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THE SELF-EVALUATIVE MOTIVES
OF SELF-ENHANCEMENT AND SELF-ASSESSMENT
AND THEIR IMPACT ON THE SOCIAL COMPARISON PREFERENCES
OF DYSPHORIC AND NON-DYSPHORIC COLLEGE STUDENTS

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By

Bradley Jacob Miller Hack

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ABSTRACT

THE SELF-EVALUATIVE MOTIVES
OF SELF-ENHANCEMENT AND SELF-ASSESSMENT
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Past research has shown that dysphoric and non-dysphoric individuals choose to compare themselves with different types of people for different reasons. The self-enhancement hypothesis posits that when dysphoric persons receive feedback inconsistent with their self-concepts, they will compare themselves with someone who is worse off than they are on the personality trait in question, in order to feel better about themselves. The self-assessment hypothesis posits that in this situation, dysphoric individuals will compare themselves with someone who is similar or better off than they are on the trait in question, in order to be more certain about themselves. Study 1 sought to test these two hypotheses directly by giving dysphoric and non-dysphoric students either positive or negative feedback, varying in certainty, on a bogus ability test. All participants were then given the opportunity to choose another participant (who was actually fictitious) with whom to compare themselves. This fictitious participant had either performed better than, worse than, or the same as the actual participants on the test of synthetic ability. Participants' moods were measured following comparisons. Participants' self-certainty regarding the bogus trait of "synthetic ability" was also measured. Results revealed that the social comparison behavior of participants was generally consistent with the self-assessment hypothesis but not the self-enhancement hypothesis. Study 2 sought to test whether these two hypotheses also apply in situations of incidental social comparisons, by giving the same level of feedback (all participants received scores of "average") on the test of "synthetic ability" to non-dysphoric

and mildly dysphoric participants. They were then told that the last participant that was tested received a score of either below average, average, or above average on the test. This was the incidental social comparison. Participants' mood and self-certainty were then assessed as was done in Study 1. Results were again generally consistent with the self-assessment hypothesis. Theoretical implications and directions for future research are discussed.

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Introduction

Depression is a relatively common problem that is experienced by clinical and non-clinical populations alike. Conservative estimates indicate that at least four percent of the adult population is sufficiently depressed at any given time to warrant clinical treatment (Lewinsohn, Antonuccio, Breckenridge, & Teri, 1984). At least twenty percent of the adult population will have a clinically significant episode of depression at some time in their lives (Amenson & Lewinsohn, 1982; Myers & Weissman, 1980). About half of those who have symptoms that warrant a diagnosis of a major depressive episode will experience another major episode (Belsher & Costello, 1988; Spaner, Bland, & Newman, 1994). With these figures in mind, it is not surprising that depression has been called the common cold of mental health (e.g., Seligman, 1975). However, depression, unlike the common cold, is not to be taken lightly. It is a particularly debilitating disorder that can exact a heavy toll on many aspects of a person's life, including interpersonal relationships, work performance, family relations, social interactions, and daily functioning. In addition, depressed individuals are at considerable risk for self-injurious and suicidal behavior. It has been noted that the suicide rate for depressed patients is higher than for patients with any other psychological disorder (Becker, 1974; Mendels, 1975), with as many as one out of every 200 depressed persons committing suicide, according to some estimates (Lehman, 1971).

There are many symptoms of depression, including a reduced rate of daily activity, problems with social interactions that lead to feelings of loneliness, feelings of guilt for not performing up to self-imposed expectations, and somatic complaints such as difficulty sleeping, loss of appetite, or chronic fatigue. These symptoms are likely to vary from person to person and may or may not be evident in some depressed individuals. The feature that is present in almost all cases, however, is dysphoria, which is described by people who experience it as feeling sad, gloomy, worthless, or helpless. Because of the impact

depression can have on one's life, many psychological theories have attempted to explain the mental processes that are involved in this disorder.

Early psychoanalytic theory focused on a reaction to the loss of a central source of love and emotional security as the precipitant to depression. Freud (1917) observed that such losses often produce severe and seemingly irrational self-criticism and castigation. He believed that this self-reproach is actually directed at the lost object, which has been introjected into the depressed individual's own ego. To criticize the lost object openly would produce feelings of guilt. Instead, the hostility is directed at the self, which results in depression. Rado (1928) provided a variation on Freud's original hypothesis by proposing that there exists a depression-prone personality which is dependent on approval from others. When such an individual experiences the loss of an object of central importance, s/he will react with anger and resentment. Realizing that such reactions will not be productive, however, the individual will attempt to gain the object's approval (and ultimately, one's self-esteem) through self-punishment and repentance. Such self-punishment, however, does not accomplish these ends and instead results in depression.

Cognitive theory has also focused on the impact of a loss and the resultant negative feelings about oneself on depressive symptomatology. Beck (1976) proposed that the thought content of a depressed individual centers on a significant loss that s/he perceives as essential to her/his happiness. The individual will anticipate negative outcomes from any important undertaking and will regard herself as deficient in the attributes necessary for achieving important goals. Beck conceives of this negative thought pattern as a cognitive triad of negative views of oneself, one's world, and one's future. This thought pattern leads to the negative emotions of dysphoria, dissappointment, and apathy, and a vicious cycle is established whereby these emotions and thoughts solidify one's negative view of life. Kuiper, Derry, and MacDonald (1982) further propose that mildly depressed people's self-schemata are mixed, including both positive and negative components. They reason that as

depression deepens, more of the person's negative self-schemata are activated, thereby negatively affecting different cognitive processes such as memory, inference, and perception.

Early behavioral theories of depression (Lazarus, 1968; Skinner, 1953) regarded the symptoms of the disorder as the result of a reduction in positive reinformcements. People who are depressed withdraw from life because few incentives exist to become more active. Another proposed source of depression is a deficiency in social skills, which prevents an individual from interacting with others in a satisfying and rewarding manner (Coyne, 1976; Lewinsohn & Shaw, 1969). Without the reinforcements derived from other people's interest and concern, the individual is likely to become depressed. In addition, the individual is likely to remain depressed until s/he can learn to elicit positive behaviors from others. Experiencing stressful life events can also lead to depression. Such events can be major life stressors, such as the death of a loved one, changing jobs changing one's residence, being promoted, or they can take the form of daily hassles. In either case, these stressors interfere with an individual's ability to carry out routine behavior patterns, which can lead the individual to become self-critical, withdraw from others, and assume responsibility for negative outcomes (Hoberman & Lewinsohn, 1985).

One recent theory has attempted to integrate these three different perspectives into a coherent model of depression. The self-regulatory perseveration model (Pyszczynski & Greenberg, 1987) posits that a self-regulatory cycle emerges in depressed individuals that maintains their depression. They propose that the self-regulatory cycle begins with disruption of ongoing behavior (usually a loss of central importance to the individual), which will create a shift in attention toward the self. This shift starts a self-evaluative process (Duval & Wicklund, 1972) whereby one's present standing on the relevant dimension is assessed. If this evaluation reveals that one meets or exceeds one's standards for that dimension, then positive affect results from the self-focus. When one falls short of this self-imposed standard, negative affect results. For example, if a tennis player self-focuses after winning a match, she will likely conclude that she meets her standard for tennis ability and

will feel good about her performance. If the same player self-focuses after a loss, she will likely conclude that she falls short of her standard for ability, and she will feel badly. This negative affect will lead to behavior aimed at reducing the discrepancy, such as practicing harder. If the attempt to reduce the discrepancy is successful, then the individual exits the self-regulatory cycle. If the attempt at discrepancy reduction fails, then further attempts at reduction are enacted, until the subjective probability of successful discrepancy reduction is low (Carver & Scheier, 1981). When this point is reached the individual experiences negative affect as a result of the self-regulatory process. If, after practicing harder, our tennis player wins her next match, she will meet her standard and will exit the self-regulatory cycle. If she loses her next match, she will practice harder until the discrepancy is reduced or she believes that she will never get better and consequently will experience negative affect.

The self-regulatory perseveration model provides a convenient tool for understanding why and how depressives engage in the self-regulatory cycle. The process of comparing one's current standing with one's desired standing on an attribute is a central component of this cycle. This process of self-evaluation can have a powerful effect on depressives' positive and negative feelings about themselves. Another method for self-evaluation, however, is comparing one's own standing on an attribute with someone else's standing on that attribute. The information gained from this process of social comparison can have as much of an impact on depressives' feelings about themselves as "self-comparison." It has been shown that depressives compare themselves socially on a daily basis (Wheeler & Miyake, 1992), and the information gained from these comparisons is an integral part of their self-concepts. Since these comparisons can be so influential, it becomes important to understand why depressives make social comparisons, whom they compare themselves to, and how these comparisons affect their feelings about themselves. Equipped with such an understanding, it becomes possible to intervene in the depressive syndrome by using the social comparison process to develop cognitive techniques to alleviate depression.

Social Comparison Literature Review

Festinger, in his seminal work on social comparison theory (1954), proposed that people have a need to have stable, accurate appraisals of themselves. Usually, they prefer objective, non-social standards for these self-appraisals, but if such information is not available, people will compare themselves with others. They engage in this process when they are unsure of their abilities or opinions. Lack of certainty concerning one's standing on a particular dimension can be precipitated by a threat to one's notion of where he or she stands on that dimension. If the dimension is central to one's self-concept, this constitutes a threat to one's self-esteem. By engaging in social comparison, however, people can evaluate the validity of the threat, as well as the certainty of their abilities and opinions. Preferably, this comparison is with a person who is similar on the attribute in question. According to Festinger (1954), this provides maximum information for the self-evaluation. For example, a bodybuilder might socially compare with another bodybuilder of similar height and weight, and who has trained for about the same number of years, to evaluate how her/his muscle development is progressing. In Festinger's original work, he described a "unidirectional drive upward," by which he meant that people strive to be more capable than their current level of performance. One way the unidirectional drive upward is exercised is by socially comparing to those who are slightly better off on the specified attribute (Wheeler, 1966). These types of comparisons have been referred to as *upward comparisons*. However, others (Suls, 1977) have suggested that this "unidirectional drive upward" can involve strivings to appear more capable than others, which could be better accomplished by comparing oneself with others who are worse off on the attribute in question. These kinds of comparisons have been termed *downward comparisons*. A third type of comparison involves measuring oneself against a target who is similar on the specified trait, which has been referred to as *lateral comparisons*.

Self-Enhancement Hypothesis

In addition to Festinger's notion of *self-evaluation*, Wills (1981, 1987) notes that a second goal of social comparison is *self-enhancement* through downward comparison. Previously, these two motives for engaging in social comparison have been treated relatively independently in the literature, with some recent exceptions (Sedikides, 1993; Swann, Pelham, & Krull, 1989). In Wills's theory of downward social comparison (1981, 1987), he states that behavior patterns under natural conditions will exhibit both self-evaluative and self-enhancing comparisons. Under normal conditions, self-evaluation should predominate, but as psychological distress increases so does self-enhancement. A principle of this theory posits that people who experience negative affect or a decrease in subjective well-being are more likely to engage in downward social comparison. Negative life events trigger disruption and distress in people that, in turn, create a threat to self-esteem. To fend off this threat, people will use coping mechanisms to reduce the distress and threat. One way of doing this is to engage in downward social comparison. This process is said to increase subjective well-being by comparing oneself with a less fortunate other. To maximize self-enhancement and minimize the ego threat, the target of comparison should be a person who has a problem similar to the distressed individual but who is worse off due to inadequate coping or because of less favorable status on other dimensions (Wills, 1981). Downward comparisons can be passive, such as "coincidental occurrence of a comparison target," in which the individual happens to read or hear about a "worse off other" and this other becomes the target for comparison. Downward comparisons can also be active, such as the derogation of others who are inferior or worse off on a particular dimension or trait.

Consistent with Wills's theory, a number of studies have shown that downward comparison can indeed reduce distress and increase life satisfaction and positive affect. Crocker and Gallo (1985) found that participants who were induced to compare downward showed an increase in subjective ratings of life-satisfaction, decreased anxiety, and a reduction in depressed mood. Conversely, those induced to compare upward did not show

these effects. Other research has examined the effects of self-esteem threat on participants' desires to socially compare. Wood, Taylor, and Lichtman (1985) examined cancer patients (a population that experiences a constant threat to well-being), and found an overwhelming preponderance of spontaneous downward comparisons with worse off others during the course of individual 2-hour interviews. Similar findings from cancer patients (Taylor, Falke, Shoptaw, & Lichtman, 1986; Collins, Dakof, and Taylor 1988) and from Rheumatoid Arthritis patients (DeVellis, Holt, Renner, Blalock, Blanchard, Cook, Klotz, Mikow & Harring, 1990) have been uncovered. This set of findings is highly consistent with Wills's theory of downward comparison. Apparently, people who experience threats to their self-esteem are likely to fend off the threat by engaging in downward comparisons for the purposes of self-enhancement. Presumably, by doing this they feel better about themselves because they defended against the ego threat. They remind themselves that there are worse off others in the world, and simply knowing this seems to have the effect of improving their mood and possibly their self-image, at least temporarily.

A population that seems particularly apt to use self-enhancing downward social comparisons to its advantage are depressed and dysphoric individuals. Indeed, people with these characteristics have received attention in the literature concerning their preferences for social comparison. This category of people is also viewed as having chronically low self-esteem, negative affect, and is particularly vulnerable to threats to self-esteem. According to Wills (1981, 1987), people who experience negative affect and a low sense of well-being are more likely to engage in downward comparison. Additionally, according to Gibbons (1986), depressed and dysphoric participants engage in downward social comparison for the purposes of self-enhancement much like the cancer and RA patients did. Specifically, Gibbons (1986) found that depressed participants (as identified by the Beck Depression Inventory, BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) induced into a negative mood were significantly more likely to request negative information about another participant. In addition, after reading about the distressed participant, these participants

reported feeling better. Depressed participants in a positive mood and non-depressed participants in either a positive or negative mood did not make the same downward comparisons.

Similarly, Aspinwall & Taylor (1993) reported that low self-esteem participants (LSE's) induced into a negative mood were far more likely to indicate that a forced downward comparison with another student, who was adjusting poorly to college, increased positive mood and led to greater hope for future success. This effect was not obtained for LSE's in a positive mood or high self-esteem participants (HSE's) in either a positive or negative mood. Gibbons and McCoy (1991) reported that after receiving negative feedback on a bogus test of social awareness (threat condition), low self-esteem participants showed an improvement in mood after listening to a tape of a troubled student, whereas high self-esteem participants did not. This effect did not occur when participants received positive feedback (no threat condition). Like depressed participants, those low in self-esteem who are threatened feel better knowing that there is another student who is worse off than they are.

Several other investigators have shown corroborating evidence, including findings that depressed participants report a desire to affiliate with other depressed people (Funabiki, Bologna, Pepping, & Fitzgerald, 1980), prefer interacting with others who are unhappy (Coates & Peterson, 1982), and are more likely to have best friends who are depressed (Rosenblatt and Greenberg, 1991). In addition, Rosenblatt and Greenberg (1991) found that depressed participants felt significantly worse than non-depressed participants after talking to non-depressed targets. Non-depressed participants, on the other hand, felt significantly worse than depressed participants after talking to depressed targets.

In sum, these studies reveal a consistent set of findings: across all of these investigations, depressed, dysphoric, and low self-esteem participants preferred downward social comparison and in many cases showed self-enhancement as a consequence. In other

words, depressed participants felt better after reading about or interacting with worse off, depressed participants than they did after interacting with non-depressed, better-off people. Based on Wills's (1981) theory, we would expect this pattern of findings. By engaging in downward social comparisons, depressives see themselves in a more positive light because they are better than someone on the trait in question, and this makes them feel better about themselves.

Self-Assessment Hypothesis

Downward comparisons, however, may not always make people feel better. Although the self-enhancement findings show that downward comparisons can improve the moods of dysphoric participants, Buunk, Collins, Taylor, Van Yperen, & Dakof (1990) and Aspinwall & Taylor (1993) found that downward comparisons do not *necessarily* benefit depressed participants. They may also increase negative mood. Buunk et al. have suggested that this is because there are two outcomes that can result from making a downward comparison: (1) people find out that they are better off than the target, but (2) they realize that it is possible for them to fall to the level of the target. Take the example of a cancer patient in remission. She can compare herself with a cancer patient whose cancer is spreading, and realize that she is better off, yet she can also realize that she can deteriorate to the level of the other patient. Buunk et al. (1990) also address upward comparisons and the fact that two outcomes are possible in these as well: (1) Individuals realize that they are inferior to the target on this trait, but also that (2) it is possible to improve on this characteristic. Buunk et al. (1990) found that cancer patients' affect differed after making either upward or downward comparisons, depending on the piece of information to which they attended. Downward comparisons did not always lead to positive affect; they also led to negative affect. Similarly, upward comparisons did not always lead to negative affect; they also led to positive affect or a sense of hopefulness that they might achieve or surpass the level of their comparison target. Thus, it seems possible that in some

situations, participants who are dysphoric or depressed might be motivated to engage in upward comparisons and might experience positive affect after doing so.

There has been another pattern of findings in the social comparison literature that is similar to this proposition. This set of findings is generally consistent with the notion of self-evaluation, as outlined by Festinger (1954), but also more specifically with the idea of self-assessment as outlined by Trope (1983, 1986). Research by Trope and colleagues shows that people strive to be accurate in their views of the world and of themselves. They select tasks that will diagnose their abilities and often do so even when the outcome is likely to be unfavorable. In relation to social comparisons, this means people will make a lateral or upward comparison despite the possibility that they will experience negative affect as a result. According to this view, the motivation for accurate self-assessment is greater than the motivation for self-enhancement. Presumably, the purpose for comparing oneself with one who is similar or better off is to accurately evaluate one's standing relative to others, not to improve one's view of oneself or increase subjective well-being. This assumption is consistent with Festinger's original proposition that social comparison serves to help individuals evaluate themselves in comparison with others when they are uncertain about the correctness of their self-evaluations, attitudes, and judgments.

Evidence suggests that depressed people are more likely to experience this type of uncertainty than people who are not depressed. Investigators have suggested that people who have negative self-concepts (e.g., depressed people) are also quite uncertain of their own self-worth (Baumeister, Tice, & Hutton, 1989; Baumgardner, 1990; Baumgardner, Kaufman, & Levy, 1989; Pelham & Swann, 1989). Others have suggested that because depressed people have a low sense of control over their lives (Warren & McEachren, 1983), they experience chronic heightened uncertainty associated with exposure to these uncontrollable life events (Abramson, Seligman, Teasdale, 1978; Weary, Elbin, & Hill, 1987). It has been proposed that this uncertainty is aversive and can lead to negative affect (Baumgardner, 1990). Depressed people, therefore, would seem to be motivated to reduce

this uncertainty. To accomplish this reduction, it would seem that depressed people should be motivated to engage in lateral or upward comparisons for the purposes of self-assessment. Consistent with this proposition, Weary et al. (1987) reported that, compared with non-depressed participants, depressed participants evaluated a confederate more positively when he made attributional judgments similar to theirs, but more negatively when his judgments were dissimilar. It has been hypothesized that similarity in attributions leads to uncertainty reduction (Byrne, 1971). Based on this proposition, it was concluded that depressed participants' attempts to evaluate their own judgments in comparison to someone else's were driven by a motivation to reduce uncertainty about these judgments. When their uncertainty was reduced (i.e., when the confederate made a similar attribution), they were more confident about where they stood on the trait in question, and they evaluated the confederate more favorably.

Swallow and Kuiper (1992) reported that dysphoric participants made a large number of social comparisons when they received either favorable or unfavorable feedback about another participant's performance, relative to their own, on a numerical sequence recall task. In contrast, non-dysphoric participants made a significantly smaller number of social comparisons following negative feedback, but an equal amount following positive feedback. If dysphoric participants were motivated to self-enhance, we would expect them to make a greater number of downward comparisons after negative feedback than after positive feedback. This, however, was not the case. Dysphoric participants were just as likely to make downward comparisons after negative as after positive feedback. Additionally, Swallow and Kuiper (1993, Study 1) found that both dysphoric and non-dysphoric participants preferred comparing themselves to better off others when they received positive feedback concering their performance on a number recall task. When non-dysphoric participants received unflattering feedback, however, they preferred comparisons with worse off others. Dysphoric participants, on the other hand, preferred comparisons with similar off others when they received unflattering feedback. The investigators

interpreted these findings as evidence for dysphoric participants' engaging in self-assessment and non-dysphoric participants' engaging in self-enhancement. Similarly, Ahrens (1986) found that when participants were given a choice between comparing themselves with a target who had done better or one who had done worse than they had on a task, depressed participants made judgments based on a successful (better off) target whereas non-depressed participants made judgments based on an unsuccessful (worse off) target. Based on these findings, Swallow and Kuiper (1992) have proposed that the cognitive motive for accurate self-evaluative feedback outweighs the affective motive for self-enhancing feedback in dysphoric participants. They believe that, consistent with Weary et al. (1987), dysphorics engage in self-assessment for the purposes of reducing heightened uncertainty that surrounds their beliefs about their abilities and judgments.

In a separate study, Ahrens (1991) found that when both groups of participants were given feedback that was either favorable (information regarding a poor performance by another participant) or unfavorable (information about a participant who did well) regarding their perfomance on a spatial abilities test, there were no differences between the two groups in their estimation of how well they performed relative to other participants. When they received mixed information (evidence that one other participant did well and one did poorly), however, non-dysphorics estimated their performance as if they had only received evidence that another participant did poorly and, in essence, self-enhanced. They ignored the other piece of information and estimated their performance to be quite good. Dysphoric participants, on the other hand, did the opposite. They estimated their performance as if they had only received unfavorable feedback (that the other participant did well), and, in essence, self-assessed. Consequently, they estimated their performance to be quite poor. Thus, dysphorics and non-dysphorics combine information differently. The manner in which they do this is consistent with the other evidence that dysphorics make comparisons with similar or better off others, consistent with the self-assessment perspective, but that non-

dysphorics make comparisons with worse off others, consistent with the self-enhancement position.

In summary, the self-assessment findings outlined here seem to indicate that when both dysphoric and non-dysphoric persons are not threatened with negative feedback, their social comparison behavior is similar: they tend to compare themselves to better off others. When they are threatened with negative feedback, however, non-dysphorics respond by comparing themselves to worse off others, presumably in an attempt to reduce the threat and protect their egos. This self-protective strategy is consistent with work detailing self-serving social cognitive biases in non-dysphoria (Alloy & Ahrens, 1987; Abramson & Alloy, 1981, Alloy & Abramson, 1979, 1982; Lewinshon, Mischel, Chaplin, & Barton, 1980; Tabachnik, Crocker, & Alloy, 1983; Taylor & Lobel, 1989; Taylor & Brown, 1988). Dysphoric participants, however, respond to negative feedback by comparing themselves with similar and better off others, which may provide more accurate, albeit less flattering, feedback regarding their abilities. This inability to utilize self-protective strategies is consistent with work that suggests this type of behavior may maintain or even exacerbate negative self-evaluations that dysphorics usually have (Ahrens, Zeiss, & Kanfer, 1988; Kuiper & MacDonald, 1982; Pinkley, Laprelle, Pyszczynski, & Greenberg, 1988; Tabachnik et al., 1983). Making upward comparisons, however, may not necessarily be detrimental, as Buunk et al. (1990) have noted. In addition, self-assessment theory proposes that dysphoric participants have heightened uncertainty and have a strong need to reduce this uncertainty. By reducing this uncertainty, (via lateral or upward comparisons), dysphorics can increase their sense of control over future outcomes by pursuing those they know they are competent in and by avoiding those they know they are incompetent in (Baumgardner, 1990).

Summary and Goals of the Current Research

The two diverging patterns of findings reviewed above are nicely explained by the two different processes of self-evaluation. On one hand, the self-enhancement motivation explains the studies showing that, when under threat, depressed participants prefer to compare themselves to targets who are worse off, and they feel better after they do so, whereas non-depressed participants prefer to compare themselves with better off others and feel better after these comparisons. The self-assessment motivation explains the studies showing that depressed and dysphoric participants prefer to compare themselves with similar and better off others when under threat, but non-depressed participants prefer to compare themselves with worse off others when under threat. Depressed participants engage in upward comparisons presumably to obtain maximally diagnostic feedback and reduce their uncertainty. Neither set of findings exhibited these effects in the absence of threat. Thus, there are two different sets of findings from studies attempting to examine the same phenomena of social comparison tendencies in depressed and dysphoric people. Each one is explained well by a separate self-evaluation hypothesis. A logical next question is: "Which hypothesis best describes the social comparison behavior of dysphorics?" In other words, which one is right? What remains to be done is to provide a direct test of these two explanations.

Prior to addressing this question, however, a conceptual distinction must be made between dysphoria and depression. Many of the studies mentioned above label their participants as "depressed" based on their Beck Depression Inventory scores. There is evidence, however, that such a label is a misnomer (Kendall, Hollon, Beck, Hammen, Ingram, 1987). These researchers distinguish between depression as a symptom, a syndrome, and a nosological category. As a symptom, depression can merely be a feeling of sadness. As a syndrome, depression is a constellation of signs and symptoms that cluster together (e.g. sadness, negative self-concept, sleep and appetite disturbances). Finally, for

depression to be a nosological category, careful diagnostic procedures, such as those in a clinical interview, must be followed to rule out other possible diagnoses (Kendall, et al., 1987). According to these distinctions, Kendall et al. state that the BDI is an instrument that measures depression at its syndromal level. They further recommend that because the BDI is not sufficient to diagnose depression as a discrete nosological entity, participants who score in the "depressed" range should be referred to as "dysphoric" and not as "depressed." This definition will be followed by the current research for the remainder of this manuscript.

