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Uncertainty Orientation and Achievement-related Motives
as Determinants of the Motivational Impact of Self-discrepancies

by

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Abstract

It has been found that the arousal of achievement-related motives is maximized in situations that involve resolving uncertainty for uncertainty-oriented people, and in situations that do not involve uncertainty resolution for certainty-oriented people (see Sorrentino & Short, 1986). Higgins, Strauman, and Klein (1986) proposed that discrepancies between the way we perceive ourselves and abstract representations of what we could be like, or should be like, may determine motivation because of the resulting affect; they suggested that ideal/own discrepancies lead to feelings of dissatisfaction and increased performance, whereas ought/other discrepancies result in anxiety and poorer performance. Self-discrepancies may also involve uncertainty, however, because they leave us uncertain as to whether we are capable of reaching a self-standard. The principal prediction, therefore, was that success-oriented people would outperform failure-threatened people to a greater extent (reflecting the arousal of achievement-related motives) when there is a perceived self-discrepancy for uncertainty-oriented people, and when there is little or no perceived self-discrepancy for certainty-oriented people. Two studies were conducted to test these predictions. The first was a field study in which students' self-discrepancies regarding performance in a university course were examined in relation to their subsequent performance in that course. The second study involved an experimental manipulation of whether or not subjects experienced self-discrepancies. Feedback from an initial task was varied such that it either indicated that subjects had, or that they had not lived up to their standard,

immediately before performing a second task. Results for both studies supported the primary hypothesis; the predicted interaction was found in Study 1 when analysing for ought/other discrepancies (but not when analysing for ideal/own discrepancies), and was also found in Study 2. The proposals by Higgins et al. (1986) regarding the different motivational impact of ideal/own and ought/other discrepancies received partial support in Study 1 only. Results for these studies demonstrate the importance of uncertainty orientation, in interaction with achievement-related motives, in determining the implications of self-discrepancies for achievement. Implications for both the theory of uncertainty orientation, and self-discrepancy theory, are discussed.

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Chapter I

Overview

Sorrentino and his colleagues hypothesize that affective arousal
due to achievement-related motives (and subsequently, performance
differences between people characterized as "success-oriented" and
"failure-threatened", Atkinson, 1964) is greatest in situations
relevant to one's uncertainty orientation. According to their theory
(see Sorrentino & Short, 1986), situations involving resolution of
uncertainty about the self or the environment are relevant for
uncertainty-oriented persons. For certainty-oriented persons, however,
situations are more relevant if resolving uncertainty is not involved.
Results consistent with this general hypothesis are reported in three
studies by Sorrentino, Short, and Raynor (1984), and another by
Sorrentino and Roney (1986).

In a recent paper by Higgins, Strauman, and Klein (1986) it was
proposed that self-discrepancies are related to achievement behaviour.
Based on self-discrepancy theory (see Higgins, 1987, for an overview),
the proposal was put forth that perceiving ourselves as discrepant from
our hopes, goals, and aspirations ("ideal/own self") has a positive
motivational influence (improved performance brought on by feelings of
dissatisfaction and disappointment; see Higgins, Strauman, & Klein,
1986). In contrast, perceiving ourselves as discrepant from the sense
of duty and obligation that we feel significant others hold for us
("ought/other self") was argued to have a negative motivational
influence (inhibited performance due to feelings of anxiety and fear).

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Sorrentino and Short (1986) argued that self-discrepancies will be relevant for uncertainty-oriented people because they involve uncertainty about the self (e.g., Will I be able to live up to this standard?). For these individuals it is where self-discrepancies are experienced that individual differences in performance reflecting achievement-related motives would be predicted. For certainty-oriented persons, however, individual differences reflecting achievement-related motives should be greatest where there are no self-discrepancies.

Two studies testing these hypotheses, a field study and a laboratory experiment, are presented. The field study examines individual differences in uncertainty orientation and achievement-related motives, in conjunction with self-discrepancies, as predictors of academic performance (grades in a university course). This study also provides information about possible relationships among these variables as they naturally occur in an academic setting. The second study is an experiment aimed at creating specific types of self-discrepancies (ideal/own or ought/other) to directly examine the effect of these discrepancies on performance on a subsequent task. Again, measures of individual differences in uncertainty orientation and achievement-related motives are included. In Study 1 it is predicted that performance differences reflecting achievement-related motives (with success-oriented people outperforming failure-threatened people) will be greatest where self-discrepancies are experienced with respect to people's standards for a course. This is predicted, however, for uncertainty-oriented people only. For certainty-oriented people the reverse is predicted, with characteristic performance differences reflecting achievement-related motives being greatest if

they do not experience a self-discrepancy. Similar predictions are made for Study 2, where performance feedback from an immediately prior ability task suggests an outcome that is discrepant from performance standards, or one that meets or exceeds these standards.

