age who uses the birth control pill?

You are more likely to become pregnant next yr. Average Woman who uses pill is more likely to become pregnant next yr.

13. What is the likelihood that the average college woman your age will have an unplanned pregnancy in the next year if she used no method of contraception? (1-100 scale) ________
14. What is your likelihood of having an unplanned pregnancy in the next year compared to the average college woman your age who uses the no method of contraception?

You are more likely to become pregnant next yr. Average Woman who uses no contraception more likely to become pregnant next yr.

15. What percent of average college women become pregnant in a typical year? _____ (0 to 100%)

Specific Birth Control Opinion Survey

In this section of the survey we are interested in your opinions about several specific birth control methods. Please answer each question even if you do not know much about the method and/or have never used it. For each question, circle the number which best represents what you know or believe.

16. How likely would the average college woman be to use the pill if she was involved in a sexual relationship?

1 2 3 4 5 6 7
would definitely use the pill
definitely would not use the pill

17. How likely would you be to use the pill if you were involved in a sexual relationship?

1 2 3 4 5 6 7
would definitely use the pill
definitely would not use the pill
18. Please indicate your opinion about using the pill as a contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

<table>
<thead>
<tr>
<th>approve of</th>
<th>disapprove of</th>
</tr>
</thead>
<tbody>
<tr>
<td>strongly</td>
<td>strongly</td>
</tr>
</tbody>
</table>

19. How likely would the average college woman be to use the condom if she was involved in a sexual relationship?

<table>
<thead>
<tr>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>would definitely use the condom</td>
</tr>
<tr>
<td>definitely would not use the condom</td>
</tr>
</tbody>
</table>

20. How likely would you be to use the condom if you were involved in a sexual relationship?

<table>
<thead>
<tr>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>would definitely use the condom</td>
</tr>
<tr>
<td>definitely would not use the condom</td>
</tr>
</tbody>
</table>

21. Please indicate your opinion about using the condom as a contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

<table>
<thead>
<tr>
<th>approve of</th>
<th>disapprove of</th>
</tr>
</thead>
<tbody>
<tr>
<td>strongly</td>
<td>strongly</td>
</tr>
</tbody>
</table>

22. How likely would the average college woman be to use withdrawal if she was involved in a sexual relationship?

<table>
<thead>
<tr>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>would definitely use withdrawal</td>
</tr>
<tr>
<td>definitely would not use withdrawal</td>
</tr>
</tbody>
</table>

23. How likely would you be to use withdrawal if you were involved in a sexual relationship?

<table>
<thead>
<tr>
<th>1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>would definitely use withdrawal</td>
</tr>
<tr>
<td>definitely would not use withdrawal</td>
</tr>
</tbody>
</table>
24. Please indicate your opinion about using withdrawal as a contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

approve of
strongly

disapprove of
strongly

25. How likely would the average college woman be to use no contraception if she was involved in a sexual relationship?

1 2 3 4 5 6 7
would
definitely go
definitely would not go
without contraception
without contraception

26. How likely would you be to use no contraception if you were involved in a sexual relationship?

1 2 3 4 5 6 7
would
definitely go
definitely would not go
without contraception
without contraception

27. Please indicate your opinion about using no contraceptive method in a sexual relationship. (Indicate your answer by placing a slash mark along the line at the location that best represents your answer).

approve of
strongly

disapprove of
strongly
Group Member Evaluation

Please recall for a moment the woman whose tape you listened to in the discussion group experiment 6 weeks ago. Please describe the extent to which the following adjectives describe the woman whose tape you listened to. Indicate your answer by placing a slash (/) at the point on the line that best represents your answer.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>28. Sincere</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Unpleasant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Loyal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. Reckless</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. Intelligent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Unkind</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. Capable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35. Unobservant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>