Returning to the descriptive question raised above, reducing this critical question to "self-enhancement versus self-assessment," may oversimplify a complex process. This simplification seems inappropriate, given the strength of the findings outlined above. It does not seem to be merely a question of which motivation is the "true" or "dominant" motive. It seems clear that both motivations operate for both dysphorics and non-dysphorics. Rather, a more interesting and appropriate question to ask is when will self-enhancement be dominant and when will self-assessment be dominant? An individual difference variable that might help to answer this question is how certain participants are about where they stand on the dimension of interest. Different levels of certainty can be created experimentally that either lead participants to be certain or uncertain that they are high or low on the trait in question. Recall that when participants are not certain about their standing on an attribute, they should self-assess (Festinger, 1954; Trope, 1983, 1986), which in turn promotes a sense of control over future outcomes, thus generating positive affect and confidence in the self (Baumgardner, 1990). If the self-assessment hypothesis is valid, then participants' level of certainty regarding the dimension of interest should influence their social comparison choices and the impact these comparisons have on participants. If the self-enhancement hypothesis is valid, then certainty should not influence participants.

The Utility Question

In addition, the current research also seeks to assess the utility of the social comparison process. That is, why in one situation is self-enhancement crucial for dysphorics when in another situation self-assessment is? Much of the past research has focused on determining which self-evaluative motive might be leading participants to compare in a certain direction. The explanations for why participants self-enhanced or self-assessed, and the utility that social comparisons had for the participants, were left to post-hoc discussions and have not been tested directly. In attempting to answer these questions, dependent variables designed to assess changes in affect and self-certainty have been included into the design of the current research. Incorporating these pre- and post-comparison measures will help to understand the utility of self-enhancing or self-assessing by measuring the impact these comparisons have on the participants.

Overview and Predictions of the Current Research

The purpose of the current research was two-fold. First, the research provided a direct test of the self-enhancement and self-assessment hypotheses concerning the social comparison behavior of dysphoric as compared with non-dysphoric participants in an attempt to assess when each motive will be dominant. This test was accomplished by informing participants that the experimenters were interested in a number of different personality traits and that participants would be taking tests of these traits. One of these traits was fictitious ("synthetic ability"), and thus the test of this trait was contrived, while the others were actual tests of personality traits. These served as filler tests, while the test of synthetic ability was the stimulus of interest. Participants took the contrived test, received feedback about their performance, were provided with an opportunity for social comparison, were given a measure of their self-certainty for the fictitious trait, and were given a measure of their affect. Two of the independent variables were valence of feedback

(positive vs. negative) and certainty of feedback (high vs. low). The participants were induced to think either that they were low or high on the desirable trait and that the experimenters were certain or uncertain about their performance on the test of synthetic ability. Major dependent variables included the type of target they chose for social comparison (a better off, similar, or worse off target), their ratings of self-certainty regarding the trait, and self-ratings of pre- and post-comparison affect.

The second purpose of this research is to attempt to identify an individual difference variable that may influence the social comparison process. The variable of interest is the amount of certainty expressed in the test feedback regarding participants' standing relative to others on the fictitious trait. The self-assessment hypothesis expects that participants made to feel uncertain will be motivated to compare themselves with similar or better off others to obtain maximally diagnostic information to reduce this uncertainty. This hypothesis also expects that a post-comparison measure of uncertainty will show that participants given uncertain feedback, who should make lateral or upward comparisons, will be more certain about themselves in regard to the trait in question than participants given uncertain feedback who prefer downward comparisons, or participants given certain feedback who prefer downward or upward comparisons. The self-enhancement hypothesis does not incorporate the notion of uncertainty and for this reason does not offer firm predictions regarding the impact of the certainty variable or participants' social comparisons.

Self-Enhancement Predictions

Regarding the valence of feedback, the self-enhancement hypothesis predicts that only when dysphoric participants are given negative feedback about their performance will they make downward comparisons and experience an improvement in mood following this comparison. Based on the findings in the literature and the assumption made by Aspinwall and Taylor (1993) that both negative affect and a threat to self-esteem are necessary for self-enhancement to occur, it was predicted that these effects would not occur when

dysphoric participants were given positive feedback. For the same reasons, it was predicted that these effects would also not occur when non-dysphoric participants were given either positive or negative feedback. The self-enhancement hypothesis does not make any predictions regarding the certainty of feedback variable and its impact on dysphoric or non-dysphoric participants. The self-enhancment hypothesis does not confer importance to the participants' level of uncertainty. If dysphoric participants are given both negative and uncertain feedback, the self-enhancement position predicts that they will make downward comparisons and experience an improvement in mood, but only because of the presence of the negative feedback.

Self-Assessment Predictions

The self-assessment hypothesis predicts that when dysphoric participants are given negative or uncertain feedback, they will engage in lateral or upward comparisons and experience a decrease in uncertainty and an improvement in mood following this comparison. This is because when participants are not certain about their standing on an attribute, they will be likely to self-assess (Festinger, 1954; Trope, 1983, 1986), which in turn promotes a sense of control over future outcomes, thus generating positive affect and confidence in the self (Baumgardner, 1990). When dysphoric participants are given both negative and uncertain feedback, it was predicted that a multiplicative effect would occur. Specifically, this hypothesis implies that dysphorics receiving negative and uncertain feedback will make even greater upward and lateral comparisons, to experience greater self-certainty and a better mood, than when given certain feedback. This prediction is based on the expectation that uncertain feedback will add to the pool of uncertainty that the negative feedback and dysphoric mood have created. In addition, the self-assessment hypothesis predicts that non-dysphoric participants will engage in downward comparisons after receiving negative feedback and will experience an improvement in mood following this comparison, but not a reduction in uncertainty. Recall that this is based on the findings that non-dysphorics tend

to self-enhance after receiving negative feedback (Ahrens, 1986; 1991; Swallow & Kuiper, 1993, Study 1) and which is also consistent with work detailing self -serving social cognitive biases in non-dysphoria (Alloy & Ahrens, 1987; Abramson & Alloy, 1981, Alloy & Abramson, 1979, 1982; Lewinshon, Mischel, Chaplin, & Barton, 1980; Tabachnik et al., 1983; Taylor & Lobel, 1989; Taylor & Brown, 1988). Finally, based on the findings outlined above that are consistent with Festinger's "unidirectional drive upward," this perspective predicts that either dysphoric or non-dysphoric participants receiving positive, certain, or both types of feedback will exhibit a pattern of lateral or upward comparisons.

The current research thus adds to the existing literature by providing a direct test of these two hypotheses and their explanation for the comparison behavior of dysphoric and non-dysphoric participants. These two hypotheses have been tested simultaneously (Sedikides, 1993) but not with a dysphoric population. Also, the addition of the post-comparison measures of affect and self-certainty allowed for more definitive conclusions as to why participants were making certain types of comparisons. That is, did they feel better after making downward comparisons (consistent with self-enhancement) or did they feel better and more certain after they made upward comparisons (consistent with self-assessment)? The assessment of these dependent variables had not been done in previous research. Rather, much of the research had focused on the descriptive question: What is the pattern of comparison for dysphorics and non-dysphorics? The utility question, (what function does this pattern serve for participants?), had been left to speculative conclusions in the post-hoc discussion of the findings. The current research sought to test these post-hoc explanations in order to begin to answer the utility question. Including these dependent measures helped to accomplish this goal.

Study 1

Theoretical Overview

The current research was carried out in two separate experiments. Study 1 involved an examination of the social comparison preferences of mildly dysphoric and non-dysphoric participants. This first study was concerned with the descriptive question as it applies to different levels of dysphoria: "Which self-evaluative motive explains what dysphoric and non-dysphoric participants do in the face of negative and uncertain feedback?" This experiment attempted to resolve the self-enhancement vs. self-assessment dispute as they relate to dysphoria. Study 1 also addressed the question of when will non-dysphoric and mildly dysphoric participants make downward, lateral, and upward comparisons? More specifically, when someone receives certain as opposed to uncertain feedback, will s/he be more likely to make downward comparisons, as the self-assessment hypothesis predicts?

Method

Overview

The procedure for Study 1 involved some elements of the classic social comparison paradigm, originally designed by Hakmiller (1966), but also incorporated additions to the typical procedure. Prior to this procedure, participants were selected based on their scores on the Beck Depression Inventory (BDI) (Beck et al., 1961), and the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), which they completed at a pre-testing session. At the experimental session, participants were told that the experimenters were interested in "participant demographics" on a number of different personality traits as well as their reactions to the tests that measure these traits. As such, they filled out a "personal background" questionnaire to assess demographic characteristics, and they also took a

number of brief personality tests and gave their reactions to each test. They were assured that all of the information collected was anonymous. Each participant was given a numeric code that was not traceable to the student's identity. Before beginning the experiment, however, they were told that, as part of a separate and unrelated experiment involving peoples' feelings, they were to complete 2 forms designed to assess their moods. Participants were given the Beck Depression Inventory to measure their level of dysphoria and the Positive and Negative Affect Scale (PANAS) (Watson, Clark, & Tellegen, 1988), which provided an initial measure of their mood. These questionnaires were followed by the administration of the personality tests. Participants were told that they would be taking two tests, the first of which was a test of "synthetic ability." Following this test, participants were given feedback regarding their performance on the test. They were told that they were either in the "very high range" (positive feedback condition) or in the "below average range" (negative feedback condition) on this trait. In addition, part of this feedback explained that the scorer of the test was either certain or uncertain of their standing on this trait. Following this feedback, they were asked to choose among targets, who varied in performance level, with whom to compare themselves. The performance of the other person, or target, was constructed by the experimenter. After viewing the feedback that the fictitious comparison target received, the participants were asked to complete the PANAS again, as well as a measure of self-certainty for the trait of synthetic ability. Thus, the design of Study 1 was a 2 (feedback valence: positive vs. negative) X 2 (feedback certainty: certain vs. uncertain) X 2 (level of dysphoria: dysphoric vs. non-dysphoric) factorial design with social comparison preference as the primary dependent variable, and affect and self-certainty as secondary dependent variables.

Pretesting

With the pretense that researchers were seeking normative information on several psychological scales measuring moods and attitudes, 344 female undergraduates enrolled in

Introductory Psychology completed the BDI and the Marlowe-Crowne Social Desirability Scale at pre-test sessions. Male participants were not asked to complete the pretests for two reasons: First, there is a greater prevalence of dysphoria among women as opposed to men (Achtimen & Joukamaa, 1994; Spaner, Bland, & Newman, 1994), and second, there is a greater number of females enrolling in Introductory Psychology classes. To maximize the likelihood that adequate numbers of dysphoric participants would be recruited, only females were asked to participate. Previous research has not found any gender effects in social comparison processes (Gibbons,1986; Weary et al., 1987; Swallow & Kuiper, 1993; Tabachnik et al., 1983). A maximum of four participants were pre-tested at any one time. The BDI is a widely used self-report questionnaire consisting of 21 clusters of statements that tap different characteristics that have been associated with depression, such as sadness, sense of failure, guilt, self-dislike, suicidal ideation, insomnia, and changes in appetite. Previous research with the BDI (Bumberry, Oliver, & McClure, 1978; Oliver & Burkham, 1979) provides evidence that this measure is valid and reliable in the detection of dysphoria among college students. Participants are asked to circle the one statement (from among four) that best describes how they have been feeling in the past week. Each statement corresponds to a number (0-3) with higher numbers representing more serious symptomatology. The sum of the statements' numeric values provides the BDI score. Finally, participants were asked to indicate on the pre-test questionnaire if they would like to participate in another research project in the near future.

There is some evidence to suggest that low scores on the BDI may not reflect psychological health but rather "illusory mental health" (Shedler, Mayman, & Manis, 1993; Study 3) or "denial of distress" (Joiner, Schmidt, & Metalsky, 1994). Shedler et al. (1993) found that some low scorers on the BDI were actually engaging in the denial of distress, as determined by clinician ratings of psychological health and physiological measures of arousal. The low end specificity of the BDI was also brought into question when Joiner et al. (1994) found that people who received a score of "0" or "1" on the BDI were significantly

more likely to be high in the denial of distress, as evidenced by endorsing at least 5 items on the MMPI-L scale and receiving a negative score on the (MMPI-F - MMPI-K) scale. In an effort to alleviate this problem of including people who deny their distress in the non-dysphoric group, participants were asked to complete the Marlowe-Crowne scale (see Appendix A). Empirical evidence from Weinberger, Schwartz, & Davidson (1979) suggests that the Marlowe-Crowne scale can, for low scorers on the BDI, distinguish between people low and high in the denial of distress. In an attempt to acheive a purer non-dysphoric sample, low scores on the Marlowe-Crowne scale were used as an additional criterion in selecting the non-dysphoric sample.

Participants

Participants who scored between 0-9 on the BDI and who scored below 20 on the Marlowe-Crowne scale were classified as non-dysphoric, while participants who scored between 10 and 17 on the BDI were part of the dysphoric sample. These BDI cutoffs for non-dysphoria and mild dysphoria have been specified by Kendall, Hollon, Beck, Hammen & Ingram (1987) and have been used in several prior studies (e.g., Ahrens, 1991; Ahrens, Zeiss, & Kanfer, 1988; Alloy & Ahrens, 1987; Golin & Terrell, 1977; Hammen & Krantz, 1976; Nelson & Craighead, 1977; Tabachnik, Crocker, & Alloy, 1983; Teasdale, 1978) . The cutoff score of 20 for the Marlowe-Crowne scale represents approximately one standard deviation above the mean, with higher scores representing a greater need for social approval, (the mean score for college students on the social desirability scale is 13.72, with a standard deviation of 5.78; Marlowe & Crowne,1960). From this initial pool of 344 pre-test participants, 100 non-dysphoric and 88 dysphoric female participants were selected to participate in the experimental session based on their BDI and Marlowe-Crowne scores.

A certain number of the participants taking the pre-test did not end up satisfying the inclusion criteria. Of the original pool of 344 pre-test participants, 61 with elevated Marlowe-Crowne scores and 42 with elevated BDI scores were not called back for

participation in the experimental session. In addition, 53 participants scoring in the non-dysphoric range on the pre-test were not asked to participate in the experimental session because appropriate cell sizes had been reached for this group of participants. Of the 188 participants selected for participation in the experimental session, 15 dysphorics were excluded from the final analyses because their scores fell into the non-dysphoric range upon retesting, while 6 non-dysphorics were excluded because their scores fell into the dysphoric range upon retesting. Thus, the final sample included 85 non-dysphoric and 82 dysphoric participants. The scores on the BDI for non-dysphoric participants ranged from 0-9 with a mean of 5.81, while the scores for the dysphoric sample ranged from 10-17 with a mean of 12.54. The scores on the Marlowe-Crowne for non-dysphorics ranged from 6-19, with a mean of 14.78 while the scores for dysphorics ranged from 2-20, with a mean score of 13.16. In an effort to avoid identifying individuals, participants were not asked to indicate their age or ethnicity.

Procedure

Participants who satisfied the selection criteria and who indicated that they would be interested in participating in future research were contacted by phone and asked to participate in another research project involving personality traits and moods. Those who agreed to participate were tested in small groups of three or less. Each participant was seated in a separate enclosed cubicle to ensure privacy and silence. The groups were homogenous with respect to their level of dysphoria. All participants were told that they would be participating in 2 unrelated experiments. They were informed that the first experiment involved answering a few different anonymous surveys about their mood. At this point they were given the BDI again, to eliminate participants who may only have been experiencing a transient depressed state at pre-testing (Sacco, 1981). They were also given the PANAS to complete. This latter mood measure consists of a list of 20 different feelings and emotions. Participants were asked to rate how much they were feeling each emotion, at

that moment, on a scale of 1 "very slightly or not at all" to 5 "extremely," (Watson, Clark, & Tellegen, 1988). After participants completed these two scales, they were asked to place them in a box in the front of the room.

Next, participants were given instructions regarding the "second" experiment. The instructions explained that the investigators were interested in the backgrounds of people who possess certain personality traits. They went on to explain that after filling out a background information survey, they would take a number of self-report personality tests. The instructions further explained that after they completed the first test, the experimenter would collect the tests and they would then be given to a graduate student in psychology who would score the tests and provide written feedback for the participants. They continued to read that while the first tests were being scored, the participants would take the next test, and once these were completed, they would be collected and scored also. After the second set of tests were collected, participants would receive results from their first test and so on.

After reading these instructions that provided an overview of the experiment, participants then filled out the brief demographic survey that asked for their year in school, college major, hometown population, and other general information, but none of which could identify an individual participant. Participants were told that this survey and the personality tests were anonymous and confidential and that the experimenters were interested in group characteristics and not individual characteristics. The true purpose of the demographic survey was to enhance the credibility of the cover story.

Synthetic Ability Test

Participants then received instructions about the first personality test, which was said to measure "synthetic ability." This test consisted of 20 analogies of varying difficulty. For example, one analogy read: "Train is to Track as Gondola is to (canal, air, ocean, or hangar)." Ten of the analogies were unsolvable. These were the items that were marked

incorrect when participants were given feedback on their performance. After participants completed this test, the experimenter collected the tests and informally introduced the graduate student in psychology who scored the tests. It was explained to the participants that frequently, participants in psychology experiments do not learn anything from them, often because they are not interested in the particular subject matter of the experiment or they do not find it personally meaningful. It was explained that in an attempt to alleviate this problem, the experimenters would provide participants with the results of their test and what these scores mean. It was also made clear to the participants that they would receive feedback on their performance but that the correct answers to the questions would not be revealed. The reason, participants were told, was that often times people will take psychological tests more than once, and if for any reason they have to take this test in the future, knowing the correct answers would unfairly bias their future test protocol. After this explanation, the graduate student left the room, ostensibly to go score the synthetic ability tests, while the experimenter passed out the second test. In actuality, he randomly assigned each of the participants to a feedback condition.

Test Feedback

After about 10 minutes had elapsed, the graduate student re-entered the room and told the experimenter that the first tests had been scored. Participants were finished with the second test by that point. The graduate student then collected the second set of tests from the experimenter and left the room again. The experimenter explained that participants would be allowed to view their test scores and feedback forms. The experimenter distributed the feedback forms to the participants based on the numeric code on the top of the page, and allowed the participants a few minutes to look them over. The pre-written, bogus feedback forms indicated to participants that they either received a score of "7" and were in the "very high" range (positive feedback condition) or that they received a score of "3" and were in the "below average" range (negative feedback condition) for this trait

(see Appendix A). In addition, the feedback forms had all of the analogies reprinted on them so the experimenter was able to indicate which ones participants got wrong. Participants in the positive feedback condition had 4 of the analogies marked wrong on the feedback forms while participants in the negative feedback condition had 10 of the analogies marked wrong. It was explained that each item on the test was worth a different value. Some easy items were worth only three-tenths of a point while some difficult items were worth a full point. They were told that when the point values are summed, the highest possible score is a "10" while the lowest possible score is a "0".

The feedback forms also stated that the test scorer was either "certain" or "uncertain" about the participant's score. For those in the "high certainty" condition, it was explained that, based on their pattern of responses, the scorer was certain of the participant's level of synthetic ability. That is, based on the questions the participant got right and wrong, the scorer was 95% certain that their score on this test is the participants' true level of synthetic ability. Participants in the "low certainty" condition read that, based on their pattern of responses, the scorer was not entirely certain of their level of synthetic ability. That is, based on the questions the participant answered correctly and incorrectly, the scorer was only 50% certain that the participant's score on this test represents the participant's true level of synthetic ability. It was further explained to participants in both conditions that sometimes the pattern of responses a particular participant gives yields a very easily interpretable profile of synthetic ability and other times it doesn't. The high certainty participants read that, based on their pattern of responses, their profile was easily interpreted, while low certainty participants read that, based on their responses, their profile was not easily interpreted.

Social Comparison

The experimenter then explained that in previous experimental sessions, participants had expressed some curiosity about how they performed on the test relative to

other participants. Because of the prevalence of these requests and the experimenter's goal of having participants learn something that is meaningful to them, it was explained that this had been incorporated into the experimental protocol. The experimenter explained that participants were permitted to look over the feedback form of another, anonymous participant. This provided participants with the comparison target's performance as well as which questions the comparison target answered incorrectly. The questions that the comparison target got right and wrong were marked but the specific answers the comparison target gave for each analogy were not circled on the feedback form. At this point, the experimenter again reminded participants that the correct answers would not be on any of the feedback forms they looked at in order to prevent learning the test in case the participants should ever need to take this test in the future. Participants then indicated on a sheet attached to the feedback form whom they wanted to compare their performance with: someone who performed better than they did, someone who performed worse than they did, or someone who performed the same as they did. They indicated this also by circling the test score, on an 11-point (0-10) scale, of the participant with whom they wanted to compare themselves. This provided a measure of the magnitude of the comparison. Participants then handed back their social comparison preferences sheets to the experimenter. The experimenter then selected the requested feedback sheet for each participant to compare their performance with, based on the number they circled. There were 11 comparison feedback sheets in all, one for each possible test score the participants could choose. Comparison feedback was classified according to category: "Superior" (scores of 8, 9, or 10), "very high" (scores of 7), "average" (scores of 6, 5, or 4), "below average" (scores of 3), and "very poor" (scores of 2, 1, or 0). Participants in the positive feedback condition who chose to make an upward comparison saw the feedback form of a participant who demonstrated "superior" performance. The actual test score they saw corresponded to the score they selected. Participants in this condition who chose to make a lateral comparison (selected a comparison score of 7) saw the feedback form of a participant who demonstrated

"very high" performance. Participants in this condition who made a downward comparison either read about a participant who demonstrated "average" performance (if they selected a comparison score of 6, 5, or 4), a participant who demonstrated "below average" performance (if they selected a comparison score of 3), or a participant who demonstrated "very poor" performance (if they selected a comparison score of 2 or less). Participants in the negative feedback condition who chose to make an upward comparison saw the feedback form of a participant who demonstrated "average" performance (if they selected a test score of 4, 5, or 6), "very high" performance (if they selected a test score of 7), or the feedback form of a participant who demonstrated "superior" performance (if they chose a comparison test score of 8, 9, or 10). Participants in this condition who chose to make a lateral comparison (selected a test score of 3) saw the feedback form of a participant who demonstrated "below average" performance, and participants in this condition who made a downward comparison read about a participant who demonstrated "very poor" performance (if they selected a comparison score of 0, 1, or 2) . The experimenter then handed out the bogus comparison feedback sheets and allowed the participants a few minutes to look them over.

Self-Certainty and Final Mood Measures

While participants viewed the "other participant's" results, the graduate student re-entered the room with the second set of scored personality tests, handed them to the experimenter and then left the room. The experimenter collected the bogus comparison tests that the participants were looking over and passed out a post-test questionnaire which included the PANAS and a self-certainty measure. She explained to the participants that the experimenters were interested in their reactions to each personality test and that after they completed this brief questionnaire, she would distribute the second set of feedback forms. They were instructed to complete the mood scale based on how they were feeling "right now," and they were told that their answers may or may not be the same as when they first responded to this scale. Participants were also asked to assess their level of

synthetic ability in relation to others in the general population by providing three ratings on a scale of 0 percentile to the 100th percentile. This part of the procedure was based on a technique used by Baumgardner (1990). The first rating they were asked for was what percentile they thought they were in on this trait, relative to the general population. This number could range from 0-100. Then they were asked for the latitude surrounding that judgment by indicating the percentile they were certain they were above (bottom of the interval) and the percentile they were certain they were below (top of the interval). For example, if a participant estimated herself to be at the 75th percentile, she may have estimated further that she was definitely below the 87th percentile but definitely above the 60th percentile. This provided a numerical estimate (a latitude of 27%) of how self-certain she is regarding this trait. The latitude between the highest and lowest ratings served as the measure of self-certainty: The greater the distance between the two ratings, the less self-certainty, while the smaller the distance between the two ratings, the greater the self-certainty. Finally, participants were asked to respond to a questionnaire designed to assess their notions of what the experiment was about. This measure simply asked them to report, in an open-ended fashion, what they thought the purpose of the experiment was. This was incorporated to assess whether any of the participants suspected the true purpose of the experiment. After collecting the questionnaire, the experimenter explained that the study was over, at which point the graduate student re-entered the room to debrief the participants thoroughly.

The debriefing involved an extensive explaination of the purpose of the study, the logic behind deceiving participants about the true nature of the experiment, and the reason for giving false test feedback. Participants were probed for any negative feelings about the deception. They were reassured that the intent was not malicious but rather done in the pursuit of sound scientific experimentation. They were also told that the test of synthetic ability is not a real test and that they should not infer anything about themselves based on their test feedback. Further, they were told that half of the items on the test were

unsolvable. The graduate student was prepared to help any negatively affected participant to cope with their feelings and also to provide appropriate referrals in the unlikely event that it became necessary. Four of the participants indicated that they were experiencing negative feelings as a result of the experiment. All of them expressed these feelings after the post-test was collected but prior to the debriefing. Once these participants were debriefed, they stated that they understood the experiement and were no longer experiencing negative feelings about it.