Background of the Problem

Uncertainty Orientation

Uncertainty orientation, uncertainty, and self-assessment

Recently, an individual difference dimension has been introduced
that is relevant to theories of achievement behaviour, particularly
those that emphasize self-evaluation. This dimension is called
uncertainty orientation. It involves the way individuals gravitate
towards situations in which there is or is not uncertainty about the
self or environment (Sorrentino & Short, 1986). It has been
hypothesized that some people may prefer situations that allow them to
resolve uncertainty; these people are referred to as
uncertainty-oriented. Other people, labelled certainty-oriented, were
predicted to prefer situations that do not require them to deal with
uncertainty. Sorrentino and Short (1986) speculated that these
differences may reflect different histories of reinforcement for
exploratory behaviour; if this type of behaviour has been encouraged in
the past, situations involving the resolution of uncertainty may become
preferred. If not encouraged (or possibly even actively discouraged),
situations that do not involve uncertainty would come to be favoured.
These two orientations are measured using a composite score, with
people's authoritarianism scores subtracted from their scores on a
projective measure of the motive to master uncertainty ($\underline{n}$
Uncertainty). The authoritarianism measure is used as an indicator of

"certainty orientation", and the projective n Uncertainty measure is
included as an indicator of "uncertainty orientation" (for a more
detailed description see the Method section for Study 1).

The differences between certainty-oriented and
uncertainty-oriented people have also been examined in terms of
differences in schemata. King and Sorrentino (1988) tested the
hypothesis that uncertainty-oriented people have chronically accessible
schemas for uncertainty, and certainty-oriented people have chronically
accessible certainty schemas. When asked to reproduce a character
description as accurately as possible, uncertainty-oriented subjects
were better able to recall uncertainty-related traits (e.g.,
"adventurous") and certainty-oriented subjects recalled more
certainty-related traits (e.g., "cautious"). These results thus
provide support for the notion that uncertainty-related traits are more
accessible for uncertainty-oriented people, and certainty-related
traits are more accessible for certainty-oriented people. In addition,
one week after reading the description the evaluative tone of ambiguous
traits were distorted in the direction of subjects' orientation (i.e.,
uncertainty-related traits were distorted in more positive terms by
uncertainty-oriented people, and in more negative terms by
certainty-oriented people). The results demonstrating differential
memory for certainty- and uncertainty- related traits were interpreted
as indicating the existence of different schemas with which situations
are interpreted, and the distortions were suggested to indicate that
these schemas include an evaluative component.

Another important direction that research involving uncertainty
orientation has taken is the extension of this dimension to information

seeking. According to Sorrentino and Short (1986) uncertainty-oriented people resolve uncertainty by actively seeking out new information. Active information seeking is not felt to be as important for the certainty-oriented person. This was described as a difference in the tendency to strive to "attain clarity" by finding out about oneself or one's environment versus "maintaining present clarity" by maintaining the status quo (Sorrentino & Short, 1986). There is evidence that these two groups of people differ in the "clarity" maintained in their perception of "person-categories". In a partial replication of research by Cantor and Mischel (1979), Roney and Sorrentino (1987) found that person-categories reported by certainty-oriented people are less rich (i.e., have fewer associated traits, but are better differentiated (i.e., share fewer common traits with other person-categories) than those reported by uncertainty-oriented people. Categories that are distinct from adjacent categories are likely relatively unambiguous and thus represent "clarity" in the way members of these categories are viewed. Certainty-oriented people therefore appear to possess a "clearer" view of what different categories of people are like (in that they are viewed as distinct from each other) than uncertainty-oriented people do. In other words, certainty-oriented people tend to think more in a "black or white" manner, seeing little overlap between traits for different types of people.