Results

Direction of Social Comparison

The main dependent variable in Study 1 was the social comparison preferences of the participant sample. This variable was measured and analyzed at two levels: the *direction* of the comparison preferences (upward, downward, or lateral) and the *magnitude* of difference between the score the participant received and the score the participant chose to compare herself with. In regard to the direction of social comparison preference, there existed a clear preference for upward comparisons among the participant sample tested. A two-tailed chi-square test on the number of cases observed versus the number of cases expected for each type of comparison revealed a highly significant difference between the comparison preferences of the participants, $\chi^2(2, N=167) = 94.65$, $p < .0001$. Of the 167 participants in Experiment 1, 113 or 68% of them made upward comparisons, 40 (24%) made lateral comparisons, and 14 (8%) made downward comparisons.

It was hypothesized that there would be differences between dysphorics and non-dysphorics on the direction of their social comparsion preferences. The self-enhancement hypothesis expected dysphorics to make a significantly greater number of downward comparisons than lateral or upward comparisons, and non-dysphorics to make a greater number of upward comparisons than downward comparisons. The self-assessment

hypothesis predicted the opposite: that dysphorics would make a significantly greater number of upward or lateral comparisons than downward comparisons and that non-dysphorics would make a greater number of downward comparisons than upward comparisons. Inspection of the values in Table 1 shows that about equal numbers of dysphorics and non-dysphorics made downward and upward comparisons, whereas slightly more non-dysphorics made lateral comparisons. A two-tailed chi-square test was used to test for significant differences between the number of cases observed and number of cases expected for each type of comparison choice for dysphoric and non-dysphoric participants. The chi-square value was not significant, $\chi^2(2, N = 167) = 1.86$ $p > .10$, indicating that level of dysphoria did not have a significant impact on the types of comparisons that participants made.

Table 1
Direction of Comparison by Level of Dysphoria

	Direction of Comparison		
	Downward	Upward	Lateral
Level of Dysphoria			
Non-dypshoric	7.1%	64.7%	28.2%
Dysphoric	9.8%	70.7%	19.5%

Additional two-tailed chi-quare tests were conducted to test for main effects of the other independent variables of valence and certainty of feedback. For the valence of feedback variable, the self-enhancement hypothesis predicted that participants receiving negative feedback would make more downward comparisons than upward or lateral comparisons. The self-assessment hypothesis predicted that participants receiving negative feedback would make more lateral and upward comparisons than downward comparisons. Inspection of values in Table 2 reveals that participants receiving negative feedback made more upward comparisons, fewer downward comparisons, and about the same number of

lateral comparisons as participants receiving positive feedback. A two-tailed chi-square test was used to test for significant differences between the number of cases observed and number of cases expected for each type of comparison choice for participants receiving positive and negative feedback. The chi-square value for valence of feedback on direction of comparisons was not significant, χ^2 (2, N = 167) = 3.68, $p > .10$, indicating that valence did not significantly impact participants' social comparison choices.

Table 2
Direction of Comparison by Valence of Feedback

	Direction of Comparison		
	Downward	Upward	Lateral
Valence of Feedback			
Positive	11.9%	61.9%	26.2%
Negative	4.8%	73.5%	21.7%

For the certainty of feedback variable, the self-assessment hypothesis predicted that participants receiving uncertain feedback would make more lateral and upward comparisons than downward comparisons while the self-enhancement hypothesis, which does not address the role of certainty in making comparisons, did not make any predictions concerning this variable. Inspection of values in Table 3 shows that participants receiving uncertain feedback actually made fewer upward and more downward comparisons than participants receiving certain feedback, which is inconsistent with the self-assessment predictions. Participants receiving uncertain feedback did, however, make a greater number of lateral comparisons than those receiving certain feedback, which is consistent with the self-assessment hypothesis. A two-tailed chi-square test was used to test for significant differences between the number of cases observed and number of cases expected for each type of comparison choice for participants receiving certain and uncertain feedback. The chi-square value for certainty of feedback on direction of comparisons again was not

significant, χ^2 (2, N = 167) = 5.17, $p > .10$, indicating that certainty did not significantly influence participants' social comparison choices.

Table 3
Direction of Comparison by Certainty of Feedback

	Direction of Comparison		
	Downward	Upward	Lateral
Certainty of Feedback			
Certain	6.0%	75.9%	18.1%
Uncertain	10.7%	59.5%	29.8%

In sum, while there was a highly significant difference between the social comparison preferences for all of the participants tested, the predicted main effects for level of dysphoria, valence and certainty of feedback, did not materialize, failing to corroborate either the self-enhancement or the self-assessment hypotheses' predictions for the direction of comparison variable. Contrary to the findings in the social comparison literature, participants in this sample overwhelmingly preferred making upward comparisons, regardless of their level of dysphoria or the type of feedback they received. One possibe reason for the preponderance of upward comparisons could be that participants believed, despite instructions to the contrary, that they would learn the correct answers from the feedback form of a participant who did very well. Despite possible biases in reporting one's motivations, informal interviewing during the debriefing indicated that this was probably not the case. Other possibilities for this finding include the possibility that participants were engaging in self-assessment regardless of level of dysphoria or valence of feedback, or that they were attempting to gain information, such as which questions were more valuable, so they could improve any future performances on the synthetic ability test.

Magnitude of Social Comparison

The second level of the main dependent variable examined the magnitude of the comparison that participants made by subtracting the score of their social comparison preference from their own score on the Synthetic Ability test. For example, if a participant received feedback indicating that she got a "3" on the Synthetic Ability test, she could make an upward comparison with a magnitude of 1 if she chose to compare herself with a participant who received a "4" or she could make an upward comparison with a magnitude of 5 if she selected a comparison score of "8". This indicates not only the direction but also the size of the upward or downward comparison being made.

The self-enhancement hypothesis predicted a two-way interaction between valence of feedback and level of dysphoria such that dysphoric participants receiving negative feedback would make greater downward comparisons than dysphoric participants receiving positive feedback, or non-dysphoric participants receiving either positive or negative feedback. The self-assessment hypothesis predicted a two-way interaction between valence of feedback and level of dysphoria, but expected non-dysphoric participants who received negative feedback to make greater downward comparisons than non-dysphoric participants who received positive feedback, or dysphoric participants who received positive or negative feedback. In addition, this hypothesis also predicted that dysphoric participants receiving negative feedback would make greater upward and lateral comparisons than participants in the other conditions. Finally, the self-assessment hypothesis also predicted a three-way interaction between dysphoria, valence, and certainty of feedback such that dysphoric participants receiving negative and uncertain feedback would make the greatest upward comparisons, and then dysphorics receiving negative and certain feedback the next greatest compared with participants in the other conditions.

A univariate analysis of variance was performed on the magnitude of comparison variable with level of dypshoria, valence, and certainty of feedback serving as between-participant factors. It is clear that the two-way interaction between dysphoria and valence

was not significant $F(1, 159) < 1.0$, ns. The self-assessment hypothesis also predicted a 3-way interaction between dysphoria, valence, and certainty, but this interaction was not significant, $F(1, 159) < 1.0$, ns. The means for these predicted interactions are presented in Tables 4 and 5, respectively.

Table 4
Magnitude of Comparison by Dysphoria and Valence

	Valence of Feedback	
	Positive	Negative
Level of Dysphoria		
Non-dysphoric	0.95 (41)	2.77 (44)
Dysphoric	1.47 (43)	2.84 (39)

Note. Positive values indicate upward comparisons, negative values indicate downward comparisons, and a value of 0 indicates lateral comparisons. Values in parentheses represent the number of participants per cell.

Table 5
Magnitude of Comparison by Dysphoria, Valence, and Certainty

	Type of Feedback			
	Certain		Uncertain	
	Positive	Negative	Positive	Negative
Dysphoria				
Non-dysphoric	1.27 (22)	2.58 (19)	0.58 (19)	2.78 (25)
Dysphoric	1.86 (21)	2.76 (21)	1.09 (22)	3.04 (18)

Note. Positive values indicate upward comparisons, negative values indicate downward comparisons, and a value of 0 indicates lateral comparisons. Values in parentheses represent the number of participants per cell.

A main effect for valence of feedback, $F(1,159) = 26.28$, $p < .0005$, emerged on the magnitude of comparison variable, but main effects for level of dysphoria $F(1, 159) < 1.0$, ns, and certainty of feedback $F(1, 159) < 1.0$, ns, did not. The valence of feedback variable produced greater magnitudes of upward comparisons for participants receiving negative feedback ($M = 2.81$) than participants receiving positive feedback ($M = 1.21$). Both of these are in the upward direction, consistent with the earlier finding of a strong preference for this type of comparison. This main effect is consistent with the self-assessment hypothesis, which states that negative feedback produces uncertainty which participants will attempt to reduce by making upward comparisons. It is inconsisitent, however, with the self-enhancement hypothesis which states that negative feedback will produce a decrease in well-being, which participants will attempt to reduce by making downward comparisons.

As for the level of dysphoria variable, dysphorics ($M = 2.09$) made upward comparisons of about the same magnitude as non-dysphorics ($M = 1.93$). Because the predicted main effects for this variable did not occur, magnitudes of comparison were collapsed across level of dysphoria to examine the resulting two-way interaction between valence and certainty of feedback. This interaction turned out not to be significant, $F(1, 159) = 2.39$, $p > .10$. It is apparent from looking at the cell means in Table 6, however, that they are directionally consistent with the tenets of the self-assessment hypothesis and directionally inconsistent with the self-enhancement hypothesis. These non-significant trends indicate that receiving negative and uncertain feedback led participants to make large upward comparisons, and receiving negative and certain feedback led to the next largest upward comparisons, presumably to reduce the level of uncertainty that this type of feedback causes.

Table 6
Magnitude of Comparison by Valence and Certainty

	Certainty of Feedback	
	Certain	Uncertain
Valence of Feedback		
Positve	1.56 (43)	0.85 (41)
Negative	2.67 (40)	2.93 (43)

Note. Positive values indicate upward comparisons, negative values indicate downward comparisons, and a value of 0 indicates lateral comparisons. Values in parentheses represent the number of participants per cell.

In sum, the predicted interactions for the magnitude of comparison variable were not statistically significant, failing to corroborate the self-enhancement or the self-assessment hypotheses. A main effect for valence of feedback emerged, however, consistent with the self-assessment hypothesis' predictions that negative feedback would lead to upward and not downward comparisons. In addition, some of the non-significant trends among the means on the comparison magnitude variable were also directionally consistent with the self-assessment predictions but directionally inconsistent with the self-enhancement predictions.

Positive and Negative Affect Scores

The second dependent variable of interest was the participants' affect, both before and after receiving feedback. Positive and negative affect was measured using the Positive and Negative Affect Scale (PANAS). It was predicted that pre-test positive affect scores for dysphorics would be lower than for non-dysphorics, and that negative affect scores for dysphorics would be higher than for non-dysphorics. An analysis of variance on participants' pre-test positive affect scores was conducted with level of dysphoria, valence, and certainty of feedback serving as between-participant factors. As can be seen in Table 7, consistent with predictions, dysphorics had significantly lower positive affect than non-dysphorics, $F(1, 159)$

= 8.50, $p < .005$. An analysis of variance was also conducted on participants' pre-test negative affect scores, with level of dysphoria, valence, and certainty of feedback serving as between-participant factors, and it was again consistent with predictions: Dysphorics had significantly higher pre-test negative affect scores than non-dysphorics, $F(1, 159) = 29.34$, $p < .0005$. This finding confirms that the BDI cutoffs used for the dysphoric and non-dysphoric samples in Study 1 are valid, and that dysphoric participants were indeed feeling less positive and more negative than non-dysphoric participants.

Table 7
Pretest Positive Affect and Negative Affect Scores

	Positive Affect	Negative Affect
Level of Dysphoria		
Non-dysphoric	30.98 (85)	14.12 (85)
Dysphoric	27.43 (82)	18.71 (82)

Note. Values in parentheses represent the number of participants per cell.

The second set of analyses on participants' affect involved differences in means on post-comparison positive and negative affect scores. Main effects for level of dysphoria, valence of feedback, and certainty of feedback emerged on these post-comparison affect scores. It is apparent from Table 8 that, consistent with findings for pre-test positive affect, dysphorics still experienced significantly less positive affect than non-dysphorics at post-test, $F(1, 159) = 7.34$, $p < .008$, as well as significantly greater negative affect than non-dysphorics at post-test, $F(1, 159) = 17.37$, $p < .0005$. Manipulation checks using post-comparison affect also reveal that participants receiving negative feedback experienced significantly greater negative affect than participants receiving positive feedback, $F(1, 159) = 15.69$, $p < .0005$, and also experienced less positive affect than participants getting positive

Table 8
Post-Comparison Positive Affect and Negative Affect Scores by Dysphoria, Valence and Certainty of Feedback

	Positive Affect	Negative Affect
Level of Dysphoria		
Non-dysphoric	29.86 (85)	13.49 (85)
Dysphoric	26.29 (82)	17.20 (82)
	Positive Affect	**Negative Affect**
Valence of Feedback		
Positive	29.05 (84)	13.60 (84)
Negative	27.16 (83)	17.05 (83)
	Positive Affect	**Negative Affect**
Certainty of Feedback		
Certain	29.18 (83)	14.94 (84)
Uncertain	27.05 (84)	15.68 (83)

Note. Values in parenthesis inidicate the number of participants per cell

feedback, although non-significant, $F(1, 159) = 1.93$, $p > .10$. In addition, and somewhat consistent with the self-assessment hypothesis, participants receiving uncertain feedback experienced marginally less positive affect than participants receiving certain feedback, $F(1, 159) = 3.31$, $p < .071$, but there were no differences between certainty conditions for negative affect, $F(1, 159) < 1.0$, ns. In sum, on post-comparison affect, dysphorics experienced significantly greater negative affect and significantly less positive affect than non-dysphorics, participants receiving negative feedback experienced significantly greater negative affect than participants receiving positive feedback, and participants receiving uncertain feedback experienced marginally significantly less positive affect than participants receiving certain feedback. These findings indicate that the valence of feedback manipulation was successful in Study 1 and they also support the finding reported earlier indicating that the BDI cutoffs used in Study 1 were valid.

Self-Enhancement Predictions for Affect

In addition to these main effects, the self-enhancement hypothesis predicted a three-way interaction between participants' level of dysphoria, valence of feedback, and the direction of comparison they made. Although the direction of comparison measure served as a dependent variable in the experimental design, it is possible to use this variable as a between-participant factor in the analyses to determine the impact of making a social comparison on subsequent affect that participants' experience. Specifically, the self-enhancement hypothesis predicted that dysphoric participants receiving negative feedback, and who also made downward comparisons, would feel better (experience greater positive affect and less negative affect) than dysphorics receiving negative feedback who made lateral or upward comparisons and better than non-dysphorics receiving negative feedback and making downward comparisons. This predicted effect would not occur, however, when dysphorics received positive feedback. Instead, dysphorics receiving positive feedback, who also made a downward comparison would not necessarily feel any better than when

making a lateral or upward comparison. Also, that non-dysphorics who made upward comparisons after either positive or negative feedback would feel better than if they had made downward comparisons. A univariate analysis of variance was performed on both positive and negative affect scores with level of dysphoria, valence of feedback, and direction of comparison serving as between participant factors. The predicted interaction between these three variables was not significant for positive affect, $F(2, 144) < 1.0$, ns, or for negative affect, $F(2, 144) < 1.0$, ns. The cell means are presented in Tables 9 and 10.

Self-Assessment Hypothesis Predictions for Affect

The self-assessment hypothesis also predicted a three-way interaction between level of dysphoria, valence of feedback and direction of comparison, but differed from the self-enhancement hypothesis such that when dysphoric participants received negative feedback, they would engage in lateral or upward comparisons and experience greater positive affect and less negative affect than if they had made downward comparisons, and greater positive and less negative affect than non-dysphorics making lateral or upward comparisons. As stated earlier, this interaction was not significant for positive, $F(2, 144) < 1.0$, ns, or negative affect $F(2, 144) < 1.0$, ns. Again, the cell means are presented in Tables 9 and 10.

The self-assessment hypothesis also predicted another three-way interaction between level of dysphoria, certainty of feedback, and direction of comparison, such that when dysphoric participants receive uncertain feedback, they will engage in lateral or upward comparisons and experience greater positive affect and less negative affect than they would if they made a downward comparison. This interaction was also not significant, $F(2, 144) < 1.0$, ns. The cell means are presented in Tables 11 and 12.

Table 10
Post-Comparison Negative Affect Scores by Dysphoria and Valence

For Downward Comparisons:

	Valence of Feedback	
	Positive	Negative
Level of Dysphoria		
Non-dysphoric	11.40 (5)	18.00 (1)
Dysphoric	16.80 (5)	21.67 (3)

For Upward Comparisons:

	Valence of Feedback	
	Positive	Negative
Level of Dysphoria		
Non-dysphoric	12.32 (22)	14.55 (33)
Dysphoric	14.23 (30)	20.75 (28)

For Lateral Comparisons:

	Valence of Feedback	
	Positive	Negative
Level of Dysphoria		
Non-dysphoric	12.64 (14)	14.40 (10)
Dysphoric	15.75 (8)	15.88 (8)

Note. Values in parentheses represent the number of participants per cell.

A marginally significant three-way interaction between level of dysphoria, valence, and certainty of feedback emerged on the post-comparison positive affect scores, $F(1,144) = 3.74$, $p < .055$, that was not predicted but that is generally consistent with the self-assessment hypothesis. In general, dysphorics experienced slightly less positive affect than non-dsyphorics in each valence and certainty condition. Examining the cell means in Table 13 more closely, it is apparent that dysphorics who received positive feedback experienced very similar levels of post-comparison affect in the certain and the uncertain conditions. Dysphorics receiving negative feedback felt about the same in the certain as in the uncertain conditions and overall, felt slightly worse than those receiving positive feedback. Post-hoc comparisons of the cell means indicated that the source of the interaction comes from the non-dysphoric sample. There was little difference between the positive affect scores for non-dysphorics who received positive feedback whether in the certain or the uncertain condition, $F(1, 39) < 1.0$, ns. For non-dysphorics receiving negative feedback, however, those also receiving certain feedback reported significantly greater positive affect than those receiving negative and uncertain feedback $F(1, 42) = 11.04$, $p < .001$. Thus, dysphorics felt slightly worse in the negative feedback condition than in the positive feedback condition, regardless of level of certainty. Non-dysphorics' positive affect, however, was affected by the certainty of the feedback they received. When receiving positive feedback, they felt about the same regardless of the certainty condition. When they received negative feedback, however, those in the certain condition experienced significantly greater positive affect than those in the uncertain condition. So for non-dysphorics, knowing for certain that they did poorly is less upsetting than not knowing for sure that they did poorly. The increased uncertainty had the effect of lowering positive affect for non-dysphorics, when coupled with negative feedback. This is generally consistent with the self-assessment hypothesis' assertion that uncertainty is upsetting to people and leads to lower positive affect than being certain. In the current example, however, this effect only occured for non-dysphorics. The self-assessment

hypothesis expected it to occur for dysphorics as well. When receiving negative feedback, dysphorics' level of positive affect was unaffected by certainty.

Table 13
Post-Comparison Positive Affect Scores by Dysphoria, Valence and Certainty

When Receiving Certain Feedback:

	Valence of Feedback	
	Positive	Negative
Level of Dysphoria		
Non-dysphoric	30.45 (22)	33.32 (19)
Dysphoric	28.29 (21)	25.00 (21)

When Receiving Uncertain Feedback:

	Valence of Feedback	
	Positive	Negative
Level of Dysphoria		
Non-dysphoric	30.89 (19)	25.92 (25)
Dysphoric	26.77 (22)	24.89 (18)

Note. Values in parentheses represent the number of participants per cell.

In sum, the significant findings on post-comparison positive and negative affect scores are generally consistent with the self-assessment hypothesis. The marginally significant main effect of certainty on positive affect scores is consistent with this hypothesis. Those participants receiving uncertain feedback experienced less positive affect than those receiving certain feedback. In addition, the marginally significant 3-way interaction between level of dysphoria, valence, and certainty of feedback is also generally consistent with the self-assessment perspective: Non-dysphorics receiving negative and certain feedback felt

better than when receiving uncertain feedback. There were no statistically significant main effects or interactions that were consistent with the self-enhancement perspsective.

Change in Positive and Negative Affect

The last level of the affect variables that was examined was the change in positive and negative affect scores between the pre-test and post-test administrations. Computing change scores from two samples that have different initial baseline rates, however, invokes Lord's Paradox (Lord, 1967; Wainer, 1991). Such was the case for the dysphoric and non-dysphoric samples: each sample had a significantly different baseline positive affect score and negative affect score. To make a causal inference and say the change from pre-test to post-test was due to the stimulus (the independent variables of valence and certainty of feedback) would be fallacious because it ignores the initial baseline differences. Wainer (1991) points out that this paradox is minimal if certain assumptions can be made. He states that a causal inference can be made if it is reasonable to assume that the dependent variable in question (positive and negative affect) "...would have been the same at post-test as at baseline, had there been no stimulation" (Wainer, 1991, p. 149). This is a reasonable assumption to make for Study 1. Therefore, in computing positive and negative affect change scores for dysphoric and non-dysphoric participants, it was assumed that their positive and negative affect scores would have been the same at pre-test as at post-test, had they not been exposed to the independent variables in Study 1.

The change in both positive and negative affect was computed by subtracting participants' pre-test scores from their post-test scores. For the change in positive affect, negative values indicate a reduction in positive affect (participants felt worse) while positive values indicate an increase in positive affect (participants felt better). For negative affect, negative values indicate a reduction in negative affect (participants felt better), while positive values indicate an increase in negative affect (participants felt worse). A univariate analysis of variance was conducted on both affect variables with level of dysphoria, valence

and certainty of feedback, and direction of comparison serving as between-participant factors. Consistent with earlier findings, a main effect for valence of feedback emerged on positive affect such that participants receiving negative feedback (M= -1.9) experienced a significantly greater reduction in positive affect than participants receiving positive feedback (M= -0.36), F(1, 144) = 5.1, p < .025. A main effect for valence of feedback also emerged on negative affect, such that participants receiving negative feedback experienced a significantly greater increase in negative affect (M=0.39) than participants receiving positive feedback (M= -2.49), F(1, 144) = 13.95, p < .0005. Main effects for level of dysphoria and certainty of feedback were not significant, F's < 1.0.

These main effects were qualified by a two-way interaction which emerged between level of dysphoria and certainty of feedback on the change in positive affect, F(1, 144) = 6.01, p < .015, but not on negative affect, F(1, 144) < 1.0, ns. The cell means for this interaction are presented in Table 14. Post-hoc analyses of the cell means for simple effects indicates that non-dysphorics receiving certain feedback experienced very little change in positive affect but when exposed to uncertain feedback, they experienced a large, though non-significant, reduction in positive affect, F(1, 83) = 2.85, p < .095. The opposite pattern emerged for dysphorics: when receiving certain feedback they experienced a large reduction in positive affect but very little reduction in positive affect when receiving uncertain information, although this difference was not significant, F(1,80) = 1.64, p > .10. Thus, despite the absence of significant simple effects, uncertainty had the effect of reducing positive affect for non-dysphorics but not for dysphorics. This finding is consistent with the three-way interaction between dysphoria, valence and certainty of feedback on post-comparison positive affect mentioned above. It is also generally consistent with the self-assessment hypothesis' tenet that uncertainty leads to less positive affect. It would have been even more specifically consistent with this hypothesis, however, if this pattern emerged for dysphorics as it did for non-dysphorics. This reasoning follows the self-assessment assertion that dysphorics tend to be uncertain about their abilities to begin with, (which is associated

with less positive affect), so uncertain information would just add to their already uncertain state, whereas certain information should reduce uncertainty and consequently increase positive affect. This situation did not occur, however, in this case.

One explanation for this interaction could be that the dysphorics in the current sample interpreted the uncertain feedback positively. That is, they may have interpreted the uncertain feedback to mean that perhaps they did even better than the feedback indicated, which would lead to less of a reduction in positive affect than if they received certain information. They may have thought to themselves: "I got a 3 which isn't very good, but the experimenter wrote that he wasn't entirely sure about this, so maybe I did even better." It might also be that the non-dysphorics did the opposite: they may have interpreted the uncertain feedback negatively, or as meaning that they might have performed even worse than the feedback indicated, which would lead to greater uncertainty and a reduction in positive affect. This possibility could mean that uncertain feedback activates a negativity or pessimistic schema in non-dysphorics but a positivity or optimistic schema in dysphorics.

Table 14
Change in Positive Affect Scores

	Certainty of Feedback	
	Certain	Uncertain
Level of Dysphoria		
Non-dysphoric	-0.17 (41)	-2.00 (44)
Dysphoric	-1.90 (42)	-0.32 (40)

Note. Values represent the change in positive affect between the pre-test and post-test measurements. Negative values indicate a reduction in positive affect while positive values indicate an increase in positive affect. Values in parentheses represent the number of participants per cell.

To test this possibility, a variable was created that measured the difference between the participants' point estimate of their synthetic ability and the feedback that they received. The feedback was given on an 11-point scale, from 0 to 10, while the self-certainty point estimate was made on a 101-point scale, from 0 to 100. The variable was computed by multiplying the point estimate by 0.1 and then by subtracting this value from the value on the participants' feedback sheet, either a "3" or a "7". A positive value means that participants estimated their ability to be less than what their feedback indicated, while a negative value means that they estimated their ability to be greater than what their feedback indicated, and a "0" means that their point estimate was consistent with their feedback. Since the feedback was the only information available about the fictitious ability, any difference between the feedback and participants' point estimates would indicate a positivity or negativity bias. If the certainty variable was differentially affecting dysphorics' and non-dysphorics' interpretations of the feedback, a two-way interaction between level of dysphoria and certainty of feedback would occur. An analysis of variance was conducted on this variable with level of dyspohoria, valence and certainty of feedback serving as between-participant factors. It is apparent that the interaction between dysphoria and certainty was not significant $F(1,112)=2.36$, $p > .10$. In addition, the possibility raised above seems unlikely. Examination of the cell means indicate that when receiving certain feedback, both dysphorics ($M= -0.06$) and non-dysphorics ($M= -0.11$) estimated their synthetic ability to be about the same as their feedback indicated. When receiving uncertain information, non-dysphorics ($M= -0.97$) estimated their ability to be greater than the feedback indicated, whereas dysphorics ($M= 0.26$) estimated thier ability to be about the same as the feedback indicated. Thus, the opposite of the possibility raised above occured, as non-dysphorics, not dysphorics, exhibited a positivity bias, which is consistent with previous findings in the literature.

Self-Certainty Scores

The scores on this variable were computed by subtracting participants' highest estimate of their level of synthetic ability from their lowest estimate, thus creating a single number which represents their self-certainty. Higher numbers indicate a wider range between estimates and thus greater uncertainty whereas lower numbers indicate a smaller range and greater certainty. As a manipulation check on the certainty of feedback conditions, it was predicted that certain feedback would lead to greater post-test self-certainty (smaller values) and uncertain feedback would lead to less self-certainty (larger values). A univariate analysis of variance was performed on the self-certainty variable with level of dysphoria, valence, and certainty of feedback serving as between-participant factors. Consistent with predictions, a main effect for certainty emerged, $F(1,144) = 9.24$, $p < .003$, such that participants receiving uncertain feedback experienced significantly less self-certainty ($M=34.5$) than participants receiving certain feedback ($M=26.64$). This confirms that the certainty of feedback manipulation in Study 1 was successful. Main effects for dysphoria, valence of feedback, and direction of comparison were not significant, all F's < 1.0.

Only the self-assessment hypothesis made predictions concerning participants' self-certainty scores because the self-enhancement hypothesis does not incorporate certainty into its position regarding social comparison. The self-assessment hypothesis predicted two different two-way interactions on the self-certainty variable. The first was between valence of feedback and direction of comparison such that, of the participants receiving negative feedback, those who made lateral and upward comparisons would experience greater self-certainty than those making downward comparisons. This situation was predicted because the negative feedback should increase their uncertainty about how much synthetic ability they have and making an upward or lateral comparison should help to reduce this uncertainty but downward comparisons should not. For participants receiving positive feedback, the self-assessment hypothesis predicted that the levels of self-certainty would be

about the same for those making downward, lateral, or upward comparisons. Positive feedback would not have the effect of increasing uncertainty as negative feedback did, and thus the direction of comparison effect should not be pronounced.

Table 15
Self-Certainty Scores by Direction of Comparison and Valence

	Direction of Comparison		
	Downward	Upward	Lateral
Valence of Feedback			
Positive	26.50 (10)	27.48 (52)	34.82 (22)
Negative	47.50 (4)	32.77 (61)	25.56 (18)

Note. Larger values represent less self-certainty while smaller values represent greater certainty. Values in parentheses represent the number of participants per cell.

A univariate analysis of variance was conducted on the self-certainty variable with level of dysphoria, valence and certainty of feedback, and direction of comparison serving as between-participant factors. The predicted two-way interaction between valence of feedback and direction of comparison was significant, $F(1, 144) = 3.05$, $p < .05$. The cell means for this interaction are presented in Table 15. Post-hoc analyses were conducted on the cell means and from these results, it is clear that the self-assessment hypothesis was accurate in its predictions. The findings for participants receiving negative feedback are as follows: those making upward comparisons reported significantly greater self-certainty than those making downward comparisons, $F(1, 63) = 17.88$, $p < .0005$, those making lateral comparisons also reported significantly greater self-certainty than those making downward comparisons, $F(1, 21) = 19.03$, $p < .0005$, and those making lateral comparisons experienced significantly greater self-certainty than those making upward comparisons, $F(1,78) = 4.73$, $p < .05$. For participants receiving positive feedback, those making

downward comparisons reported about the same level of self-certainty as those making upward comparisons but experienced significantly greater self-certainty than those making lateral comparisons, $F(1, 31) = 7.95$, $p < .01$. Thus, consistent with the self-assessment hypothesis, after participants received negative feedback, making lateral comparisons was associated with the greatest level of self-certainty, upward comparisons the next greatest, while downward comparisons led to uncertainty. Thus, lateral comparisons are the most effective at reducing uncertainty after receiving negative feedback. This finding adds greater specificity to the self-assessment hypothesis which predicted either upward or lateral comparisons would reduce uncertainty after receiving negative feedback. Apparently, lateral comparisons have the largest effect. When receiving positive feedback, there was little difference between downward and upward comparisons on participants' self-certainty, but lateral comparisons led to slightly greater uncertainty after positive feedback.

The second two-way interaction predicted by the self-assessment hypothesis was between certainty of feedback and direction of comparison. It was predicted that participants receiving uncertain feedback would experience greater self-certainty after making lateral or upward comparisons than after making downward comparisons. For participants receiving certain feedback, there would be little difference between the the three comparison directions. Results from the analysis of variance described above indicate that this interaction was not significant, $F(1, 144) < 1.0$, ns. The cell means are presented in Table 16.

The two-way interaction between valence of feedback and direction of comparison on self-certainty scores is qualified by a significant three-way interaction between level of dysphoria, valence of feedback, and direction of comparison, $F(2, 144) = 3.09$, $p < .05$. The cell means for this interaction are presented in Table 17. Post-hoc analyses of the means indicates that the source of the three-way interaction lies within the dysphoric sample.

Table 16
Self-Certainty Scores by Direction of Comparison and Certainty

	Direction of Comparison		
	Downward	Upward	Lateral
Certainty of Feedback			
Certain	22.20 (5)	27.46 (63)	24.67 (15)
Uncertain	38.22 (9)	33.96 (50)	34.24 (25)

Note. Larger values represent less self-certainty while smaller values represent greater certainty. Values in parentheses indicate the number of participants per cell.

The direction of the interaction is consistent with self-assessment predictions. A simple interaction between valence of feedback and direction of comparison emerged for the dysphoric sample, $F(2, 76) = 4.20$, $p < .02$. Specifically, for dysphorics receiving negative feedback, those who made a lateral comparison experienced marginally significantly greater self-certainty than those making a downward comparison, $F(1, 10) = 4.44$, $p < .065$, and those making an upward comparison also experienced significantly greater self-certainty than those making a downward comparison, $F(1, 29) = 4.31$, $p < .05$. Hence, making a downward comparison after receiving negative feedback had the effect of reducing self-certainty for dysphoric participants, but making an upward or lateral comparison after getting negative feedback increased self-certainty for dysphorics. This finding is consistent with the self-assessment hypothesis and the aforementioned finding. It must be noted, however, that the cell means for downward comparisons are very small, thereby making any conclusions somewhat tentative. This problem was corrected in Study 2. There were no simple effects among the cell means for non-dysphorics. Combining these findings, it is apparent that after dysphorics receive negative feedback, making an upward or lateral comparison is associated with greater self-certainty than making a downward comparison, which is entirely consistent with the self-assessment hypothesis.

Table 17
Self-Certainty Scores by Direction of Comparison, Dysphoria, and Valence

For Dysphoric Participants:

	Valence of Feedback	
	Positive	Negative
Direction of Comparison		
Downward	25.00 (5)	53.33 (3)
Upward	27.93 (30)	29.86 (28)
Lateral	36.25 (8)	25.25 (8)

For Non-dysphoric Participants:

	Valence of Feedback	
	Positive	Negative
Direction of Comparison		
Downward	28.00 (5)	30.00 (1)
Upward	26.86 (22)	35.24 (33)
Lateral	34.00 (14)	25.80 (10)

Note. Values in parentheses represent the number of participants per cell.

Ancillary Results

There has been considerable controversy in the literature concerning depression research methodology recently (Tennen, Hall, & Affleck, 1995; Weary, Edwards, & Jacobson, 1995; Kendall & Flannery-Schroeder, 1995). Some criticisms have been raised by Tennen et al. (1995) about the quality of research being conducted using depressed and dysphoric participants. Tennen et al. (1995) address their own criticisms by offering three recommendations to improve the quality of depression reserarch methodology. First, they suggest using multiple depression assessment periods to address the transitory nature of depression. As described earlier, Study 1 adhered to this first recommendation, which is also the recommendation originally presented by Kendall et al. (1987). Second, they recommend using multiple assessment methods, not just the BDI, with preference given to structured interviews such as the Diagnostic Interview Schedule (DIS). Their reasoning is that elevated BDI scores may be due to physical illness or drug use, which the BDI doesn't take into account but which the DIS does, and thus, participants scoring high on the BDI may not be "truly" depressed. Study 1 did not follow this recommendation, however, for three reasons: First, Study1 was investigating dysphoria and not nosological depression, which Kendall et al. (1987) state is sufficiently measured by the BDI alone. Second, this recommendation itself is not an ideal solution, and in fact is problematic because of the possibility of interview bias when using the DIS or other structured interview, which may compromise the integrity of the sample populations, the strong empirical evidence of construct validity associated with the BDI, and the possibility that self-report biases (e.g. social desirability and negative response set) may also operate during interviews (Weary et al. 1995). Third, while the PANAS is not designed to measure dysphoria at its syndromal level, it does provide a well validated measure of general positive and negative affect. The findings of a significant positive correlation between negative affect and BDI scores, (r = .441, $p < .01$, two-tailed), as well as a significant negative correlation between positive affect and BDI scores (r = -.297, $p < .01$, two-tailed), provide corroborating evidence from a

separate affect assessment measure that the BDI was adequately detecting dysphorics in the participant sample. For these reasons, using only the BDI as a measure of participants' dysphoria is not considered a shortcoming of Study 1.

The third recommendation that Tennen et al. make is to include comparison groups, such as those exhibiting other kinds of psychopathology, like anxiety, in addition to the typical non-depressed group. They make this recommendation because of the possibility that participants who score a 10 or more on the BDI can do so without endorsing items which convey the DSM IV depression prerequisites of sad mood, loss of pleasure or interest (items 1, 4, & 12 respectively). Thus, participants may be placed into the dysphoric sample when they are not dysphoric at all, but rather are exhibiting symptoms of anxiety or general distress. To address this concern, the BDI's of the dysphoric participants in Study 1 were re-examined for endorsement of items 1, 4, and 12. It was found that of the 82 dysphoric participants in Study 1, 75 or 91% endorsed at least one of these items. This finding confirms that virtually all of the participants labelled dysphoric in Study 1 were in fact, dysphoric. Tennen et al. also make recommendation number three because of the high correlation between anxiety and depression in both self-report and clinical diagnoses (Barlow, 1988; Breier, Charney, & Heninger, 1985; Dobson, 1985; Metalsky & Joiner, 1992). Essentially, Tennen et al. state that because of these high correlations, participants scoring high on the BDI may not be dysphoric or depressed, but may instead be exhibiting anxiety or general distress.

To test this possibility, the PANAS was used to create two groups within the dysphoric sample based on Tennen et al's recommendation: an anxious group scoring high on the positive affect scale, and a dysphoric group scoring low on positive affect (Clark & Watson, 1991; Laurent & Stark, 1993; Watson & Clark, 1992; Watson, Clark, & Carey, 1988). High scores on the positive affect scale were defined as those in the top 25% of the dysphoric sample and low scores on this scale were defined as those in the bottom 25% of the dysphoric sample. Analyses of variance were conducted to compare these two groups on

the main dependent variables of interest (positive affect, negative affect, self-certainty, and magnitude of comparison,) with level of dysphoria/anxiety, valence, and certainty of feedback serving as between-participant factors. Any significant main effects or interactions involving the level of dysphoria/anxiety would indicate that the distinction between anxious and dysphoric participants within the dysphoric sample was meaningful. Looking first at the affect variables, it is apparent that a main effect emerged for level of dysphoria/anxiety on post-comparison positive affect, $F(1, 33) = 92.5$, $p < .0001$. This finding was expected, however, because the anxious and dysphoric groups were created based on their pre-test positive affect scores. Pre-test and post-test positive affect scores were significantly positively correlated with one another ($r = .808$, $p < .01$), and thus, one would expect this main effect to emerge. One expects this finding not because the distinction between the anxious and dysphoric is meaningful but because of how these groups were defined. There were no interaction effects on post-comparison positive affect involving the level of dysphoria/anxiety variable, all $F's < 1.0$. There were no main effects or interactions involving this variable on post-comparison negative affect, all $F's < 1.0$. Looking next at the self-certainty variable, there were no main effects or interactions involving the level of dysphoria/anxiety variable on participants' self-certainty ratings, all $F's < 1.0$. Finally, there were no main effects or interactions for level of dysphoria/anxiety on the magnitude of comparison variable $F's < 1,0$. Thus, the distinction between anxious and dysphoric participants in Study 1 was not significant. The recommendation by Tennen et al. (1995) to include an anxious comparison group has been followed but the presence of anxiety does not appear to have had an impact on the social comparison process. In addition, it appears that the possibility of having anxious participants in a dysphoric sample defined by BDI scores is not a risk in social comparison research. Further research with multiple a priori assessments for anxiety should be conducted, however, to confirm this initial finding.

Discussion

The goals of Study 1 were to answer the question of when will dysphorics and non-dysphorics make downward, lateral, or upward comparisons? In the presence of positive or negative feedback, and/or in the presence of certain or uncertain feedback? Also, to answer the utility question of why do dysphorics and non-dysphorics make certain types of comparisons in certain situations? To improve their affect, to increase their self-certainty, or both? Study 1 was designed to provide a direct test of the self-enhancement and self-assessment hypotheses' answers to these questions. Each self-evaluative hypothesis made opposing predictions for the effects of the independent variables of level of dysphoria, valence of feedback, and certainty of feedback on the dependent variables of the direction and magnitude of social comparison, post-comparison affect and self-certainty.

Neither hypothesis was accurate in explaining dysphoric and non-dysphoric participants' preferences for the direction of comparisons they made. The majority of participants, regardless of their level of dysphoria, made upward comparisons. The self-assessment hypothesis was somewhat accurate, however, in predicting the relative magnitude of dysphorics' comparisons. For example, those participants receiving negative feedback made large upward comparisons and those receiving positive feedback made small upward comparisons. In addition, while none of the interactions predicted for magnitude of comparison on the basis of this hypothesis were statistically significant, the trends among the cell means were almost uniformly consistent with the self-assessment hypothesis and inconsistent with the self-enhancement hypothesis. The self-assessment hypothesis best answered the question of when participants will make certain types of comparisons. When dysphorics receive negative feedback alone or negative feedback coupled with uncertain feedback, they make large upward comparisons. Non-dysphorics tend to make smaller upward comparisons when given negative feedback, but make upward comparisons nonetheless.

This pattern of dysphorics and non-dysphorics making upward comparisons after negative feedback is inconsistent, however, with previous findings that participants who receive negative feedback or who are low in self-esteem avoid potentially unfavorable social comparisons (i.e. upward comparisons) in an attempt to be "self-protective" (Baumeister, Tice, & Hutton, 1989; Gibbons, Gerrard, Lando, & McGovern, 1991; Gibbons, Benbow, & Gerrard, 1994; Pyzsczynski, Greenberg, & LaPrelle, 1985; Smith & Insko, 1987; Wood, Giordano-Beech, Taylor, Michela, & Gaus, 1994). Apparently, the self-protective motive these authors describe was not operating for the participants in the Study 1. One possibility for the discrepancy may be that a particular feature of the current experimental procedure led to a minimization of self-protective motivations. Perhaps receiving negative feedback was not threatening enough to participants in Study 1 to evoke self-protective strategies. This possibility seems unlikely, however, as the procedure closely mimicked the classic social comparison paradigm and is very similar to the procedures used in some of the conflicting studies cited above. In addition, participants who received negative feedback experienced less positive affect and significantly greater negative affect than participants getting positive feedback. This finding indicates that the negative feedback that participants received had the intended affective consequences. A second possibility is that there is a gender difference in self-protective motives. The studies cited above used both genders as participants, whereas the current study used only females. Perhaps females exhibit less self-protective strategies when engaging in social comparisons than males. No evidence exists, however, that indicates that males are more self-protective after receiving negative feedback than are females (Gibbons et al., 1994).

A third possibility explaining the preponderance of upward comparisons is somewhat consistent with Trope and Neter's (1994) "self-control" approach to making social comparisons. These authors state that receiving negative feedback about one's abilities is incompatible with self-enhancement motives. Finding out that one did poorly on a task does not enhance one's self. They also state that negative feedback can be compatible, however,

with self-assessment motives if the feedback is diagnostic. If negative feedback tells one what skills are needed to improve on a task or what tasks they will do well on, one can learn more about oneself. The authors go on to state that sometimes people will exhibit "self-control" and tolerate the negative affective consequences of receiving negative feedback when it is diagnostic and satisfies the need for self-assessment. In relation to Study 1, making an upward comparison is one way of choosing to receive negative feedback. In Trope and Neter's terms, it appears participants in Study 1 exhibited self-control, tolerated the negative affective consequences of making upward comparisons to satisfy their need to self-assess. Apparently, something about the situation led them to override the need for self-enhancement.

In answering the utility question of why dysphorics and non-dysphorics prefer these types of comparisons, the self-assessment hypothesis was more accurate than the self-enhancement hypothesis in explaining post-comparison affect as an indicator of what motivated a certain type of comparison. Only the self-assessment hypothesis was corroborated by statistically significant results, as it was accurate in postulating the effect of uncertain feedback on the resulting positive affect for non-dysphoric participants: when they received negative and certain feedback, they felt significantly better than when receiving negative and uncertain feedback. Certainty had an impact on their positive affect, regardless of what direction of comparison they made. Additional evidence emerged that certainty of feedback had an impact on the change in positive affect for non-dysphorics. Level of certainty differentially effected dysphorics' and non-dysphorics' change in positive affect such that uncertainty for non-dysphorics led to a reduction in positive affect but certain feedback for dysphorics led to a reduction in positive affect. It would have been a stronger corroboration of this hypothesis had both of these effects occurred for dysphorics as well. Thus, consistent with the self-assessment hypothesis, level of certainty of feedback moderated non-dysphorics' positive affect regardless of what type of comparison they made.

Perhaps making any type of social comparison is sufficient to activiate this effect for certainty.

In addition, the self-assessment hypothesis was quite accurate in expecting self-certainty to be effected by the type of social comparisons that participants made. Both the two-way and three-way interactions were consistent with the self-assessment predictions: After dysphorics received negative feedback, making an upward or lateral comparison was associated with greater self-certainty than making a downward comparison. After non-dyshporics received negative feedback, however, a downward comparison was associated with a slightly greater level of self-certainty than an upward comparison. In addition, evidence from the two-way interaction indicated that making a lateral comparison after receiving negative feedback was associated with the greatest level of self-certainty, an upward comparison the next greatest, while making a downward comparison after receiving negative feedback was associated with uncertainty. These findings provide the strongest corroborating evidence found in Study 1. Apparently, making lateral and upward comparisons increases dysphorics' self-certainty, as the self-assessment hypothesis predicted. Perhaps the need to increase self-certainty was an overriding factor in participants' social comparison preferences for upward and lateral comparisons. In addition, these results add greater specificity to the self-assessment hypothesis by showing empirically that lateral comparisons are associated with greater of self-certainty than upward comparisons, both of which are associated with greater self-certainty than downward comparisons.

When the results for the self-certainty variable are compared with the results for the affect variable, some interesting points can be made. Specifically, it is illuminating to compare the three-way interaction (between level of dyshporia, valence of feedback, and comparison direction) on self-certainty with the same non-significant interaction on the post-comparison positive affect variable. For participants who received negative feedback, dysphorics who also made upward comparisons felt less positive affect than dysphorics who

made downward comparisons, yet dysphorics making upward comparisons reported much greater self-certainty than dysphorics making downward comparisons. In other words, for dysphorics getting negative feedback, making an upward comparison was associated with greater self-certainty but less positive affect than when making a downward comparison. Since the majority of dysphorics made upward comparisons, this seems to indicate that increased self-certainty after receiving negative feedback is initially more important to dysphoric participants than increased positive affect, which is consistent with the self-assessment hypothesis. The self-assessment hypothesis also states, however, that increased self-certainty leads to an improvement in mood. This proposed relationship between mood and self-certainty is somewhat dubious, because it was not confirmed by the analyses testing the causal relationship between these variables (although self-certainty and change in negative affect were significantly correlated, $r = -.174$, $p < .05$, two-tailed, indicating that high self-certainty was associated with a reduction in negative affect). This lack of findings may be due to the possibility that increased self-certainty leads to improved affect over time, as one chooses to engage in activities that she is self-certain about, thereby increasing the probability of experiencing favorable outcomes in these activities. In Study 1, participants rated their affect about 5-10 minutes after making their comparisons, and it is likely that this was not an adequate amount of time for positive affect to develop from their increased self-certainty. The presence of the correlation between self-certainty and change in mood, however, makes the temporal nature of the relationship between these two variables a logical issue for future research.

It may also be that the affective and cognitive (e.g., self-certainty) consequences of social comparisons occur in stages. A similar suggestion concerning self-relevant information is made by Swann and colleagues (Swann, Griffin, Predmore, & Gaines, 1987; Swann, Hixon, Stein-Seroussi, & Gilbert, 1990). They state that reactions to self-relevant information occurs in stages such that the initial appraisal of self-relevant information is minimally cognitive and highly affective but tends to give way to more cognitive and reflective

thinking about the self during later appraisals. Similar findings concerning "self-comparisons" bolsters this possibility. Self-comparisons are defined as the process of comparing self-relevant feedback to the "actual", "ideal", and "rejected" selves to find a match between the feedback and the self (Eisenstadt & Leippe, 1994). Eisenstadt and Leippe (1994) found that affect-based reactions to self-relevant information give way to more cognitively based reactions as time for self-comparisons increases. The same general process may be occuring for the social comparisons made by participants in Study 1. Their initial affective reactions to making social comparisons did not follow self-assessment expectations, (as downward comparisons led to greater positive affect than lateral and upward comparisons), but their cognitive reactions (i.e., self-certainty) did follow self-assessment expectations. Thus, the self-assessment perspective can not be viewed as an accurate explanation of the initial affective stage after social comparisons. The self-assessment perspective, however, can be seen as an accurate explanation of the cognitive consequences of social comparison. It may also be that if Study 1 had employed more longitudinal measures of affect, an improvement may have occurred over time due to increased self certainty. It is also possible that the self-enhancement hypothesis can explain initial affective reactions to social comparisons. Recall that while non-signficant, downward comparisons did lead to greater positive affect than lateral and upward comparsions. Additional research is needed to test these possibilities.

In summary, in reviewing the overall accuracy of the two hypotheses that were tested, the self-enhancement hypothesis' predictions were not statistically corroborated and consequently, it does not seem to be a good explanation for dysphorics' or non-dysphorics' social comparison preferences or magnitudes. This hypothesis did not make any predictions concerning the self-certainty variable. The self-assessment hypothesis' predictions, on the other hand, were accurate in describing the effect of valence of feedback on magnitude of comparison preferences, the effect of certainty of feedback on non-dysphorics' positive affect and change in positive affect, and in explaining the utility of lateral and upward

comparisons as a means of increasing self-certainty. Thus, all of the significant effects found in Study 1 are consistent with the self-assessment hypothesis. While all of this hypothesis' predictions were not corroborated, the evidence from Study 1 provides support for the self-assessment perspective as a better explaination of dysphorics' and non-dysphorics' social comparison behavior than the self-enhancement perspective. While Study 1 provided support for the self-assessment perspective, a limitation of this first study is the difficulty in drawing firm conclusions about results involving the direction of comparison as a factor in the analyses, particularly the results for the self-certainty measure. This finding was the strongest evidence for the self-assessment hypothsis but may have been compromised by the small number of participants who made downward comparisons. Consequently, the number of participants per cell for a two-way or larger interaction was less than 10. In an effort to remedy this difficulty, a second study was devised that has equal numbers of participants making downward, lateral, and upward comparisons.