Research examining uncertainty orientation in relation to persuasion also suggests that this dimension is related to characteristic differences in resolving uncertainty. Sorrentino, Bobocel, Gitta, Olson, and Hewitt (1988) reported that, under

conditions of high personal relevance, uncertainty-oriented subjects were found to be more persuaded by a two-sided argument (study 1), and by strong arguments (study 2), than were certainty-oriented people. Uncertainty-oriented people thus appear to strive to directly resolve uncertainty about an issue by directly evaluating it, being persuaded more when both sides are presented, and when high quality arguments are presented. Certainty-oriented subjects, when the issue was personally relevant, were found to be more persuaded by a one-sided message, and by an expert source, than were uncertainty-oriented subjects. The certainty-oriented thus appear to be seeking "certainty", either as provided by a one-sided communication, or by adopting the position advocated by an expert, rather than striving to resolve the issue by considering the relevant facts. An important feature of this research is that it is when the issue is personally important that uncertainty-oriented and certainty-oriented people primarily exhibit their characteristic mode of resolving uncertainty about that issue (focussing on the content of the message, or on heuristic cues, respectively). When the issue was not personally important people were actually more likely to behave in a manner that is opposite what would be expected given their orientation: certainty-oriented people were more likely to process "systematically", focussing on the message, and uncertainty-oriented people were more likely to process "heuristically", relying on external cues. This tendency for people to behave in a manner that is opposite what is thought to be characteristic for them under conditions of low personal relevance parallels research findings regarding uncertainty orientation in an achievement context. This research will be described later.

In addition to being related to the resolution of uncertainty in one's environment, uncertainty orientation is also believed to be related to how one deals with uncertainty about the self. Most of the evidence for this has been obtained in the achievement domain and will be described in the next section. One exception is a study reported by Roney and Sorrentino (1989) in which subjects were given the opportunity to observe as many comparison scores on a values questionnaire as they wished to see, to compare to their own scores. Subjects were either led to believe that these value scores came from a student population (similar others), or from a non-student population. In general, uncertainty-oriented subjects chose to see more comparison scores than did certainty-oriented subjects. This supports the view that self-evaluation is more important for uncertainty-oriented than for certainty-oriented people. In addition, on the actual values questionnaire used (the Allport & Vernon, 1931, Values Survey), uncertainty-oriented subjects scored significantly higher than certainty-oriented subjects in "theoretical" value orientation, reflecting an interest in "the discovery of truth" (Allport & Vernon, 1931, p. 8). Uncertainty-oriented subjects also scored higher in "aesthetic" values (judging experience in terms of "grace, symmetry, or fitness", Allport & Vernon, 1931, p.8). Both of these may be ways of coming to understand one's environment. Certainty-oriented people, however, scored significantly higher than uncertainty-oriented people in "religious" values; this is consistent with the theory of uncertainty orientation to the extent that religion may provide a means of dealing with uncertainty by relying on existing beliefs, rather than striving to gain a "new" understanding.

In general, then, it appears that uncertainty orientation involves different schemas for uncertainty, is related to information-seeking, and reflects differing value systems for the two types of people. The two following sections will include a discussion of the importance of this variable for the understanding of achievement-related behaviour.

Uncertainty orientation, achievement-related motives, and self-evaluation of ability

The importance of the self (and more specifically, self-evaluation) has been increasingly emphasized in research and theory in the area of achievement. Perhaps the best example of this emphasis is Trope's self-assessment theory of achievement (e.g., Trope, 1975; Trope & Brickman, 1975). According to Trope the desire to evaluate our abilities is a primary determinant of achievement behaviour. He argues that we are motivated to perform well on tasks, and are interested in undertaking tasks, to the extent that they provide us with information about our level of ability (i.e., they are diagnostic).

Sorrentino and Hewitt (1984) conducted a replication of an experiment by Trope (1979) examining task choice as a function of task diagnosticity. Trope (1979) gave some subjects feedback suggesting that they were not high in ability, but leaving them uncertain as to whether they were moderate or low (descending condition), and gave other subjects feedback suggesting that they were not low in ability, but leaving them uncertain as to whether they were moderate or high in ability (ascending condition). This was done to examine the impact of diagnosticity independent of whether the task could provide positive or negative information about the self. Trope found that, regardless

of condition, subjects tended to choose a majority of items that they believed would be most diagnostic in the given condition. Sorrentino and Hewitt (1984) replicated this study and extended it by measuring individual differences in uncertainty orientation and achievement-related motives. For uncertaiL.cy-oriented subjects the results were consistent with Trope's findings; these subjects chose more items that were most diagnostic for the condition that they were assigned to than nondiagnostic items. Certainty-oriented subjects, in contrast, chose fewer of the diagnostic items than they did those that either reaffirmed what they previously knew about their ability, or that would tell them nothing about their ability. It appears, therefore, that the uncertainty-oriented subjects wanted to find out something new about their level of ability, whereas certainty-oriented subjects were less inclined to seek out such diagnostic information. Trope's prediction that we are motivated to find out about ourselves was therefore only in evidence for uncertainty-oriented people. Sorrentino and Hewitt (1984) thus suggest that Trope's (1979) results likely reflect the use of a predominantly uncertainty-oriented sample.

Additional data r▪ orted by Sorrentino and Hewitt (1984) were argued to be consistent with the view that achievement-related motives reflect individuals' affective orientations toward achievement situations. This is based on hypotheses from Atkinson's theory of achievement motivation (see Atkinson & Feather, 1966: Atkinson & Raynor, 1974) suggesting that success-oriented people are predominantly influenced by the prospect of experiencing "pride in accomplishment", whereas failure-threatened persons are affected more by "fear or shame over possible failure". Sorrentino and Hewitt (1984) found that

success-oriented subjects chose more items that they believed distinguish between high and moderate ability in the condition maximizing this uncertainty, whereas failure-threatened subjects were least likely to choose items that were diagnostic in this condition. In the condition where subjects were uncertain as to whether they were of low or intermediate ability, however, no differences were found in the choices of success oriented and failure-threatened subjects. Sorrentino and Hewitt (1984) suggested that finding out whether one is of high or intermediate ability is most challenging for the success-oriented person, and most threatening for the failure-threatened person, because this is most like familiar achievement situations. It is where people have the opportunity to determine whether or not they are high in ability that Sorrentino and Hewitt suggest that success-oriented people will be motivated to strive to succeed, and failure-threatened people most threatened by the prospect of failure. These findings were argued to be consistent with an affective view of achievement-related motivation.

Another line of research has viewed uncertainty-orientation and achievement-related motives as separate influences that interact in predicting performance. As suggested from Sorrentino and Hewitt's results, uncertainty-orientation is felt to be related to the informational aspects of performance (the extent to which uncertainty is resolved), and achievement-related motives are felt to reflect an affective orientation (positive or negative) to achievement situations. This research is described in the following section.

Uncertainty-orientation, achievement-related motives, and
performance: An interactive approach

The initial research involving uncertainty orientation
investigated the role this variable plays in understanding achievement
motivation, specifically, in predicting performance. The basic premise
of this research was that motivation is aroused in situations that are
relevant to people's uncertainty orientation (i.e., situations
involving the resolution of uncertainty were argued to be relevant for
uncertainty-oriented people, and situations that do not involve
uncertainty were suggested to be relevant for certainty-oriented
people; Sorrentino, Short, & Raynor, 1984). The "arousal" of
motivation is inferred by observing performance differences as a
function of people's scores on measures of characteristic
achievement-related tendencies. It is in situations that are
"relevant" given the individual's uncertainty orientation that
individual differences reflecting different motivational tendencies are
predicted. This prediction is a modification of Atkinson's theory of
achievement motivation, which also included predictions regarding
individual differences in achievement-related motives.

Atkinson's theory of achievement motivation (e.g., Atkinson, 1964;
Atkinson & Feather, 1966; Atkinson & Raynor, 1974) emphasized
individual differences in conjunction with situational influences. The
primary individual difference distinction proposed by Atkinson was
hypothesized to reflect differences in the relative strength of the
motive to strive to achieve success and the motive to avoid
experiencing failure. The motive to succeed was argued to reflect a

disposition to work toward success due to a "capacity to experience pride in accomplishment" (Atkinson, 1964, p.214). The motive to succeed is measured using a projective measure of achievement motivation (n achievement; McClelland, Atkinson, Clark, & Lowell, 1958). The strength of the tendency to strive for success was hypothesized to be determined by the motive to succeed, and two situational components, the probability of experiencing success and the incentive value of success. The motive to avoid failure was hypothesized to reflect e disposition to avoid possible shame from failure. The motive to avoid failure is inferred using a self-report test anxiety measure (Mandler & Sarason, 1952). The strength of the tendency to avoid failure is determined by the individual's motive to avoid failure, as well as the probability of experiencing failure and the incentive value of failure. In achievement-related situations the affect aroused with this tendency (anxiety and fear over the possibility of failure) is believed to be negatively motivating, inhibiting good performance. Individuals for whom the motive to approach success is greater than that to avoid failure are called "success-oriented", and those for whom the motive to avoid failure is greater are referred to as "failure-threatened".