Study 2

Theoretical Overview

The method used in Study 2 attempted to answer more precisely the question that was raised in Study 1 concerning the utility of making upward, downward, and lateral social comparisons. For example, do downward comparisons made by dysphoric people lead to an improvement in affect, as the self-enhancement hypothesis would predict, merely because they are feeling badly about themselves? Or, do upward comparisons made by dysphoric individuals lead to an improvement in self-certainty and consequently an improvement in affect, as the self-assessment hypothesis would predict, because the need for certainty is greater than the need for self-enhancement? In an attempt to answer these questions, Study 2 employed essentially the same procedure used in Study 1. Study 2 departed from Study 1, however, by making the dependent variable of social comparison in Study 1, an independent variable in Study 2. That is, participants did not choose whom they preferred to compare their test performance with, but rather, a particular type of comparison was randomly assigned to them by the experimenter. In addition, the certainty of feedback was not manipulated experimentally, but instead, pre- and post-comparison dependent measures of self-certainty, for the trait of synthetic ability, were employed. Positive and negative affect were measured as in Study 1. The procedure for Study 2 was changed in this way in an attempt to replicate the findings from Study 1 using a different method. This procedure was also designed to test whether the consequences of social comparison are different when social comparisons are sought out and freely made by participants, as opposed to when participants are passively exposed to them. Finally, the particular procedure used in this study also allowed for causal inferences about the impact of direction of social comparison that could not be justified in the first experiment. Thus, the design for Study 2 was a 2 (Level of Dysphoria: mild, non-dysphoric) X 3 (Social Comparison type: upward, downward, or lateral) between-participants factorial design. The main dependent

variables were pre- and post-comparison measures of self-certainty for synthetic ability, and pre- and post-comparison affect ratings.

Method

Participants

Due to the large number of experiments being conducted during spring term, it was not possible to use the Introductory Psychology participant pool for Study 2. Instead, participants for Study 2 were recruited from three different 200 level psychology classes in exchange for extra credit in their courses. Because of this unexpected change, Study 2 participants were not pre-tested and then called back to participate. Rather, the BDI and Marlowe-Crowne scores attained at the experimental session were used as the inclusion criteria. The BDI and Marlowe-Crowne cutoffs for the mildly dysphoric and non-dysphoric samples were the same as they were in Study 1. Participants not meeting the cutoffs were tested but their data was not used in the analyses. A total of 146 participants were tested for Study 2. There were 12 with elevated BDI scores and 21 with elevated Marlowe-Crowne scores that were not included in the analyses. Thus, the final sample for Study 2 consisted of 45 mildly dysphoric and 67 non-dysphoric participants. The scores on the BDI for non-dysphoric participants ranged from 0-9 with a mean of 4.73, while the scores for the dysphoric sample ranged from 10-17 with a mean of 12.64. The scores on the Marlowe-Crowne for non-dysphorics ranged from 9-19, with a mean of 15.17 while the scores for dysphorics ranged from 5-20, with a mean score of 12.89. As with Study 1, an effort was made to avoid identifying individuals, and because of this, participants were not asked to indicate their age or ethnicity.

Procedure

The procedure used in Study 2 was very similar to that used in Study 1 with a two minor changes. The first change involved asking participants for an initial estimate of their

level of synthetic ability, prior to taking the test. The second change eliminated the portion of the procedure asking them for their comparison choices. Instead, after receiving their feedback, participants were exposed to a passive social comparison. The remainder of Study 2 was identical to Study 1.

Initial Measure of Self-Certainty

Participants read instructions explaining that before taking the test of synthetic ability, the experimenters were interested in their own estimate of their synthetic ability. Specifically, they were asked, based on the brief explanation given by the experimenter, to estimate their level of synthetic ability in relation to others in the general population by providing three ratings on a scale of 0 percentile to the 100th percentile. This part of the procedure is identical to the post-comparison measure of self-certainty used in Study 1.

Test Feedback

After participants completed the synthetic abilities test, the graduate student collected them, and then they were given the second personality test, just as was done in Study 1. After participants completed the second personality test, the graduate student returned the scored tests of synthetic ability, the experimenter distributed them, and the graduate student then collected the second set of tests and left the room, ostensibly to score them. Participants were individually seated in private cubicles, such that they could not see the test scores of the other participants. All of the tests of synthetic ability had half of the answers marked correct and half of the answers marked incorrect, with "50%" written in red ink on the test. Recall that half of the items on the synthetic abilities test were unsolvable, and it was these items that were marked wrong on the participants feedback forms.

Social Comparison

When giving participants their feedback forms, the experimenter explained that participants are sometimes curious about how they performed on the test relative to others in the experiment. One at a time, she told the participants that she was not sure if the score they received was a particularly high or low score, relative to the other participants in this experiement because she had not tested that many participants yet. She stated that, to give them an idea of how other participants were doing, she would tell them the score of the last person she tested. This procedure has been adapted from Ahrens (1991). She briefly left the participant's cubicle ostensibly to check the last participant's score, and then returned and did one of three things. In the upward comparison condition, the experimenter showed the participants an anonymous protocol with three-fourths of the answers marked correct and one-fourth of the answers marked incorrect and said, "The last participant I tested got 75% of the answers correct so they did somewhat better than you on this particular test." In the downward comparison condition, the experimenter showed them a feedback sheet with one-fourths of the answers marked correct and three-fourths of the answers marked incorrect and said, "The last participant I tested got 25% of the answers correct so they did somewhat worse than you did." In the lateral comparison condition, the experimenter showed them a sheet with one-half of the answers marked correct and one-half of the answers marked incorrect and said, "The last participant I tested got 50% of the answers correct so they did the same as you did." It was made clear that the comparison participant was from an earlier session and was not part of their session.

Final Measure of Self-Certainty and Affect

After the participants saw the comparison test, the experimenter collected the feedback sheets from them. They were then asked to complete an additional questionnaire while they were waiting for the graduate student to score their second personality test. The instructions asked the participants to complete the self-certainty questionnaire again

because now they had more information to judge the degree to which they possess this trait. The instructions also asked them to complete the PANAS again. They were instructed to complete the mood scale based on how they were feeling "right now." They were told that their answers may or may not be the same as when they first responded to these scales and it was stressed that the experimenters wanted them to answer openly and honestly. Finally, participants were asked to respond to a "suspicion" questionnaire. This measure simply asked them to report, in an open-ended fashion, what they thought the purpose of the experiment was. This was incorporated to assess whether any of the participants suspected the true purpose of the experiment. These questionnaires were collected by the experimenter and the participants were debriefed. The debriefing procedure was similar to the one used in the first experiment.

Results

Positive and Negative Affect Scores

The first dependent variable of interest in Study 2 was the participants' affect, both before and after receiving feedback. Positive and negative affect was again measured using the Positive and Negative Affect Scale (PANAS). It was predicted that pre-test positive affect scores for dysphorics would be lower than for non-dysphorics, and that negative affect scores for dysphorics would be higher than for non-dysphorics. An analysis of variance on participants' pre-test positive affect scores was conducted with level of dysphoria, valence, and certainty of feedback serving as between-participant factors. As can be seen in Table 18, consistent with predictions, dysphorics had significantly lower positive affect than non-dysphorics $F(1, 106) = 11.10$, $p < .001$. An analysis of variance was also conducted on participants' pre-test negative affect scores, with level of dysphoria and direction of comparison serving as between-participant factors, and it was again consistent with predictions: Dysphorics had significantly higher pre-test negative affect scores than non-

dysphorics $F(1, 106) = 30.89$, $p < .0005$. This finding confirms that the BDI cutoffs used for the dysphoric and non-dysphoric samples in Study 2 were valid, and that dysphoric participants were indeed feeling less positive and more negative than non-dysphoric participants.

Table 18
Pre-test Positive and Negative Affect Scores

	Positive Affect	Negative Affect
Level of Dysphoria		
Non-dysphoric	31.45 (67)	13.90 (67)
Dysphoric	26.78 (45)	19.47 (45)

Note. Values in parentheses represent the number of participants per cell.

The second set of analyses on participants' affect scores involved differences in means on post-comparison positive and negative affect scores. Main effects for level of dysphoria emerged on both positive and negative affect. It is apparent from Table 19 that, consistent with findings for pre-test positive affect, dysphorics still experienced significantly less positive affect than non-dysphorics at post-test, $F(1, 106) = 7.92$, $p < .01$, as well as significantly greater negative affect than non-dysphorics at post-test $F(1, 106) = 24.09$, $p < .0005$. There was no main effect for direction of comparison on post-test positive affect, $F(1, 106) < 1.0$, ns, as those exposed to downward comparisons ($M = 26.71$) had about the same level of post-test positive affect as those exposed to lateral ($M = 26.95$) or upward ($M = 27.39$) comparisons. Similarly, there was no main effect for direction of comparison on post-test negative affect, $F(1, 106) = 1.1$, $p < .10$, as those exposed to downward comparisons ($M = 15.18$) experienced slightly more negative affect than those exposed to lateral comparisons ($M = 14.17$), but experienced slightly less negative affect than those exposed to upward

comparisons (M = 15.97). Thus, dysphoric participants continued to feel less positive and more negative affect at post-test than non-dysphorics, but direction of comparison alone did not significantly affect participants' post-test positive and negative affect.

Table 19
Post-test Positive and Negative Scores

	Positive Affect	Negative Affect
Level of Dysphoria		
Non-dysphoric	28.60 (67)	13.06 (67)
Dysphoric	24.67 (45)	18.02 (45)

Note. Values in parentheses represent the number of participants per cell.

Self-Enhancement and Self-Assessment Predictions for Affect

In addition to these main effects, the self-enhancement hypothesis predicted a two-way interaction between participants' level of dysphoria and the direction of comparison that was made. Specifically, the self-enhancement hypothesis predicted that dysphoric participants who were exposed to downward comparisons would feel better (experience greater positive affect and less negative affect) than non-dysphorics who were also exposed to downward comparisons, while dysphorics who were exposed to lateral or upward comparisons would feel worse than non-dysphorics also exposed to lateral or upward comparisons. In addition, this hypothesis predicted that dysphorics exposed to downward comparisons would experience greater positive affect than dysphorics exposed to lateral or upward comparisons, while non-dysphorics exposed to upward comparisons would experience greater positive affect than those exposed to downward comparisons. The self-assessment hypothesis also predicted a two-way interaction between level of dysphoria and direction of comparison, but differed from the self-enhancement hypothesis such that

dysphoric participants who were exposed to downward comparisons would feel worse (experience less positive affect and greater negative affect) than non-dysphorics who were also exposed to downward comparisons, while dysphorics who were exposed to lateral or upward comparisons would feel better than non-dysphorics exposed to the same types of comparisons. In addition, this hypothesis predicted that dysphorics exposed to downward comparisons would experience less positive affect than dysphorics exposed to lateral or upward comparisons, while non-dysphorics exposed to upward or lateral comparisons would experience less positive affect than those exposed to downward comparisons

As stated earlier, a univariate analysis of variance was performed on both positive and negative affect scores with level of dysphoria and direction of comparison serving as between-participant factors. The interaction between these two variables was significant for post-comparison positive affect, $F(2, 106) = 3.11$, $p < .05$, but not for post-comparison negative affect, $F(2, 106) < 1.0$, ns. The cell means for this interaction are presented in Table 20. Post-hoc analyses were conducted on the cell means, and they indicated that dysphoric participants exposed to downward comparisons felt significantly worse than non-dysphorics exposed to downward comparisons, $F(1, 32) = 5.29$, $p < .03$, consistent with self-assessment predictions. Dysphorics exposed to lateral comparisons, however, felt significantly worse than non-dysphorics exposed to lateral comparisons, $F(1, 40) = 8.76$, $p < .005$, which is inconsistent with the self-assessment hypothesis. Dysphoric participants exposed to upward comparisons felt about the same as non-dysphorics also exposed to upward comparisons. In addition, also consistent with the self-assessment predictions, dysphorics exposed to downward comparisons experienced significantly less positive affect than dysphorics exposed to upward comparisons, $F(1, 28) = 12.04$, $p < .005$, and non-dysphorics exposed to upward comparisons experienced less positive affect than those exposed to downward comparisons, although this trend was non-significant, $F(1, 40) = 1.08$, $p < .10$. Inspecting the cell means for negative affect in Table 21, it is apparent that the

main effect for dysphoria is responsible for the difference in scores. Dysphorics experienced greater negative affect than non-dysphorics after being exposed to each type of comparison.

Table 20
Post-Comparison Positive Affect Scores by Direction of Comparison and Dysphoria

	Direction of Comparison		
	Downward	Lateral	Upward
Level of Dysphoria			
Non-dysphoric	29.21 (19)	29.54 (26)	26.95 (22)
Dysphoric	22.75 (15)	23.53 (16)	28.07 (14)

Note. Values in parentheses represent the number of participants per cell.

In sum, results on post-comparison affect revealed a significant two-way interaction between direction of comparison and level of dysphoria that corroborates the self-assessment hypothesis. The predicted interactions did not emerge for either hypothesis on the negative affect variable, indicating that perhaps it is insensitive to social comparisons. These findings are consistent with those in Study 1 where significant effects emerged for positive affect but not for negative affect.

Table 21
Post-Comparison Negative Affect Scores by Direction of Comparison and Dysphoria

	Direction of Comparison		
	Downward	Lateral	Upward
Level of Dysphoria			
Non-dysphoric	12.32 (19)	12.92 (26)	13.86 (22)
Dysphoric	18.80 (15)	16.19 (16)	19.29 (14)

Note. Values in parentheses represent the number of participants per cell.

Change in Positive and Negative Affect

The last level of the affect variables that was examined was the change in positive and negative affect scores between the pre-test and post-test administrations. As stated in this section in Study 1, Lord's Paradox arises when computing change scores for two groups that differ at pre-testing on the variable in question. Thus, because of the significant differences between these groups on pre-test positive and negative affect, Lord's Paradox arises again in Study 2. As before, this problem is minimal, as suggested by Wainer (1991), if it can be reasonably assumed that there would have been no change in affect scores had the participants not been exposed to the independent variable (direction of passive social comparison). The change in both positive and negative affect was computed by subtracting participants' pre-test scores from their post-test scores. For the change in positive affect, negative values indicate a reduction in positive affect (participants felt worse) while positive values indicate an increase in positive affect (participants felt better). For negative affect, negative values indicate a reduction in negative affect (participants felt better), while positive values indicate an increase in negative affect (participants felt worse).

The self-enhancement hypothesis predicts a significantly greater increase in positive affect and decrease in negative affect for dysphorics exposed to downward comparisons than for non-dysphorics exposed to downward comparisons. In addition, this hypothesis also predicts that non-dysphorics exposed to lateral or upward comparisons will experience a significantly greater increase in positive affect and decrease in negative affect than dysphorics also exposed to these types of comparisons. Finally, this hypothesis predicts that dysphorics exposed to downward comparisons will experience a greater increase in positive affect and decrease in negative affect than dysphorics exposed to lateral or upward comparisons, while non-dysphorics exposed to upward comparisons will experience a greater increase in positive affect and decrease in negative affect than those exposed to downward comparisons. The self-assessment hypothesis, on the other hand, predicts that non-dysphorics exposed to lateral or upward comparisons will experience a significantly greater

decrease in positive affect and increase in negative affect than dysphorics exposed to these types of comparisons. In addition, it predicts that dysphorics exposed to downward comparisons will experience a significantly greater decrease in positive affect and increase in negative affect than non-dysphorics who are also exposed to downward comparisons. Finally, this hypothesis predicts that dysphorics exposed to downward comparisons will experience a greater decrease in positive affect and increase in negative affect than dysphorics exposed to lateral or upward comparisons, while non-dyshporics exposed to upward comparisons will experience a greater decrease in positive affect and increase in negative affect than those exposed to downward comparisons.

A univariate analysis of variance was conducted on both change in affect variables with level of dysphoria and direction of comparison serving as between-participant factors. There were no main effects for dysphoria, $F(1, 106) < 1.0$, ns, or direction of comparison $F(1, 106) = 1.19$, $p > .10$, on change in negative affect, or on change in positive affect, both F's < 1.0. In addition, the predicted two-way interaction between level of dysphoria and direction of comparison did not emerge on change in positive affect, $F(2, 106) = 1.93$, $p > .10$, or on change in negative affect, $F(2, 106) < 1.0$, ns. In sum, the change in positive and negative affect did not corroborate either of the hypotheses' predictions. The cell means are presented in Table 22.

Table 22
Change in Post-Comparison Positive Affect Scores by Direction of Comparison and Dysphoria

	Direction of Comparison		
Level of Dysphoria	Downward	Lateral	Upward
Non-dysphoric	-2.89 (19)	-2.46 (26)	-3.27 (22)
Dysphoric	-3.00 (15)	-3.06 (16)	-0.07 (14)

Note. Values in parentheses represent the number of participants per cell.

Self-Certainty Scores

Participants' self-certainty was measured twice, prior to taking the synthetic ability test and then again after receiving their feedback and making their comparison. The scores on this variable were computed by subtracting participants' highest estimate of their level of synthetic ability from their lowest estimate, thus creating a single number which represents their self-certainty. Higher numbers indicate a wider range between estimates and thus greater uncertainty whereas lower numbers indicate a smaller range and greater certainty. Only the self-assessment hypothesis made predictions concerning participants' self-certainty scores because the self-enhancement hypothesis does not incorporate certainty into its position regarding social comparison. The self-asssessment hypothesis predicted a main effect for level of dysphoria on participants' pre-test self-certainty ratings, such that dysphorics would be less certain about their level of synthetic ability than non-dysphorics. A univariate analysis of variance was conducted on the pre-test self-certainty ratings with level of dysphoria and direction of comparison serving as between-participant factors. The predicted main effect was not significant, $F(1, 106) < 1.0$, ns, as dysphorics experienced about the same level of self-certainty ($M = 29.69$) as non-dysphorics ($M = 27.63$).

The self-assessment hypothesis also predicted a two-way interaction on the post-test self-certainty variable between level of dysphoria and direction of comparison such that, dysphorics who were exposed to lateral and upward comparisons would experience greater self-certainty than non-dysphorics exposed to lateral and upward comparisons. In addition, it was predicted that dysphorics exposed to downward comparisons would experience less self-certainty than non-dysphorics exposed to downward comparisons. This result was predicted because the negative feedback should increase their uncertainty about how much synthetic ability they have and being exposed to an upward or lateral comparison should help to reduce this uncertainty but downward comparisons should not. As can be seen from the cell means in Table 23, dysphorics and non-dysphorics had similar levels of post-test self-certainty after being exposed to lateral and upward comparisons, but dysphorics

experienced greater uncertainty after downward comparisons than non-dysphorics. To test for the predicted interaction, a univariate analysis of variance was conducted on the post-test self-certainty variable with level of dysphoria and direction of comparison serving as between-participant factors. The predicted two-way interaction between dysphoria and direction of comparison, however, was not significant $F(2, 106) = 1.12$, $p > .10$.

Table 23
Post-Comparison Self-Certainty Scores by Direction of Comparison and Dysphoria

	Direction of Comparison		
	Downward	Lateral	Upward
Level of Dysphoria			
Non-dysphoric	26.95 (19)	21.92 (26)	24.05 (22)
Dysphoric	32.07 (15)	21.79 (16)	23.19 (14)

Note. Values in parentheses represent the number of participants per cell.

A main effect emerged for direction of comparison on the post-test self-certainty variable $F(1,106) = 4.72$, $p < .05$, that is generally consistent with the self-assessment hypothesis and the findings in Study 1. The cell means for this main effect are presented in Table 24. Post-hoc analyses for simple effects revealed that participants exposed to upward comparisons experienced significantly greater levels of self-certainty than those exposed to downward comparisons, $F(1,69) = 4.56$, $p < .05$. These analyses also revealed that participants exposed to lateral comparisons also experienced significantly greater levels of self-certainty than those exposed to downward comparisons, $F(1, 74) = 7.34$, $p < .01$.

Table 24
Post-Comparison Self-Certainty Scores by Direction of Comparison

	Direction of Comparison		
	Downward	Upward	Lateral
Self-Certainty Scores	29.21	22.40	23.17
	(34)	(42)	(36)

Note. Values in parentheses represent the number of participants per cell

Change in Self-Certainty Scores

The last level of the self-certainty variable that was examined was the change in self-certainty scores between the pre-test and post-test administrations. The change in self-certainty was measured by subtracting participants' post-test scores from their pre-test scores. Positive values indicate an increase in self-certainty, negative values indicate a decrease in self-certainty, and a value of 0 indicates that there was no change in participants self-certainty ratings. Lord's Paradox does not apply to these change scores, as there were no significant differences between dysphorics and non-dyphorics on pre-test self-certainty. Again, only the self-assessment hypothesis makes predictions regarding this variable. This hypothesis predicts a two-way interaction on the change in self-certainty variable between level of dysphoria and direction of comparison such that, dysphorics who were exposed to lateral and upward comparisons would experience a greater increase in self-certainty than non-dysphorics exposed lateral and upward comparisons. In addition, it was predicted that dysphorics exposed to downward comparisons would experience a greater decrease in self-certainty than non-dysphorics exposed downward comparisons. Finally, it was predicted that dysphorics exposed to lateral comparisons would experience the greatest increase in self-certainty, upward comparisons the next greatest increase, and downward comparisons the least amount of increase in self-certainty.

A univariate analysis of variance was conducted on the change in self-certainty variable, with level of dysphoria and direction of comparison serving as between-participant factors. A main effect for direction of comparison again emerged, $F(1, 106) = 5.55$, $p < .005$. The cell means for this main effect are presented in Table 25. Post-hoc analyses for simple effects revealed that, consistent with the self-assessment hypothesis and with the finding for post-comparison self-certainty, participants exposed to lateral comparisons experienced a significantly greater increase in self-certainty than those exposed to downward comparisons, $F(1, 69) = 3.97$, $p < .05$, and participants exposed to upward comparisons also experienced a significantly greater increase in self-certainty than those exposed to downward comparisons, $F(1, 74) = 8.21$, $p < .005$. Recall that positive values indicate an increase in self-certainty and negative values a decrease.

Table 25
Change in Post-Comparison Self-Certainty Scores by Direction of Comparison

	Direction of Comparison		
	Downward	Lateral	Upward
Self-Certainty Scores	0.00	6.12	4.50
	(34)	(42)	(36)

Note. Values in parentheses represent the number of participants per cell

This main effect, however, was qualified by the predicted two-way interaction between dysphoria and direction of comparison, which was highly significant, $F(2, 106) = 10.99$, $p < .0005$. The inspection of cell means in Table 26 indicate that the self-assessment hypothesis was directionally accurate in its predictions. In post-hoc tests for simple effects, it is apparent that dysphorics exposed to downward comparisons experienced a significantly greater decrease in self-certainty than non-dysphorics exposed to a downward comparison, who actually experienced an increase in self-certainty, $F(1, 32) = 16.83$, $p <$

.0005. In addition, dysphorics exposed to lateral comparisons experienced a significantly greater increase in self-certainty than non-dysphorics exposed to lateral comparisons, $F(1, 40) = 4.76$, $p < .03$, and dysphorics exposed to upward comparisons experienced significantly greater increases in self-certainty than non-dysphorics exposed to upward comparisons, $F(1, 35) = 4.13$, $p < .05$. Also, for dysphorics, lateral comparisons led to a significantly greater level of self-certainty than downward comparisons, $F(1, 29) = 30.01$, $p < .0001$, and upward comparisons also led to a significantly greater level of self-certainty than downward comparisons, $F(1, 28) = 28.80$, $p < .0001$. There were no simple effects for direction of comparison in the non-dysphoric sample. These results offer strong evidence in favor of the self-assessment hypothesis' explanation of the utility of social comparisons for dysphorics and non-dysphorics.

Table 26
Change in Post-Comparison Self-Certainty Scores by Direction of Comparison and Dysphoria

	Direction of Comparison		
	Downward	Lateral	Upward
Level of Dysphoria			
Non-dysphoric	4.53 (19)	3.69 (26)	2.64 (22)
Dysphoric	-5.73 (15)	10.06 (16)	7.43 (14)

Note. Values in parentheses represent the number of participants per cell.

Ancillary Results

The methodological concerns raised by Tennen et al. (1995) were again addressed in Study 2. Recall their recommendation to include comparison groups, such as those exhibiting other kinds of psychopathology, like anxiety, in addition to the typical non-depressed group. As stated earlier they make this recommendation because of the

possibility that participants who score a 10 or more on the BDI can do so without endorsing items which convey the DSM IV depression prerequisites of sad mood, loss of pleasure or interest (items 1, 4, & 12 respectively). Thus, participants may be placed into the dysphoric sample when they are not dysphoric at all, but rather are exhibiting symptoms of anxiety or general distress. To address this concern, the BDI's of the dysphoric participants in Study 2 were re-examined for endorsement of items 1, 4, and 12. It was found that of the 45 dysphoric participants in Study 1, 40 or 89% endorsed at least one of these items. This finding confirms that virtually all of the participants labelled dysphoric in Study 2 were in fact, dysphoric. Recall that Tennen et al. also make this recommendation because of the high correlation between anxiety and depression in both self-report and clinical diagnoses (Barlow, 1988; Breier, Charney, & Heninger, 1985; Dobson, 1985; Metalsky & Joiner, 1992). Essentially, Tennen et al. state that because of these high correlations, participants scoring high on the BDI may not be dysphoric or depressed, but may instead be exhibiting anxiety or general distress.

To test this second possibility, the PANAS was again used to create two groups within the dysphoric sample based on Tennen et al's recommendation: an anxious group scoring high on the positive affect scale, and a dysphoric group scoring low on positive affect (Clark & Watson, 1991; Laurent & Stark, 1993; Watson & Clark, 1992; Watson, Clark, & Carey, 1988). Because of the smaller dysphoric sample size in Study 2, high scores on the positive affect scale were defined as those in the top 33% of the dysphoric sample and low scores on this scale were defined as those in the bottom 33% of the dysphoric sample. Analyses of variance were conducted to compare these two groups on the main dependent variables of interest (positive affect, negative affect, self-certainty, and magnitude of comparison,) with level of dysphoria/anxiety, valence, and certainty of feedback serving as between-participant factors. Any significant main effects or interactions involving the level of dysphoria/anxiety would indicate that the distinction between anxious and dysphoric participants within the dysphoric sample was meaningful. Looking first at the affect

variables, it is apparent that a main effect emerged for level of dysphoria/anxiety on post-comparison positive affect, $F(1, 23) = 10,73$, $p < .003$. Participants in the anxious group had a significantly higher mean post-comparison positive affect score ($M = 29.07$), than participants in the dysphoric group ($M = 20.53$). This finding was expected, however, because the anxious and dysphoric groups were created based on their pre-test positive affect scores. Pre-test and post-test positive affect scores were again highly correlated for the dysphoric sample in Study 2, $r = .826$, $p < .01$, two-tailed, and thus, one would expect this main effect to emerge. One expects this finding not because the distinction between the anxious and dysphoric is meaningful but because of how these groups were defined. There were no interaction effects on post-comparison positive affect between the level of dysphoria/anxiety variable and direction of comparison, $F(2, 23) < 1.0$, ns. There was no main effect, $F(1, 23) = 1.41$, $p > .10$, or interaction, $F(2, 23) < 1.0$, ns, involving this variable on post-comparison negative affect. Looking next at the self-certainty variable, there was no main effect or interaction involving the level of dysphoria/anxiety variable on participants' self-certainty ratings, both F's < 1.0. Thus, the distinction between anxious and dysphoric participants in Study 2, as in Study 1, was not significant. The recommendation by Tennen et al. (1995) to include an anxious comparison group has been followed but the presence of anxiety does not appear to have an impact on the social comparison process. In addition, it appears that the possibility of having anxious participants in a dysphoric sample defined by BDI scores is not a risk in social comparison research. Further research with multiple a priori assessments for anxiety should be conducted, however, to confirm this initial finding.

Discussion

Study 2 tested hypotheses concerning the self-evaluative motives of self-enhancement and self-assessment on the social comparison behavior of dysphoric and non-dysphoric college students. The goals of Study 2 were to answer the utility question of why dysphorics

and non-dysphorics make certain types of comparisons in certain situations: To improve their affect, to increase their self-certainty, or both? Also to test whether the effects of passive social comparisons on affect and self-certainty differed from the effects on these variables after freely selecting the type of social comparison to make. Study 2 was designed to provide a direct test of the self-enhancement and self-assessment hypotheses' answers to these questions. Each self-evaluative hypothesis made opposing predictions for the effects of the independent variables of level of dysphoria,and direction of comparison on the dependent variables of post-comparison affect and self-certainty.

Results showed that all of the significant findings in Study 2 were consistent with the self-assessment hypothesis, thus offering good evidence of its accuracy. There were main effects for direction of comparison on post-test self-certainty and change in self-certainty: Lateral and upward comparisons led to significantly greater post-test self-certainty and significantly greater increases in self-certainty than downward comparisons. There were also interactions between direction of comparison and level of dysphoria on post-comparison positive affect and change in self-certainty. Combining these findings for self-certainty and affect, one finds that downward comparisons led dysphorics to become significantly less self-certain and to experience significantly less positive affect than non-dysphorics. Stated another way, downward comparisons led non-dysphorics to become significantly more self-certain and experience significantly greater positive affect than dysphorics. In addition, upward comparisons led dysphorics to become significantly more self-certain than non-dysphorics and also led them to experience slightly greater positive affect, although non-significant, than non-dyshporics who were also exposed to upward comparisons. Finally, lateral comparisons led dysphorics to become significantly more self-certain than non-dysphorics but they also experienced significantly less positive affect than non-dysphorics after lateral comparisons. Thus, for dysphorics, there seems to be little utility in making downward comparisons when it comes to increasing self-certainty or improving affect. The utility of lateral comparisons for dysphorics lies in their ability to increase self-certainty and

the utility of upward comparisons for dysphorics lies in their ability to increase self-certainty and increase positive affect. For non-dysphorics, downward comparisons seem to have the greatest utility, as they led to greater positive affect and greater self-certainty. Lateral comparisons had some utility for non-dysphorics, as they led to greater positive affect. Upward comparisons had the least utility for non-dysphorics, as they led to less positive affect and less self-certainty. While not all of the self-assessment hypothesis' predictions were corroborated with statistically significant results, the findings from Study 2 offer strong evidence for this hypothesis' explanation of the utility of social comparisons for dysphoric and non-dysphoric participants. Thus Study 1 told us what types of comparisons dysphorics and non-dysphorics prefer to make (upward and lateral) and when they want to make them (after negative feedback and for non-dysphorics, after uncertain feedback). Now Study 2 has given us clues as to why they want to make them (to increase self-certainty and increase positive affect after upward comparisons).

General Discussion

In comparing the findings from Study 2 with those from Study 1, it is apparent that there are similarities between the two that are consistent with the self-assessment hypothesis: Downward comparisons led to less self-certainty for dysphorics but greater self-certainty for non-dysphorics, while upward comparisons led to greater self-certainty for dysphorics but less self-certainty for non-dysphorics in both Study 1 and Study 2. Lateral comparisons led to high self-certainty for both dysphorics and non-dysphorics in the first study, but led to greater self-certainty for dysphorics in the second study. Perhaps the nature of the comparisons had an impact on this difference. It is possible that lateral comparisons lead to greater self-certainty for non-dysphorics when chosen freely as compared to when they were made passively. Coupled with the strong preference for upward comparisons in Study 1, these findings offer strong evidence that the self-assessment hypothesis is a more accurate explanation of both the social comparison behavior of dysphorics and non-dysphorics,and the utility that social comparisons have for each group. Another similarity between the two studies is the lack of significant findings on the negative affect variable. Apparently, negative affect is insensitive to the effects of social comparisons. This finding is informative, however, as attempts to reduce negative affect through social comparison are not likely to succeed.

While lateral and upward comparisons increased self-certainty for dysphorics, they did not consistently lead to greater positive affect (except for upward comparisons in Study 2). This result is not entirely consistent with the self-assessment hypothesis, which expected positive affect to increase for dysphorics after lateral and upward comparisons. There are two possible explanations for this finding. First, it may be that increased self-certainty will lead to improved affect over time. The self-assessment hypothesis expected dysphorics' increase in self-certainty to increase positive affect and decrease negative affect. Although this did not occur immediately, it is possible that it would occur at a later point in

time. Recall that self-certainty was significantly correlated with change in negative affect. As stated before, the presence of this correlation makes the temporal nature of the relationship between these two variables a logical avenue for speculation and future research. If synthetic ability were an actual trait, the increased knowledge of whether one is high or low in this ability would guide one to include or exclude oneself from activities that called for synthetic ability, thereby maximizing the likelihood of a positive affective outcome. For example, if a person increases their self-certainty and knows they are high in synthetic ability, they may take courses or choose a career that utilize this type of thinking. Because they are good at it, they may receive praise from others, good grades, or promotions, all of which would likely increase positive affect. Thus, over time, their greater self-certainty could lead to an increase in positive affect. More longitudinal research designs that have participants return to the laboratory several times over the course of a semester would help to answer this question.

Second, the lack of findings on the affect variables may have occured because the type of affect measured in Studies 1 and 2 reflected only general feeling states. There is evidence (Baumgardner, 1990) that increased self-certainty leads to an increase in positive affect that is specific to the self (i.e., "self-affect"). Positive self-affect in Baumgardner's study was measured using a self-report inventory that contained items specifically related to how one feels about oneself, such as: competent, confident, effective, efficient, smart, and resourceful. Positive affect in the current studies were measured using items that reflect general feeling states that are not necessarily specific to how one views onesself, such as: interested, excited, enthusiastic, alert, inspired, and attentive. Perhaps if Studies 1 and 2 had also employed measures of positive self-affect, then the self-assessment predictions may have been corroborated. As it is, the increased self-certainty that dyshporics experienced after upward and lateral comparisons in Studies 1 and 2 may have also increased their positive self-affect, but there is no way to know this for certain. Future research on this topic should include measures of self-affect as well as general affect used in a more

longitudinal fashion. It could then be determined whether positive self-affect is increased via upward and lateral comparisons and also, if and when an increase in self-affect leads to an increase in general affect.

The findings in Studies 1 and 2 that dysphorics prefer to make upward and lateral comparisons, often without positive affective consequences, amounts to evidence against the self-protective hypothesis. Recall that this perspective states that dysphorics avoid potentially unfavorable social comparisons (i.e. upward comparisons) in an attempt to protect the self from the negative implications of upward comparisons, such as increased self-focus or thoughts that one is inferior, which can lead to a decrease in positive affect (Trope, 1983). Instead, the self-protective perspective expects dysphorics to make downward comparisons when given a choice. This perspective was not accurate, however, in describing the findings of the current research, as dysphorics preferred upward comparisons. Apparently, dysphoric participants were not concerned with the possible negative implications of upward comparisons or in being self-protective. Rather, they appeared to exhibit self-control (Trope & Neter, 1994) and eschew the negative possibilities of upward and lateral comparisons to reach the positive consequences of increased self-certainty. This finding tells us that college students may be more aware of and interested in long-run affect improvement and self-improvement than one might think.

While the findings in Study 1 and 2 constitute evidence against the self-protective hypothesis, they are nonetheless consistent with evidence showing that dysphorics make comparisons that are likely to result in unfavorable evaluations of the self. Evidence from Ahrens (1991) indicates that dysphorics selectively attend to individuals who perform better than themselves, while evidence from Wheeler and Miyake (1992) indicates that dysphorics also tend not to make downward comparisons on a daily basis. McFarland and Miller (1994) propose that individuals with "negative orientations" (e.g., dysphorics), respond to feedback by comparing themselves with people who performed better then they did. This idea is consistent with work by Beck (1976) stating that people who are depressed, tend to

keep themselves depressed by focusing their cognitive processes on the negative implications of the events they experience. Thus, there exists an alternative explanation for the findings in Studies 1 and 2. The question then becomes, were participants in the current research making upward comparisons because of faulty cognitive patterns that confirm their negative views of themselves? This proposition seems to explain some of the current findings (i.e. comparison preferences in Study 1) but when one considers the impact of upward and lateral comparisons on self-certainty, this explanation does not seem to capture the essence of the comparison processes in the current research. Instead, a more optimistic explanation can be proffered. Evidence from Studies 1 and 2 show that it is not a significant short-run benefit to one's positive affect to choose an upward comparison but it is a cognitive benefit to one's self-certainty to choose or be passively exposed to an upward comparison. This is initial evidence that cognitive goals in social comparison are more important to dysphorics than affective goals in the short-run. But if these short-run cognitive successes via upward comparisons lead to long-run improvements in positive affect, as some have suggested (Baumgardner, 1990; Festinger, 1954), then perhaps dysphorics are more clever, and more interested in improving how they think and feel than the selective attention to negative information hypothesis would suggest. Perhaps increasing self-certainty can lead to longer lasting or more meaningful improvements in affect than simple self-enhancement. Enhancing oneself by making a downward comparison could have only a short-lived impact on one's affect, and it may be why non-dysphorics tend to engage in it so frequently (Ahrens et al., 1988; Kuiper & McDonald, 1982; Swallow & Kuiper, 1987; Tabachnik, Crocker, & Alloy, 1983; Wheeler & Miyake, 1992). Whereas making upward comparisons to increase self-certainty could help one formulate a long-run plan of which activities or abilities to engage in or use and which ones to avoid, which in turn could result in continued improvement in affect. Obviously these postulations require empirical testing, but they do offer an optimistic explanation for dysphorics' social comparison behavior.

There were a number of limitations in the current research. First, it is difficult to generalize the findings concerning dysphorics from Studies 1 and 2 to a clinically depressed population. There are qualitative differences in the experience of depressive symptoms between dysphorics and severely depressed people (Kendall et al., 1987), which could influence comparison behavior and its consequences. Simply including severely depressed participants does not solve this problem, however, as a number of ethical concerns arise when conducting research involving deception with this type of population. It would be very difficult to justify deceiving depressed participants and giving them contrived negative feedback. If future research attempts to include a clinically depressed sample, special precautions should be taken, such as changing the typical social comparison paradigm to include more open-ended questions or self-reports of daily social comparison behavior, such as that used by Wheeler and Miyake (1992). It might also be possible to eliminate the experimentally controlled threat to self-esteem (i.e., negative feedback) by assuming that severely depressed participants experience continual threats to their self-esteem. A second limitation is that the current research did not include a measure of affect specific to the self. This failure might account for the lack of findings on the affect variable, particularly with regard to the self-assessment hypothesis. Future research on this topic should include a measure of self-affect, such as that used by Baumgardner (1990), to test for a differential impact of social comaprisons on general and self-affect. A third limitation of the current research was the failure to include longitudinal measures into the experimental design. The dependent variables were measured within minutes of the participants receiving feedback and making comparisons. Future research could improve on this methodology by including repeated measures of affect and self-certainty over a number of days or weeks. Such a design would help to answer the questions raised above regarding the long-run utility of lateral and upward comparisons and increased self-certainty. Since self-evaluation is an ongoing process, it would be informative to examine self-enhancement and self-assessment motives in social comparison behavior over repeated pieces of success or failure information.

This more longitudinal approach will also allow one to test the cumulative effects of social comparisons on affect to see if the short-run benefit of increased self-certainty does indeed lead to long-term benefits of improved affect. Finally, the procedure in Study 2 did not employ multiple assessments of dysphoria because of the limited resources in the participant pool, thus leaving open the possibility of including some participants in the dysphoric sample who were only experiencing a transient state of sadness. While this occurence goes against the suggestions of Kendall et al. (1987) and Tennen et al. (1995), it does not weaken the conclusions drawn from this research. It is still meaningful to those who may only have been transiently dysphoric that self-certainty is improved by making lateral and upward comparisons.

In addition to these suggestions, some other directions for future research include testing variables that might moderate the social comparison process. One possible moderator variable in the social comparison process could be the degree of controllability that people perceive as having over improving themselves on a particular dimension (Major, Testa, & Bylsma, 1991). For example, people may not perceive an upward comparison as disappointing if they believe that they have the potential to influence or improve their standing on the dimension. Likewise, a downward comparison may not be very self-enhancing if people perceive little control over the dimension, as they may fear that they will drop to the level of the worse off other (Wood et al., 1985). The inclusion of this variable could help to create a clearer picture of when dysphorics and non-dysphorics will self-enhance or self-assess in their social comparisons, especially since there are differences between them in perceptions of control (Alloy & Abramson, 1979; Vasquez, 1987).

A second possible moderator is the relevance of the trait in question to one's self-definition. Comparisons along self-relevant dimensions appear to have more impact than comparisons that are not self-relevant. Tesser and his colleagues have accumulated a great deal of evidence that suggests that another person's success is distressing when it involves a dimesion that is centrol to one's own self-definition (Tesser & Campbell, 1982; Tesser,

Millar, & Moore, 1988). Thus, people should be more likely to prefer downward comparisons and less likely to prefer upward comparisons on self-relevant dimesions (Wood & Taylor, 1991). Although the relevance of synthetic ability was not measured, Tesser's findings would suggest that synthetic ability was not relevant to participants in Studies 1 and 2. In addition, Tesser did not directly test his model using dysphoric subjects but it is easy to extrapolate predictions from the self-enhancement and self-assessment perpectives for self-relevance as a moderator variable. Both propositions could easily be tested by including a measure of self-relevance in future research. Such research could provide fruitful information regarding the role of moderator variables in social comparison processes.

Finally, the current research did not use severely depressed participants. Because of this fact, it is difficult to draw any conclusions about how the social comparison process could help clinicians treat people suffering from clinical depression. Many people who seek counseling, however, do experience dysphoria, whether or not it is the focus of their treatment. The findings from the current research indicate that after exposure to threatening feedback, dysphoric people might increase their self-certainty by engaging in active (Study 1), or passive (Study 2), lateral comparisons, and that they might increase both their self-certainty and positive affect by engaging in active or passive upward comparisons. This does not necessarily mean, however, that they will no longer experience dysphoria. The increase in self-certianty will be in the ability or trait that they receive threateining feedback about, which may or may not be related to their central concerns. One would imagine that the more closely related the dimension is to their reason for treatment, the more pronounced the effect of social comparison would be, (although this possibility would best be answered by first testing for the moderator effect of self-relevance). It is possible to imagine a scenario, however, in which merely entering into a therapeutic relationship could constitute negative feedback about one's ability to cope with their problems. Unfortunately, many people believe that if they have to enter counseling, this constitutes a failure of some sort on their part. If a dysphoric person holds this negative

thought about their decision to enter therapy, and s/he is then exposed to a lateral, (e.g., someone with similar problems who also entered therapy), or upward comparison, (e.g., someone with similar difficulties who came in for therapy, improved, and who no longer needs treatment), they may increase their self-certainty regarding coping ability as well as their general positive affect. In addition, increased confidence in knowing when one should seek help to cope with life events and when one is capable of handling the events on their own, can be a beneficial aspect of therapy. Future research with dysphorics in counseling, using coping ability as the dimension of interest, is needed, however, before such a claim can be made firmly. The current research provides an initial step in this direction.

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Appendix A

Stimulus Materials for Study 1

Experiment #1 Instructions

You will be participating in two separate and unrelated experiments today. In the first experiment, you will be asked to fill out 2 anonymous surveys about your mood and 1 survey about your attitudes. These surveys will not ask you for your name or any other identifying information. The researchers are investigating the different percentage of college aged people who experience one feeling or another.

The 3 surveys are attached. Please be very open and honest in your answers. Remember that these surveys are anonymous. Please **do not** put your name anywhere on this questionnaire.

When you are finished with this questionnaire, please come out of your cubicle, place it in the box at the front of the room, and then return to your cubicle. When everyone has completed the first experiment, the experimenter will explain the second experiment.

If you have any questions at this point, please address them to the experimenter. If not, then please close your door and you may begin completing the questionnaires.

Mood Inventory

This questionnaire consists of 21 groups of statements. After reading each group of statements carefully, circle the number (0, 1, 2, or 3) that corresponds to the one statement in each group wich **best** describes the way you have been feeling the **past week, including today.** If several statements within a group seem to apply equally well, circle the **one** that best describes how you are feeling. Be sure to **read all the statements** in each group before making your choice.

A	0.	I do not feel sad.
	1.	I feel sad.
	2.	I am so sad all the time and I can't snap out of it.
	3.	I am so sad or unhappy that I can't stand it.
B	0.	I am not particularly discouraged about the future.
	1.	I feel discouraged about the future.
	2.	I feel I have nothing to look forward to.
	3.	I feel that the future is hopeless and that things cannot improve.
C	0.	I do not feel like a failure.
	1.	I feel I have failed more than the average person.
	2.	As I look back on my life, all I can see is a lot of failure.
	3.	I feel I am a complete failure as a person.
D	0.	I get as much satisfaction out of things as I used to.
	1.	I don't enjoy things the way I used to.
	2.	I don't get real satisfaction out of anything anymore.
	3.	I am dissatisfied or bored with everything.
E	0.	I don't feel particularly guilty.
	1.	I feel guilty a good part of the time.
	2.	I feel quite guilty most of the time.
	3.	I feel guilty all of the time.
F	0.	I don't feel I am being punished.
	1.	I feel I may be punished.
	2.	I expect to be punished.
	3.	I feel I am being punished.
G	0.	I don't feel disappointed in myself.
	1.	I am disappointed in myself.
	2.	I am disgusted with myself.
	3.	I hate myself.
H	0.	I don't feel I am any worse than anybody else.
	1.	I am critical of myself for my weaknesses or mistakes.
	2.	I blame myself all the time for my faults.
	3.	I blame myself for everything bad that happens.
I	0.	I don't have any thoughts of killing myself.
	1.	I have thoughts of killing myself, but I would not carry them out.
	2.	I would like to kill myself.
	3.	I would kill myself if I had the chance.

J
0. I don't cry any more than usual.
1. I cry more now than I used to.
2. I cry all the time now.
3. I used to be able to cry, but now I can't cry even though I want to.

K
0. I am no more irritated now than I ever am.
1. I get annoyed or irritated more easily than I used to.
2. I feel irritated all the time now.
3. I don't get irritated at all by the things that used to irritate me.

L
0. I have not lost interest in other people.
1. I am less interested in other people than I used to be.
2. I have lost most of my interest in other people.
3. I have lost all of my interest in other people.

M
0. I make decisions about as well as I ever could.
1. I put off making decisions more than I used to.
2. I have greater difficulty in making decisions than before.
3. I can't make decisions at all anymore.

N
0. I don't feel I look any worse than I used to.
1. I am worried that I am looking old or unattractive.
2. I feel that there are permanent changes in my appearance that make me look unattractive.
3. I believe that I look ugly.

O
0. I can work about as well as before.
1. It takes an extra effort to get started at doing something.
2. I have to push myself very hard to do anything.
3. I can't do any work at all.

P
0. I can sleep as well as usual.
1. I don't sleep as well as I used to.
2. I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3. I wake up several hours earlier than I used to and cannot get back to sleep.

Q
0. I don't get more tired than usual.
1. I get tired more easily than I used to.
2. I get tired from doing almost anything.
3. I am too tired to do anything.

R
0. My appetite is no worse than usual.
1. My appetite is not as good as it used to be.
2. My appetite is much worse now.
3. I have no appetite at all anymore.

S
0. I haven't lost much weight, if any, lately.
1. I have lost more than 5 pounds.
2. I have lost more than 10 pounds.
3. I have lost more than 15 pounds.

I am purposely trying to lose weight by eating less. YES____ NO____

T
0. I am not any more worried about my health than I usually am.
1. I am worried about physical problems such as aches and pains or upset stomach or constipation.
2. I am very worried about physical problems and it's hard to think of much else.
3. I am so worried about my physical problems that I cannot think about anything else.

U
0. I have not noticed any recent change in my interest in sex.
1. I am less interested in sex than I used to be.
2. I am much less interested in sex now.
3. I have lost interest in sex completely.

Feeling Questionnaire

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent **you are feeling this way right now.** Use the following scale to respond to each item.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

1. interested _____
2. distressed _____
3. excited _____
4. upset _____
5. strong _____
6. guilty _____
7. scared _____
8. hostile _____
9. enthusiastic _____
10. proud _____
11. irritable _____
12. alert _____
13. ashamed _____
14. inspired _____
15. nervous _____
16. determined_____
17. attentive _____
18. jittery _____
19. active _____
20. afraid _____

General Attitude Survey

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

T	F	1. Before voting, I thoroughly investigate the qualifications of all the candidates.
T	F	2. I never hesitate to go out of my way to help someone in trouble.
T	F	3. It is sometimes hard for me to go on with my work if I am not encouraged.
T	F	4. I have never intensely disliked anyone.
T	F	5. On occasion I have had doubts about my ability to succeed in life.
T	F	6. I sometimes feel resentful when I don't get my way.
T	F	7. I am always careful about my manner of dress.
T	F	8. My table manners at home are as good as when I eat out in a restaurant.
T	F	9. If I could get into a movie without paying and be sure I was not seen, I would probably do it.
T	F	10. On a few occasions, I have given up doing something because I thought too little of my ability.
T	F	11. I like to gossip at times.
T	F	12. There have been times when I felt like rebelling against people in authority even though I knew they were right.
T	F	13. No matter who I'm talking to, I'm always a good listener.
T	F	14. I can remember "playing sick" to get out of something.
T	F	15. There have been occasions when I took advantage of someone.
T	F	16. I'm always willing to admit it when I make a mistake.
T	F	17. I always try to practice what I preach.
T	F	18. I don't find it particularly difficult to get along with loud-mouthed, obnoxious people.
T	F	19. I sometimes try to get even, rather than forgive and forget.
T	F	20. When I don't know something, I don't at all mind admitting to it.
T	F	21. I am always courteous, even to people who are disagreeable.
T	F	22. At times I have really insisted on having things my own way.

T	F	23. There have been occasions when I felt like smashing things.
T	F	24. I would never think of letting someone else be punished for my wrongdoings.
T	F	25. I never resent being asked to return a favor.
T	F	26. I have never been irked when people expressed ideas very different from my own.
T	F	27. I never make a long trip without checking the safety of my car.
T	F	28. There have been times when I was quite jealous of the good fortune of others.
T	F	29. I have almost never felt the urge to tell someone off.
T	F	30. I am sometimes irritated by people who ask favors of me.
T	F	31. I have never felt that I was punished without cause.
T	F	32. I sometimes think when people have a misfortune they only got what they deserved.
T	F	33. I have never deliberately said something that hurt someone's feelings.