One of the major hypotheses from the original theory of achievement motivation (Atkinson, 1964) was that the arousal of one's achievement-related motives would be greatest when performing a task of intermediate difficulty. This prediction was based on an expectancy X value model, proposing that expectancy for success and value of success are maximized when the probability of success is close to 50% (see

Atkinson & Feather, 1966, for the derivation of this hypothesis). This theory was later elaborated by Raynor (1974) to incorporate achievement situations that are time-linked. A major prediction from this elaboration was that the arousal of one's achievement-related motives would be greatest when performing a task that is linked to a future goal (see Raynor, 1974, for the derivation of this hypothesis). A substantial body of research has been presented in support of these ideas (e.g., see Atkinson & Feather, 1966; Atkinson & Raynor, 1974).

The hypotheses put forth by Sorrentino et al. (1984) maintained the role of achievement-related motives in understanding achievement behaviour, but argued that this variable would interact with uncertainty orientation. Specifically, the affective basis suggested by Atkinson to underlie individual differences in achievement-related motives is argued to be an important determinant of performance. Sorrentino et al. (1984) add, however, that the effects of achievement-related motives on performance will be moderated by individua' differences in uncertainty orientation. The predicted interaction between uncertainty orientation and achievement-related motives was stated as follows: "Affective arousal of various motives (such as achievement-related motives) is assumed to be strongest in situations that are consistent with the person's uncertainty orientation." (Sorrentino et al., 1984, p. 190). In other words, performance differences reflecting achievement-related motives (success-oriented people outperforming failure-threatened people) were predicted to be greatest in situations that involve resolving uncertainty for uncertainty-oriented persons only. These differences

would be greatest in situations of relative certainty for those who are certainty-oriented.

Support for these predictions was provided in three studies reported by Sorrentino, Short, and Raynor (1984). In the first study it was argued that tasks of intermediate difficulty provide the greatest degree of uncertainty regarding one's possible outcome (relative to easy or difficult tasks where there is greater certainty that success or failure will be the outcome, respectively). As noted previously, one of the postulates of the theory of achievement motivation states that performance differences reflecting achievement-related motives are maximized where the subjective probability of success is intermediate (i.e., for moderate, rather than easy or difficult tasks). Sorrentino, Short, and Raynor (1984) argued that this would be true for uncertainty-oriented people only. For certainty-oriented people it was predicted that performance differences reflecting achievement-related motives would actually be greatest on tasks believed to be easy or difficult, as there would be less uncertainty associated with the outcome. Results were consistent with the Sorrentino et al. hypotheses since, for uncertainty-oriented subjects, those who were success-oriented outperformed those who were failure-threatened only if the task was believed to be of intermediate difficulty (most uncertain outcome). These characteristic differences reflecting achievement-related motives were only found where the task was believed to be easy or difficult (more certain outcomes) for certainty-oriented subjects.

The second study reported by Sorrentino et al. (1984) examined

performance on a task that was said to be the first in a contingent
string (where success on an initial task determines whether or not one
continues on to a successive stage) or in a noncontingent string (where
continuation to subsequent stages is independent of performance on the
present task). Raynor (1974) hypothesized that achievement-related
motives would be aroused to a greater extent for tasks that are linked
to future goals than for those that are not. It was suggested by
Sorrentino et al. (1984), however, that contingent tasks provide the
greatest uncertainty, as these involve uncertainty not only about the
outcome of the first task, but also about continuation on to the later
tasks. As predicted, success-oriented subjects outperformed
failure-threatened subjects only in the contingent path condition if
they were unc tainty-oriented, and only in the noncontingent path
condition if they were certainty-oriented. Similarly, the third study
reported by Sorrentino et al. (1984) found characteristic
achievement-related motive differences in performance (grades) for
uncertainty-oriented students only if the course was seen as
instrumental to their future goals. For certainty-oriented students,
if the course was seen as non-instrumental to future goals then
characteristic performance differences were found. In all of these
studies, uncertainty orientation, achievement-related motives, and the
perceived characteristics of the task were found to interact in
predicting performance. It is noteworthy in all three of these studies
that predictions made based on previous theories of achievement
motivation (Atkinson, 1964; Raynor, 1974) were supported for
uncertainty-oriented subjects, but exactly the reverse of these

predictions was found for certainty-oriented subjects.