General Instructions

This is an experiment concerning personality traits. We are interested in the different background characteristics of people who have certain personality traits. You will first be asked to respond to a "background survey" that asks you for some personal information. We are interested in group averages and are not particularly concerned with any one individual. You will not be asked to give your name. In addition, **if you feel uncomfortable answering any of the questions on the "background survey", you may leave them blank.**

After completing the background survey, you will be asked to respond to a number of brief, self-report personality tests. **You will <u>not</u> be asked to put your name on these tests.** After you complete the first test, the experimenter will collect them and give them to a graduate student in psychology who will score the tests. Too often in psychology experiments, subjects do not learn anything about themselves or the topic of research because it is uninteresting to them or because it is not personally meaningful. To alleviate this problem, you will be provided with the results of your tests and feedback about what your scores mean. We have selected personality tests that are brief, so that you will be able to see the results of your tests before you leave today.

After completing the first test, the experimenter will distribute the second personality test. Upon completion of the second test, they will be collected and given to the graduate student to score. By this time, the first tests will be scored and the results will be distributed to you. You will be given a few minutes to look them over. You will then be asked to fill out some post-experiment surveys before leaving. If you have any questions during the experiment, please direct them to the experimenter. If you have no questions at this point, you may begin the experiment.

Do Not Put Your Name on This Page

DEMOGRAPHIC SURVEY

1. Year in school_____ 2. Major_____

2. Hometown Geographic Location: (In the U.S.)

   a) Northeast b) Southeast c) Midwest d) Southwest e) Far West f) Other

3. Hometown Type:

   a) Urban b) Suburban c) Rural

4. Hometown Population (approximate)

   a) Less than 10,000 b) 10,000 - 50,000 c) 50,000 - 100,000 d) 100,000 -500,000

   e) over 500,000

5. Father's Occupation:

   a) Professional (doctor, lawyer, professor)
   b) Business (accountant, stock broker, business executive)
   c) Managerial (supervisor, foreman)
   d) Laborer (factory worker, construction)
   e) Agriculture (farmer)
   f) Domestic (homemaker)
   g) Self-employed
   h) Unemployed

6. Mother's Occupation:

   a) Professional (doctor, lawyer, professor)
   b) Business (accountant, stock broker, business executive)
   c) Managerial (supervisor, foreman)
   d) Laborer (factory worker, construction)
   e) Agriculture (farmer)
   f) Domestic (homemaker)
   g) Self-employed
   h) Unemployed

7. Previous Military Service:

   Yes____ No_____ If "Yes," What Branch?_____

Standard Test of Synthetic Ability
(STSA)

Form X327

INSTRUCTIONS: Read each item carefully and pick the one best answer from among the available options. Answer every question, even if you have to guess. There is no penalty for wrong answers.

SAMPLE ITEM:

WRITE : SCRAWL :: TALK : (a. orate, b. translate, c. mumble, d. speak)

1. **SUPERLATIVE : BEST :: COMPARATIVE : (a. poor, b. good, c. best, d. great)**

2. **TRAIN : TRACK :: GONDOLA : (a. canal, b. air, c. ocean, d. hangar)**

3. **GARROTING : DEATH :: FRICTION : (a. rubbing, b. lubricant, c. heat, d. slaughtered)**

4. **ROYALTY : CROWN :: RELIGION : (a. prayer, b. crucifix, c. priesthood, d. bible)**

5. **EMPEROR : ROMAN EMPIRE :: PHARAOH : (a. Babylonia, b. Phoenicia, c. Egypt, d. India)**

6. **ENERGY : CONDUCTION :: SYNERGY : (a. induction, b. deduction, c. reduction, d. transduction)**

7. **COMPLETE : COMMENCE :: IMPERMEABLE : (a. temporary, b. porous, c. impenetrable, d. permanent)**

8. **APEX : SUMMIT :: ZENITH : (a. nadir, b. end, c. cumulous, d. beginning)**

9. **ATOM : MOLECULE :: CELL : (a. DNA, b. cytoplasm, c. nucleus, d. membrane)**

10. **SILENT : TACITURN :: MUTE : (a. voluble, b. shy, c. lively, d. deaf)**

11. ROOSTER : CHICKEN :: DRAKE : (a. quail, b. turkey, c. hen, d. pheasant)

12. STATUE : SCULPTOR :: FUGUE : (a. composer, b. politician, c. psychiatrist, d. blacksmith)

13. BROGUE : FOOT :: SHEATH : (a. skin, b. compass, c. escutcheon, d. tendon)

14. ALPINIST : MOUNTAINS :: SPELUNKER : (a. deserts, b. caves, c. glaciers, d. forests)

15. LONGEST : RED :: SHORTEST : (a. blue, b. yellow, c. violet, d. green)

16. WAR BETWEEN THE STATES : CIVIL WAR :: GREAT WAR : (a. American Revolution, b. Hundred Years War, c. World War I, d. World War II)

17. KENNEDY : BULLET :: SOCRATES : (a. dagger, b. suffocation, c. noose, d. hemlock)

18. CIRRHOSIS : LIVER :: NEPHROSIS : (a. gall bladder, b. diaphragm, c. pancreas, d. lungs)

19. DEDUCTION : INDUCTION :: ANALYTIC : (a. post hoc, b. inferential, c. a priori, d. a fortiori)

20. ETIOLOGY : SYMPTOM :: SCATOLOGY : (a. fatal, b. abreaction, c. sublocution, d. rejoinder)

Test of Social Awareness

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

T F 1. A person who thinks primarily of his own happiness is beneath contempt.

T F 2. The main thing in life is for a person to want to do something important.

T F 3. In a discussion I often find it necessary to repeat myself several times to make sure I am being understood.

T F 4. Most people just don't know what's good for them.

T F 5. In times like these, a person must be pretty selfish if he considers his own happiness primarily.

T F 6. A man who does not believe in some great cause has not really lived.

T F 7. I'd like it if I could find someone who would tell me how to solve my personal problems.

T F 8. Of all the different philosophies which have existed in this world there is probably only one which is correct.

T F 9. It is when a person devotes himself to an ideal or cause that his life becomes meaningful.

T F 10. In this complicated world of ours the only way we can know what is going on is to rely upon leaders or experts who can be trusted.

T F 11. There are a number of persons I have come to hate because of the things they stand for.

T F 12. There is so much to be done and so little time to do it in.

T F 13. It is better to be a dead hero than a live coward.

T F 14. A group which tolerates too much difference of opinion among its own members cannot exist for long.

T F 15. It is only natural that a person should have a much better acquaintance with ideas he believes in than with ideas he opposes.

T F 16. While I don't like to admit this even to myself, I sometimes have the ambition to become a great man, like Einstein, Beethoven, or Shakespeare.

T F 17. Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary at times to restrict the freedom of certain political groups.

T F 18. If a man is to accomplish his mission in life it is sometimes necessary to gamble "all or nothing at all."

T F 19. Most people just don't give a damn about others.

T F 20. A person who gets enthusiastic about a number of causes is likely to be a pretty "wishy-washy" sort of person.

T F 21. To compromise with our political opponents is dangerous because it usually leads to the betrayal of our own side.

T F 22. If given the chance I would do something that would be of great benefit to the world.

T F 23. In times like these it is often necessary to be more on guard against ideas put out by certain people or groups in one's own camp than by those in the opposing camp.

T F 24. In a heated discussion I generally become so absorbed in what I am going to say that I forget to listen to what the others are saying.

T F 25. Once I get wound up in a heated discussion I just can't stop.

T F 26. There are two kinds of people in this world: Those who are on the side of truth and those who are against it.

T F 27. Man on his own is a helpless and miserable creature.

T F 28. The United States and Russia have just about nothing in common.

T F 29. In the history of mankind there have probably been just a handful of really great thinkers.

T F 30. The highest form of government is a democracy and the highest form of democracy is a government run by those who are most intelligent.

T F 31. The present is all too often full of unhappiness. It is the future that counts.

T F 32. Unfortunately, a good many people with whom I have discussed important social and moral problems don't really understand what is going on.

T F 33. Fundamentally, the world we live in is a pretty lonely place.

T F 34. It is often desirable to reserve judgment about what's going on until one has had a chance to hear the opinions of those one respects.

T F 35. The worst crime a person can commit is to attack publicly the people who believe in the same thing he does.

T F 36. In the long run, the best way to live is to pick friends and associates whose tastes and beliefs are the same as one's own.

T F 37. Most of the ideas which get published nowadays aren't worth the paper they are printed on.

T F 38. It is only natural for a person to be rather fearful of the future.

T F 39. My blood boils whenver a person stubbornly refuses to admit he's wrong.

If you are finished, please open the door to your cubicle so the experimenter can collect your test.

Personality Test #1
Test of Synthetic Ability
Feedback Form

1. Comparative: (poor, good, best, great) :: Superlative : Best
2. Gondola : (canal, air, ocean, hangar) :: Train : Track
3. Garroting : Death :: Friction : (rubbing, lubricant, heat, slaughtered)
4. Crown : Royal :: (prayer, crucifix, priesthood, bible) : Religious
5. (Babylonia, Phoenicia, Egypt, India) : Pharaoh :: Roman Empire : Emperor

6. Energy : Conduction :: Synergy : (induction, deduction, reduction, transduction)
7. (temporary, porous, impenetrable, permanent) : Impermeable :: Commence : Complete
8. Apex : Summit :: Zenith : (nadir, end, cumulous, beginning)
9. Atom : Molecule :: Cell (DNA, cytoplasm, nucleus, membrane)
10. (voluble, shy, lively, deaf) : Mute :: Silent : Taciturn

11. (Quail, turkey, hen, pheasant) : Drake :: Chicken : Rooster
12. Sculptor : Statue :: (composer, politician, psychiatrist, blacksmith) : Fugue
13. Brogue : Foot :: Sheath (skin, compass, escutcheon, tendon)
14. Spelunker : (deserts, caves, glaciers, forests) :: Alpinist : Mountains
15. Red : Longest :: (blue, yellow, violet, green) : Shortest

16. War Between the States : Civil War :: Great War : (American Revolution, Hundred Years War, World War I, World War II)
17. Socrates : (dagger, suffocation, noose, hemlock) :: Garfield : Bullet
18. Cirrhosis : Liver :: Nephrosis : (gall bladder, diaphragm, pancreas, lungs)
19. Induction : Deduction :: (post hoc, inferential, a priori, a fortiori) : Analytic
20. Etiology : Symptom :: Scatalogy (fatal, abreaction, sublocution, rejoinder)

The questions that you answered incorrectly are marked with an "X." The correct answers to those you answered wrong are not indicated in order to prevent you from "learning" the test. You may have to take this test at some point later in your life and knowing the correct answers would unfairly bias your future test protocal. Each item is worth a different value. Some easy items are worth only three-tenths of a point while some difficult items are worth a full point. When these values are summed, the highest score possible is a "10" and the lowest possible score is a "0."

Subject #_____, you received a score of 7 on the test of Standard Synthetic Ability (form X327-F). This places you in the very high range of synthetic ability. This means that you are very high, in the ability to reason abstractly. Furthermore, based on your pattern of responses, I am not entirely certain (i.e. only 50%), that you are actually in the high range of synthetic ability. Your pattern of responses did not yield an easily interpretable profile, and I can not say with certainty that your score represents your true level of synthetic ability.

Scored by

Bradley Hack, M.A

Do not put your name on this page

After reviewing the feedback regarding your performance, please select someone with whom you would like to compare your performance with. That is, you want to compare yourself with someone who:

Performed Worse_____ Performed Better_____ Performed the Same_____

Now, please select the specific test score with which you would like to compare your performance to. That is, you want to see the test of a subject who received a score of:

0	1	2	3	4	5	6	7	8	9	10
Very Poor			Below Average		Average		Very High			Superior

* Please open your door when you are finished.

Synthetic Ability
Post-Test Questionnaire

Please fill out the two brief questionnaires on the following pages. The experimenters are interested in your reaction to the Synthetic Ability test. You will be filling out similar questionnaires regarding the Test of Social Awareness. Please read the instructions carefully.

Please open your door when you are finished with these questionnaires so the experimenter can collect them.

If you have any questions, please ask the experimenter.

Do Not Place Your Name On This Page

Latitude of Self-Description Questionnaire

Instructions: Please answer the questions, following the sample given next.

Sample: In this exercise, you will find a series of descriptors, some of which may seem to describe you and others of which may not seem to describe you. There are two steps involved in answering each question. Your first task is to decide if you think you have more than average, about average, or less than average of the particular trait. Then mark on the scale with an X where on that continuum you see yourself, and write in parentheses below the X, the exact number where you see yourself.

Athletic

0 10 20 30 40 50 60 70 80 90 100

much less than average — average — much more than average

So if you see yourself as being more athletic than average, say, at the 85th percentile (more athletic than 85% of the population), then you might place an X halfway between the 80 and 90 and then write an "85" in parentheses below the X. But if you see yourself as being less athletic than average, say at the 33rd percentile (less athletic than 67% of the population), then you might place an X a little above the 30 and write a "33" in parentheses below the X.

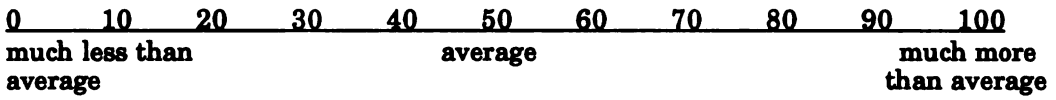
After you have decided about where you fall on this continuum, then your second task is to decide where you see your range on that trait. You probably found yourself a bit unsure of where to place the X in the first exercise. This is because we usually view ourselves as somewhat flexible on almost all traits (although some more than others). What you now need to do is simply decide where that range is, mark the two endpoints with arrows, and write the actual numbers in parentheses.

So if you are sure you are more athletic than at least 15% of the population, then place an arrow (!) halfway between 10 and the 20 above and write a "15" below the arrow. And if you are sure you are not more athletic than 90% of the population, then put the second arrow there and write a "90" below the arrow.

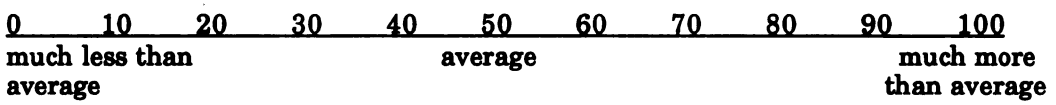
When done, you should have two arrows, marking the endpoints of where you might fall, and one X, marking your best guess of where you do fall and the exact numbers in parentheses below the arrows and the X.

After completing the sample question, please go on and answer the remaining descriptors in the same way.

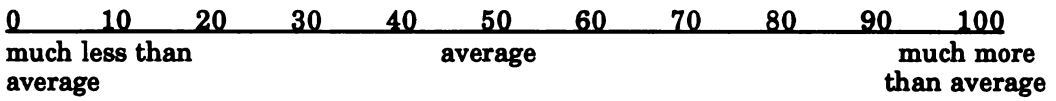
Intelligent



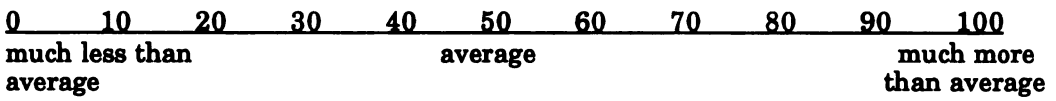
Humorous



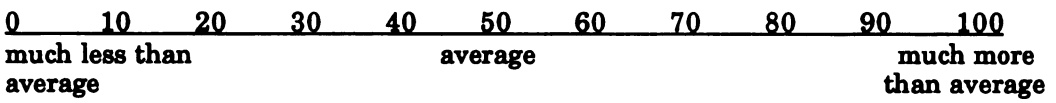
Overconfident



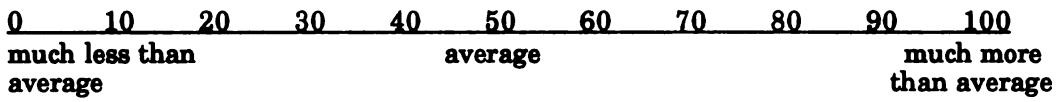
Synthetic Ability



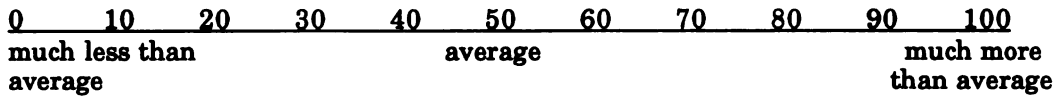
Reckless



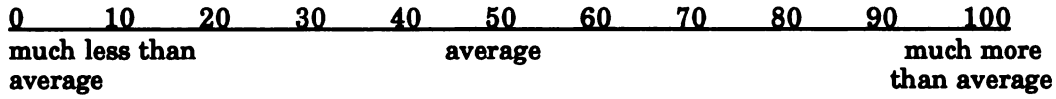
Happy



Persistent



Logical



Feeling Questionnaire

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent **you are feeling this way right now.** Use the following scale to respond to each item.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

1. interested _____
2. distressed _____
3. excited _____
4. upset _____
5. strong _____
6. guilty _____
7. scared _____
8. hostile _____
9. enthusiastic _____
10. proud _____
11. irritable _____
12. alert _____
13. ashamed _____
14. inspired _____
15. nervous _____
16. determined_____
17. attentive _____
18. jittery _____
19. active _____
20. afraid _____

Test Reaction Questionnaire

The experiment is now over. It will be explained to you in a few minutes. In the space provided below, please explain briefly what you think the purpose of this experiement was. Please open your door when you are finished.

DEBRIEFING

This study is about over. Before we go any further, I'd like to ask you a few questions, ok? First, has there been anything about the tasks we've done so far, or things I've explained to you that may have made you think there may be more to this study than I've told you? Anything that made you suspicious? (ask all subjects and follow-up in detail if they say yes).

There is more to this study than I have told you so far. But before I tell you more about it, I just want to remind you to feel free to interrupt if something is unclear or if you want more explanation about anything, OK?

OK. This experiment is designed to look at how people respond to positive and negative feedback about their abilities. Specifically, we are interested in whether or not getting positive or negative feedback about your synthetic ability had an effect on who you wanted to compare yourself to. Social psychologists are interested in this because it can reveal more about how we evaluate ourselves and our abilities. As you might have heard in your psychology classes, one finding in psychology is that "we compare ourselves with people below us." Another finding is that we compare ourselves to people above us. But which one is true? We are seeking to understand the conditions where each option may apply, and when, for example, we compare with someone who performed below us and someone who performed above us.

In this experiment, we do a number of things as experimenters, in order to create different conditions where we can test this idea. Beforehand, you filled out a consent form, and a mood inventory. We want to measure mood to see how it varies in people and how it may vary under experimental conditions (i.e. after getting positive or negative feedback).

First we had you complete the synthetic abilities test. Then we had you take another personality test. This second test was unimportant for the experiment and served to fill some time. Then we gave you feedback about how you performed on the synthetic abilities test. Recall that we want to see how people react to either positive or negative feedback. And remember, in experiments, we need to keep everything that you are exposed to constant,

except for the things we want to study...i.e., test feedback being either positive or negative. So this is one of the things that I manipulated. So what that means is that I gave each of you bogus feedback sheets that I had written up before you even arrived today. I have feedback sheets that are primarily positive and primarily negative (show subjects). This way, I can have experimental control of the feedback you get, and it is the same for every subject I run. So, I did not really rate your performance, those were bogus feedback sheets pre-filled out by me. I randomly decided who would get what type of feedback before you even arrived.

(Take out the two bogus feedback sheets and say:)

I have a copy of the feedback sheet we assigned to each of you. Also, I have another copy of the feedback that was randomly assigned to people in other conditions (show participants). Do you see the differences?

Do you understand why we deceive you in that way? If we had you give your real scores on the test, then every participant would get different types of feedback. This leads to a lot of experimental errors, and we are not able to say with certainty how people react to positive vs. negative feedback. So the score we gave you had nothing to do with how you actually performed. In fact, 10 of the items on the test were unsolvable.

OK. So that explains those conditions of psoitive vs. negative feedback. The next thing we are interested in is who you chose to compare yourself with. Some psychologists think that when you get negative feedback you compare yourself with someone who did worse than you and when you get positive feedback, you compare yourself with someone who did better than you. Other psychologists think the opposite. That is, when you negative feedback, you compare yourself with someone who did better than you did but when you get positive feedback, you will compare yourself with someone who did worse than you. Neither type of comparison pattern is "right" or "wrong," "better" or "worse." They are just different. We want to know which psychologists are correct in their ideas about how participants do this.

Finally, we are interested in how you decision to compare yourself with someone who did better than, worse than, or the same as you, made you feel. Some psychologists believe that such a comparison will have no effect on your mood or how certain you are of your abilities, while others think the comparison will have an effect on you feelings and certainty. Noticing a change in your mood after comparing yourself with someone else, however, is not any better or worse than not noticing a change.

OK. Now if you got assigned to receive negative feedback, that was totally random. That is, the sheets were made up before you got here and you got assigned to it solely by a random determination. That is, even before participants arrive, I choose from a set of experimental conditions, which one I will put the next participants in.

(Discussion: Ask participants if they have any more questions or comments. Tell them that if they do, they can contact Bradley Hack in B-109 West Fee Hall or at 353-4362.)

Appendix B

Stimulus Materials for Study 2

Experiment #1 Instructions

You will be participating in two separate and unrelated experiments today. In the first experiment, you will be asked to fill out 2 anonymous surveys about your mood and 1 survey about your attitudes. These surveys will not ask you for your name or any other identifying information. The researchers are investigating the different percentage of college aged people who experience one feeling or another.

The 3 surveys are attached. Please be very open and honest in your answers. Remember that these surveys are anonymous. Please **do not** put your name anywhere on this questionnaire.

When you are finished with this questionnaire, please come out of your cubicle, place it in the box at the front of the room, and then return to your cubicle. When everyone has completed the first experiment, the experimenter will explain the second experiment.

If you have any questions at this point, please address them to the experimenter. If not, then please close your door and you may begin completing the questionnaires.

Mood Inventory

This questionnaire consists of 21 groups of statements. After reading each group of statements carefully, circle the number (0, 1, 2, or 3) that corresponds to the one statement in each group wich **best** describes the way you have been feeling the **past week, including today.** If several statements within a group seem to apply equally well, circle the **one** that best describes how you are feeling. Be sure to **read all the statements** in each group before making your choice.

A	**0.**	I do not feel sad.
	1.	I feel sad.
	2.	I am so sad all the time and I can't snap out of it.
	3.	I am so sad or unhappy that I can't stand it.
B	**0.**	I am not particularly discouraged about the future.
	1.	I feel discouraged about the future.
	2.	I feel I have nothing to look forward to.
	3.	I feel that the future is hopeless and that things cannot improve.
C	**0.**	I do not feel like a failure.
	1.	I feel I have failed more than the average person.
	2.	As I look back on my life, all I can see is a lot of failure.
	3.	I feel I am a complete failure as a person.
D	**0.**	I get as much satisfaction out of things as I used to.
	1.	I don't enjoy things the way I used to.
	2.	I don't get real satisfaction out of anything anymore.
	3.	I am dissatisfied or bored with everything.
E	**0.**	I don't feel particularly guilty.
	1.	I feel guilty a good part of the time.
	2.	I feel quite guilty most of the time.
	3.	I feel guilty all of the time.
F	**0.**	I don't feel I am being punished.
	1.	I feel I may be punished.
	2.	I expect to be punished.
	3.	I feel I am being punished.
G	**0.**	I don't feel disappointed in myself.
	1.	I am disappointed in myself.
	2.	I am disgusted with myself.
	3.	I hate myself.
H	**0.**	I don't feel I am any worse than anybody else.
	1.	I am critical of myself for my weaknesses or mistakes.
	2.	I blame myself all the time for my faults.
	3.	I blame myself for everything bad that happens.
I	**0.**	I don't have any thoughts of killing myself.
	1.	I have thoughts of killing myself, but I would not carry them out.
	2.	I would like to kill myself.
	3.	I would kill myself if I had the chance.

J
0. I don't cry any more than usual.
1. I cry more now than I used to.
2. I cry all the time now.
3. I used to be able to cry, but now I can't cry even though I want to.

K
0. I am no more irritated now than I ever am.
1. I get annoyed or irritated more easily than I used to.
2. I feel irritated all the time now.
3. I don't get irritated at all by the things that used to irritate me.

L
0. I have not lost interest in other people.
1. I am less interested in other people than I used to be.
2. I have lost most of my interest in other people.
3. I have lost all of my interest in other people.

M
0. I make decisions about as well as I ever could.
1. I put off making decisions more than I used to.
2. I have greater difficulty in making decisions than before.
3. I can't make decisions at all anymore.

N
0. I don't feel I look any worse than I used to.
1. I am worried that I am looking old or unattractive.
2. I feel that there are permanent changes in my appearance that make me look unattractive.
3. I believe that I look ugly.

O
0. I can work about as well as before.
1. It takes an extra effort to get started at doing something.
2. I have to push myself very hard to do anything.
3. I can't do any work at all.

P
0. I can sleep as well as usual.
1. I don't sleep as well as I used to.
2. I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3. I wake up several hours earlier than I used to and cannot get back to sleep.

Q
0. I don't get more tired than usual.
1. I get tired more easily than I used to.
2. I get tired from doing almost anything.
3. I am too tired to do anything.

R
0. My appetite is no worse than usual.
1. My appetite is not as good as it used to be.
2. My appetite is much worse now.
3. I have no appetite at all anymore.

S
0. I haven't lost much weight, if any, lately.
1. I have lost more than 5 pounds.
2. I have lost more than 10 pounds.
3. I have lost more than 15 pounds.

I am purposely trying to lose weight by eating less. YES____ NO____

T
0. I am not any more worried about my health than I usually am.
1. I am worried about physical problems such as aches and pains or upset stomach or constipation.
2. I am very worried about physical problems and it's hard to think of much else.
3. I am so worried about my physical problems that I cannot think about anything else.

U
0. I have not noticed any recent change in my interest in sex.
1. I am less interested in sex than I used to be.
2. I am much less interested in sex now.
3. I have lost interest in sex completely.

Feeling Questionnaire

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent **you are feeling this way right now.** Use the following scale to respond to each item.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

1. interested _____
2. distressed _____
3. excited _____
4. upset _____
5. strong _____
6. guilty _____
7. scared _____
8. hostile _____
9. enthusiastic _____
10. proud _____
11. irritable _____
12. alert _____
13. ashamed _____
14. inspired _____
15. nervous _____
16. determined_____
17. attentive _____
18. jittery _____
19. active _____
20. afraid _____

General Attitude Survey

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

T	F	1. Before voting, I thoroughly investigate the qualifications of all the candidates.
T	F	2. I never hesitate to go out of my way to help someone in trouble.
T	F	3. It is sometimes hard for me to go on with my work if I am not encouraged.
T	F	4. I have never intensely disliked anyone.
T	F	5. On occasion I have had doubts about my ability to succeed in life.
T	F	6. I sometimes feel resentful when I don't get my way.
T	F	7. I am always careful about my manner of dress.
T	F	8. My table manners at home are as good as when I eat out in a restaurant.
T	F	9. If I could get into a movie without paying and be sure I was not seen, I would probably do it.
T	F	10. On a few occasions, I have given up doing something because I thought too little of my ability.
T	F	11. I like to gossip at times.
T	F	12. There have been times when I felt like rebelling against people in authority even though I knew they were right.
T	F	13. No matter who I'm talking to, I'm always a good listener.
T	F	14. I can remember "playing sick" to get out of something.
T	F	15. There have been occasions when I took advantage of someone.
T	F	16. I'm always willing to admit it when I make a mistake.
T	F	17. I always try to practice what I preach.
T	F	18. I don't find it particularly difficult to get along with loud-mouthed, obnoxious people.
T	F	19. I sometimes try to get even, rather than forgive and forget.
T	F	20. When I don't know something, I don't at all mind admitting to it.
T	F	21. I am always courteous, even to people who are disagreeable.
T	F	22. At times I have really insisted on having things my own way.

T F 23. There have been occasions when I felt like smashing things.

T F 24. I would never think of letting someone else be punished for my wrongdoings.

T F 25. I never resent being asked to return a favor.

T F 26. I have never been irked when people expressed ideas very different from my own.

T F 27. I never make a long trip without checking the safety of my car.

T F 28. There have been times when I was quite jealous of the good fortune of others.

T F 29. I have almost never felt the urge to tell someone off.

T F 30. I am sometimes irritated by people who ask favors of me.

T F 31. I have never felt that I was punished without cause.

T F 32. I sometimes think when people have a misfortune they only got what they deserved.

T F 33. I have never deliberately said something that hurt someone's feelings.

General Instructions

This is an experiment concerning personality traits. We are interested in the different background characteristics of people who have certain personality traits. You will first be asked to respond to a "background survey" that asks you for some personal information. We are interested in group averages and are not particularly concerned with any one individual. You will not be asked to give your name. In addition, **if you feel uncomfortable answering any of the questions on the "background survey", you may leave them blank.**

After completing the background survey, you will be asked to respond to a number of brief, self-report personality tests. **You will <u>not</u> be asked to put your name on these tests.** After you complete the first test, the experimenter will collect them and give them to a graduate student in psychology who will score the tests. Too often in psychology experiments, subjects do not learn anything about themselves or the topic of research because it is uninteresting to them or because it is not personally meaningful. To alleviate this problem, you will be provided with the results of your tests and feedback about what your scores mean. We have selected personality tests that are brief, so that you will be able to see the results of your tests before you leave today.

After completing the first test, the experimenter will distribute the second personality test. Upon completion of the second test, they will be collected and given to the graduate student to score. By this time, the first tests will be scored and the results will be distributed to you. You will be given a few minutes to look them over. You will then be asked to fill out some post-experiment surveys before leaving. If you have any questions during the experiment, please direct them to the experimenter. If you have no questions at this point, you may begin the experiment.

Do Not Put Your Name on This Page

DEMOGRAPHIC SURVEY

1. Year in school_____ 2. Major_____

2. Hometown Geographic Location: (In the U.S.)

   a) Northeast b) Southeast c) Midwest d) Southwest e) Far West f) Other

3. Hometown Type:

   a) Urban b) Suburban c) Rural

4. Hometown Population (approximate)

   a) Less than 10,000 b) 10,000 - 50,000 c) 50,000 - 100,000 d) 100,000 -500,000

   e) over 500,000

5. Father's Occupation:

   a) Professional (doctor, lawyer, professor)
   b) Business (accountant, stock broker, business executive)
   c) Managerial (supervisor, foreman)
   d) Laborer (factory worker, construction)
   e) Agriculture (farmer)
   f) Domestic (homemaker)
   g) Self-employed
   h) Unemployed

6. Mother's Occupation:

   a) Professional (doctor, lawyer, professor)
   b) Business (accountant, stock broker, business executive)
   c) Managerial (supervisor, foreman)
   d) Laborer (factory worker, construction)
   e) Agriculture (farmer)
   f) Domestic (homemaker)
   g) Self-employed
   h) Unemployed

7. Previous Military Service:

   Yes____ No_____ If "Yes," What Branch?_____

Pre-Test Instructions

Before taking the first personality test, we are interested in knowing how much of certain personality traits you see yourself possessing.

That is, we want your initial impression of how much of each trait you see yourself as having, before you take the tests and get your feedback about how much of each trait you actually do possess.

We are also interested in your self-perceptions of some traits that you will not be tested for.

Please read the instructions on the next page and fill out the questionnaire. The experimenter will answer any questions you may have.

Do Not Place Your Name On This Page

Latitude of Self-Description Questionnaire

Instructions: Please answer the questions, following the sample given next.

Sample: In this exercise, you will find a series of descriptors, some of which may seem to describe you and others of which may not seem to describe you. There are two steps involved in answering each question. Your first task is to decide if you think you have more than average, about average, or less than average of the particular trait. Then mark on the scale with an X where on that continuum you see yourself, and write in parentheses below the X, the exact number where you see yourself.

Athletic

0 10 20 30 40 50 60 70 80 90 100

much less than average — average — much more than average

So if you see yourself as being more athletic than average, say, at the 85th percentile (more athletic than 85% of the population), then you might place an X halfway between the 80 and 90 and then write an "85" in parentheses below the X. But if you see yourself as being less athletic than average, say at the 33rd percentile (less athletic than 67% of the population), then you might place an X a little above the 30 and write a "33" in parentheses below the X.

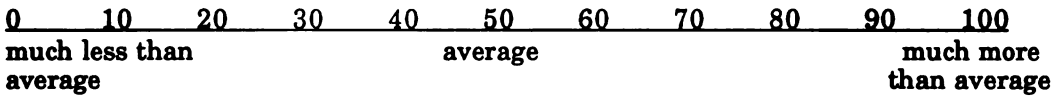
After you have decided about where you fall on this continuum, then your second task is to decide where you see your range on that trait. You probably found yourself a bit unsure of where to place the X in the first exercise. This is because we usually view ourselves as somewhat flexible on almost all traits (although some more than others). What you now need to do is simply decide where that range is, mark the two endpoints with arrows, and write the actual numbers in parentheses.

So if you are sure you are more athletic than at least 15% of the population, then place an arrow (!) halfway between 10 and the 20 above and write a "15" below the arrow. And if you are sure you are not more athletic than 90% of the population, then put the second arrow there and write a "90" below the arrow.

When done, you should have two arrows, marking the endpoints of where you might fall, and one X, marking your best guess of where you do fall and the exact numbers in parentheses below the arrows and the X.

After completing the sample question, please go on and answer the remaining descriptors in the same way.

Intelligent



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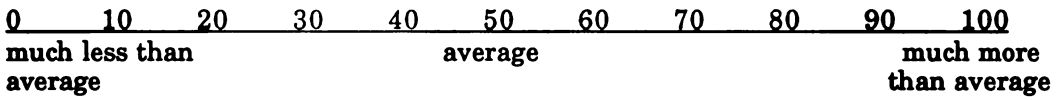
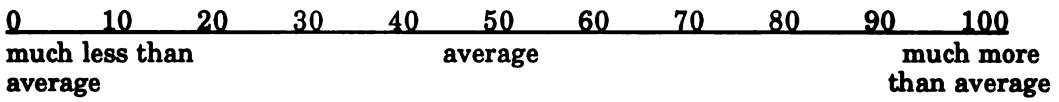
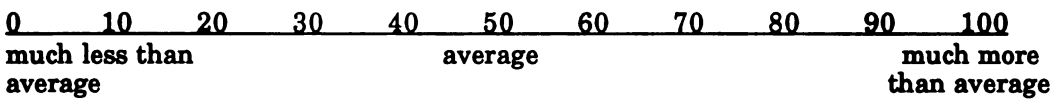


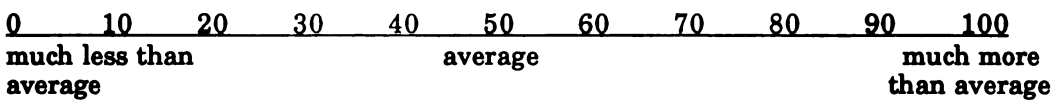
Overconfident



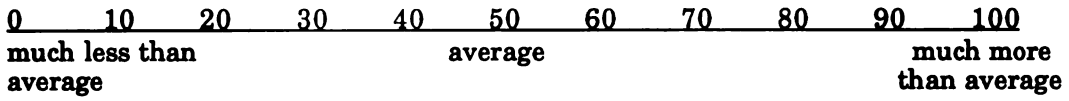
Synthetic Ability



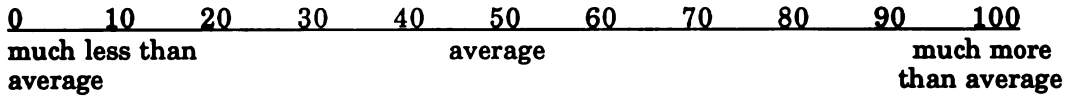
Reckless



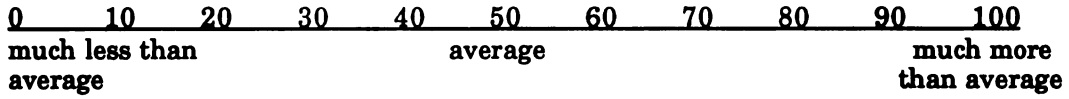
Happy



Persistent



Logical



Standard Test of Synthetic Ability
(STSA)

Form X327

INSTRUCTIONS: Read each item carefully and pick the one best answer from among the available options. Answer every question, even if you have to guess. There is no penalty for wrong answers.

SAMPLE ITEM:

WRITE : SCRAWL :: TALK : (a. orate, b. translate, c. mumble, d. speak)

1. **SUPERLATIVE : BEST :: COMPARATIVE : (a. poor, b. good, c. best, d. great)**

2. **TRAIN : TRACK :: GONDOLA : (a. canal, b. air, c. ocean, d. hangar)**

3. **GARROTING : DEATH :: FRICTION : (a. rubbing, b. lubricant, c. heat, d. slaughtered)**

4. **ROYALTY : CROWN :: RELIGION : (a. prayer, b. crucifix, c. priesthood, d. bible)**

5. **EMPEROR : ROMAN EMPIRE :: PHARAOH : (a. Babylonia, b. Phoenicia, c. Egypt, d. India)**

6. **ENERGY : CONDUCTION :: SYNERGY : (a. induction, b. deduction, c. reduction, d. transduction)**

7. **COMPLETE : COMMENCE :: IMPERMEABLE : (a. temporary, b. porous, c. impenetrable, d. permanent)**

8. **APEX : SUMMIT :: ZENITH : (a. nadir, b. end, c. cumulous, d. beginning)**

9. **ATOM : MOLECULE :: CELL : (a. DNA, b. cytoplasm, c. nucleus, d. membrane)**

10. **SILENT : TACITURN :: MUTE : (a. voluble, b. shy, c. lively, d. deaf)**

11. **ROOSTER : CHICKEN :: DRAKE : (a. quail, b. turkey, c. hen, d. pheasant)**

12. **STATUE : SCULPTOR :: FUGUE : (a. composer, b. politician, c. psychiatrist, d. blacksmith)**

13. **BROGUE : FOOT :: SHEATH : (a. skin, b. compass, c. escutcheon, d. tendon)**

14. **ALPINIST : MOUNTAINS :: SPELUNKER : (a. deserts, b. caves, c. glaciers, d. forests)**

15. **LONGEST : RED :: SHORTEST : (a. blue, b. yellow, c. violet, d. green)**

16. **WAR BETWEEN THE STATES : CIVIL WAR :: GREAT WAR : (a. American Revolution, b. Hundred Years War, c. World War I, d. World War II)**

17. **KENNEDY : BULLET :: SOCRATES : (a. dagger, b. suffocation, c. noose, d. hemlock)**

18. **CIRRHOSIS : LIVER :: NEPHROSIS : (a. gall bladder, b. diaphragm, c. pancreas, d. lungs)**

19. **DEDUCTION : INDUCTION :: ANALYTIC : (a. post hoc, b. inferential, c. a priori, d. a fortiori)**

20. **ETIOLOGY : SYMPTOM :: SCATOLOGY : (a. fatal, b. abreaction, c. sublocution, d. rejoinder)**

Test of Social Awareness

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

T	F	1. A person who thinks primarily of his own happiness is beneath contempt.
T	F	2. The main thing in life is for a person to want to do something important.
T	F	3. In a discussion I often find it necessary to repeat myself several times to make sure I am being understood.
T	F	4. Most people just don't know what's good for them.
T	F	5. In times like these, a person must be pretty selfish if he considers his own happiness primarily.
T	F	6. A man who does not believe in some great cause has not really lived.
T	F	7. I'd like it if I could find someone who would tell me how to solve my personal problems.
T	F	8. Of all the different philosophies which have existed in this world there is probably only one which is correct.
T	F	9. It is when a person devotes himself to an ideal or cause that his life becomes meaningful.
T	F	10. In this complicated world of ours the only way we can know what is going on is to rely upon leaders or experts who can be trusted.
T	F	11. There are a number of persons I have come to hate because of the things they stand for.
T	F	12. There is so much to be done and so little time to do it in.
T	F	13. It is better to be a dead hero than a live coward.
T	F	14. A group which tolerates too much difference of opinion among its own members cannot exist for long.
T	F	15. It is only natural that a person should have a much better acquaintance with ideas he believes in than with ideas he opposes.
T	F	16. While I don't like to admit this even to myself, I sometimes have the ambition to become a great man, like Einstein, Beethoven, or Shakespeare.
T	F	17. Even though freedom of speech for all groups is a worthwhile goal, it is unfortunately necessary at times to restrict the freedom of certain political groups.

T F 18. If a man is to accomplish his mission in life it is sometimes necessary to gamble "all or nothing at all."

T F 19. Most people just don't give a damn about others.

T F 20. A person who gets enthusiastic about a number of causes is likely to be a pretty "wishy-washy" sort of person.

T F 21. To compromise with our political opponents is dangerous because it usually leads to the betrayal of our own side.

T F 22. If given the chance I would do something that would be of great benefit to the world.

T F 23. In times like these it is often necessary to be more on guard against ideas put out by certain people or groups in one's own camp than by those in the opposing camp.

T F 24. In a heated discussion I generally become so absorbed in what I am going to say that I forget to listen to what the others are saying.

T F 25. Once I get wound up in a heated discussion I just can't stop.

T F 26. There are two kinds of people in this world: Those who are on the side of truth and those who are against it.

T F 27. Man on his own is a helpless and miserable creature.

T F 28. The United States and Russia have just about nothing in common.

T F 29. In the history of mankind there have probably been just a handful of really great thinkers.

T F 30. The highest form of government is a democracy and the highest form of democracy is a government run by those who are most intelligent.

T F 31. The present is all too often full of unhappiness. It is the future that counts.

T F 32. Unfortunately, a good many people with whom I have discussed important social and moral problems don't really understand what is going on.

T F 33. Fundamentally, the world we live in is a pretty lonely place.

T F 34. It is often desirable to reserve judgment about what's going on until one has had a chance to hear the opinions of those one respects.

T F 35. The worst crime a person can commit is to attack publicly the people who believe in the same thing he does.

T F 36. In the long run, the best way to live is to pick friends and associates whose tastes and beliefs are the same as one's own.

T F 37. Most of the ideas which get published nowadays aren't worth the paper they are printed on.

T F 38. It is only natural for a person to be rather fearful of the future.

T F 39. My blood boils whenver a person stubbornly refuses to admit he's wrong.

If you are finished, please open the door to your cubicle so the experimenter can collect your test.

Personality Test #1
Test of Synthetic Ability
Feedback Form

1. Comparative: (poor, good, best, great) :: Superlative : Best
2. Gondola : (canal, air, ocean, hangar) :: Train : Track
3. Garroting : Death :: Friction : (rubbing, lubricant, heat, slaughtered)
4. Crown : Royal :: (prayer, crucifix, priesthood, bible) : Religious
5. (Babylonia, Phoenicia, Egypt, India) : Pharaoh :: Roman Empire : Emperor

6. Energy : Conduction :: Synergy : (induction, deduction, reduction, transduction)
7. (temporary, porous, impenetrable, permanent) : Impermeable :: Commence : Complete
8. Apex : Summit :: Zenith : (nadir, end, cumulous, beginning)
9. Atom : Molecule :: Cell (DNA, cytoplasm, nucleus, membrane)
10. (voluble, shy, lively, deaf) : Mute :: Silent : Taciturn

11. (Quail, turkey, hen, pheasant) : Drake :: Chicken : Rooster
12. Sculptor : Statue :: (composer, politician, psychiatrist, blacksmith) : Fugue
13. Brogue : Foot :: Sheath (skin, compass, escutcheon, tendon)
14. Spelunker : (deserts, caves, glaciers, forests) :: Alpinist : Mountains
15. Red : Longest :: (blue, yellow, violet, green) : Shortest

16. War Between the States : Civil War :: Great War : (American Revolution, Hundred Years War, World War I, World War II)
17. Socrates : (dagger, suffocation, noose, hemlock) :: Garfield : Bullet
18. Cirrhosis : Liver :: Nephrosis : (gall bladder, diaphragm, pancreas, lungs)
19. Induction : Deduction :: (post hoc, inferential, a priori, a fortiori) : Analytic
20. Etiology : Symptom :: Scatalogy (fatal, abreaction, sublocution, rejoinder)

Subject #_____, you received a score of 50% on the test of Standard Synthetic Ability (form X327-F). This places you in the average range of synthetic ability. This means that you are average in the ability to reason abstractly.

Scored by

Bradley Hack, M.A

Synthetic Ability
Post-Test Questionnaire

Please fill out the two brief questionnaires on the following pages. The experimenters are interested in your reaction to the Synthetic Ability test. You will be filling out similar questionnaires regarding the Test of Social Awareness. Please read the instructions carefully.

Please open your door when you are finished with these questionnaires so the experimenter can collect them.

If you have any questions, please ask the experimenter.

Do Not Place Your Name On This Page

Latitude of Self-Description Questionnaire

Instructions: Please answer the questions, following the sample given next.

Sample: In this exercise, you will find a series of descriptors, some of which may seem to describe you and others of which may not seem to describe you. There are two steps involved in answering each question. Your first task is to decide if you think you have more than average, about average, or less than average of the particular trait. Then mark on the scale with an X where on that continuum you see yourself, and write in parentheses below the X, the exact number where you see yourself.

Athletic

0 10 20 30 40 50 60 70 80 90 100

much less than average — average — much more than average

So if you see yourself as being more athletic than average, say, at the 85th percentile (more athletic than 85% of the population), then you might place an X halfway between the 80 and 90 and then write an "85" in parentheses below the X. But if you see yourself as being less athletic than average, say at the 33rd percentile (less athletic than 67% of the population), then you might place an X a little above the 30 and write a "33" in parentheses below the X.

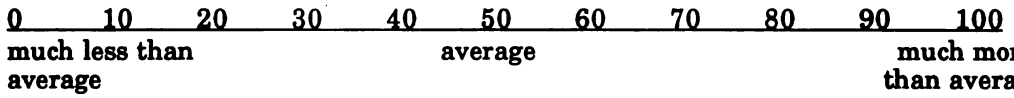
After you have decided about where you fall on this continuum, then your second task is to decide where you see your range on that trait. You probably found yourself a bit unsure of where to place the X in the first exercise. This is because we usually view ourselves as somewhat flexible on almost all traits (although some more than others). What you now need to do is simply decide where that range is, mark the two endpoints with arrows, and write the actual numbers in parentheses.

So if you are sure you are more athletic than at least 15% of the population, then place an arrow (!) halfway between 10 and the 20 above and write a "15" below the arrow. And if you are sure you are not more athletic than 90% of the population, then put the second arrow there and write a "90" below the arrow.

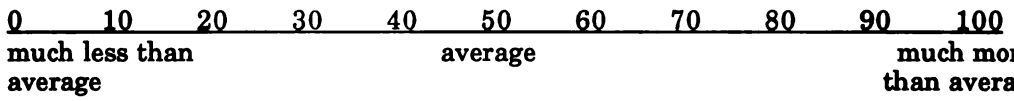
When done, you should have two arrows, marking the endpoints of where you might fall, and one X, marking your best guess of where you do fall and the exact numbers in parentheses below the arrows and the X.

After completing the sample question, please go on and answer the remaining descriptors in the same way.

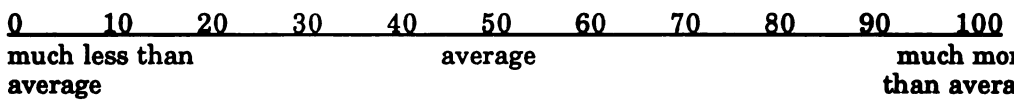
Intelligent



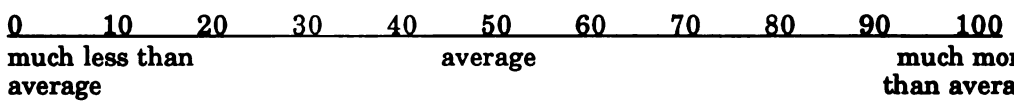
Humorous



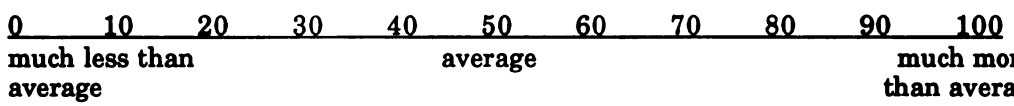
Overconfident



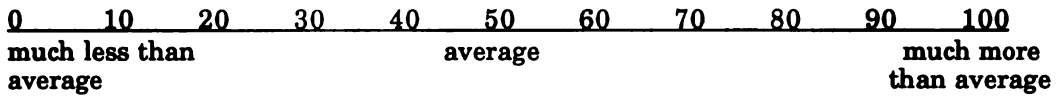
Synthetic Ability



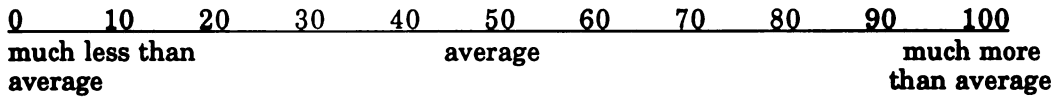
Reckless



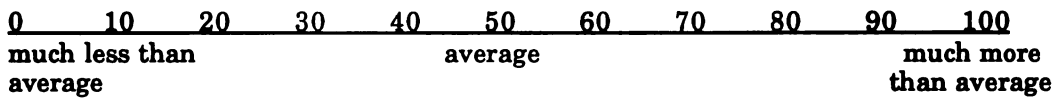
Happy



Persistent



Logical



Feeling Questionnaire

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent **you are feeling this way right now.** Use the following scale to respond to each item.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

1. interested _____
2. distressed _____
3. excited _____
4. upset _____
5. strong _____
6. guilty _____
7. scared _____
8. hostile _____
9. enthusiastic _____
10. proud _____
11. irritable _____
12. alert _____
13. ashamed _____
14. inspired _____
15. nervous _____
16. determined_____
17. attentive _____
18. jittery _____
19. active _____
20. afraid _____

Test Reaction Questionnaire

The experiment is now over. It will be explained to you in a few minutes. In the space provided below, please explain briefly what you think the purpose of this experiement was. Please open your door when you are finished.