In retrospect, the three studies reported by Sorrentino et al. (1984) may be reinterpreted as reflecting differences in the importance of self-evaluation (Sorrentino & Short, 1986). For example, in addition to having the most uncertain outcome, tasks of intermediate difficulty also allow "self" rather than "task" attributions for performance (Weiner, 1974); in other words, people can determine more about their ability based on performance on a moderately difficult task. Similarly, contingent tasks and tasks that are important for career goals may be most informative regarding one's ability; at each stage the individual will find out if he or she is good enough to attain the end goal. A study by Sorrentino and Roney (1986) tested the hypothesized interaction from Sorrentino, Short, and Raynor (1984), this time examining uncertainty orientation and achievement-related motives, in conjunction with the perceived diagnosticity of an achievement task, as influences on performance (replicating Trope, 1982). Characteristic performance differences as a function of achievement-related motives were found for uncertainty-oriented subjects only if the task was believed to be diagnostic of ability, and for certainty-oriented subjects only if the task was believed to be relatively nondiagnostic of ability. A situation that offers an opportunity to find out something new about one's ability level (a task that is perceived as highly diagnostic) appears to be of greater relevance to uncertainty-oriented people, and a relatively nondiagnostic task seems of greater relevance to certainty-oriented people. The extent to which a task involves finding out about one's

ability therefore appears to be important in conjunction with uncertainty orientation in determining when people's achievement-related motives are aroused.

An interesting feature of the research reported above examining the interactive relationship between uncertainty orientation, achievement-related motives, and characteristics of the achievement situation, is the occurrence of reversals in the situations that are not consistent with the individual's uncertainty orientation. For uncertainty-oriented people in situations that do not involve the resolution of uncertainty, and for certainty-oriented subjects in situations that do involve resolving uncertainty, failure-threatened people are often found to outperform success-oriented people. It has been proposed that this may occur because characteristic motives are not engaged in these cases (Sorrentino et al., 1984), and therefore failure-threatened individuals may perform well because anxiety associated with the fear of failure would not be aroused, and success-oriented people may not do well if their motive to strive to succeed is not aroused. Atkinson and Birch (1970) have provided a framework to explain why performance may be extreme in the opposite direction when characteristic motives are not engaged; they suggest that the removal of an "inhibitory force" results in a short term increase in positive motivation, and similarly removal of a positively motivating "instigating force" may result in a short-term decrease. Failure-threatened individuals may thus do very well, and success-oriented individuals poorly, if such motives are removed (e.g., in irrelevant situations).

This research indicates that understanding how achievement-related motives and characteristics of an achievement situation influence performance requires the inclusion of individual differences in uncertainty orientation as a moderating variable. The present thesis will examine the Sorrentino et al. (1984) hypotheses regarding motivation and performance in the context of a new approach that has been proposed for understanding achievement-related motivation. This new approach is based on self-discrepancy theory, a model that was developed to explain different affective experiences.

Self-discrepancy theory

Self-discrepancies and Affect

Self-discrepancy theory, posited by Higgins and his colleagues (Higgins, Klein, & Strauman, 1985; Higgins, Bond, Klein, & Strauman, 1986; Higgins, Strauman, & Klein, 1986; Higgins, Klein, & Strauman, 1987; Higgins, 1987; Strauman & Higgins, 1987), deals with the affective consequences of perceived discrepancies between abstract self-guides and the way we believe we actually are. The most basic principle of self-discrepancy theory is that we experience negative affect when we perceive discrepancies between different self-representations (for example, between our cognitive representation of the way we actually are, and that of abstract "selves" representing what we could be like, or should be like). It is hypothesized (and has been demonstrated by Higgins et al., 1985) that the intensity of experienced negative affect is positively related to the degree of experienced self-discrepancy. The theory also makes specific predictions about the relationships between different types of

self-discrepancy and different types of negative affect (specifically, dejection-related emotions versus agitation-related emotions; Higgins et al., 1985).

In distinguishing different self-discrepancies, Higgins and his colleagues suggest that there are different "domains" of the self, and different "standpoints" for the self. The domains postulated are the "actual self" (a cognitive representation of the way one really is), the "ideal self" (a representation of the way one would ideally like to be, or hopes to be), and the "ought self" (a representation of the way one is expected or obliged to be). As described by Higgins et al. (1985), "the difference between the 'ideal' self and the 'ought' self is reflected in the classic conflict between one's 'personal desires' and one's 'sense of duty' " (p. 53). Higgins (1987) suggested that ideal discrepancies are associated with the actual or anticipated failure to attain positive outcomes, and ought discrepancies are associated with actual or expected negative outcomes.

For each of the three domains of the self it was also hypothesized that there may be different self-representations associated with different "standpoints". These "selves" may be considered from one's "own" standpoint (the way we think we actually are, would like to be ideally, or ought to be), or from the standpoint of "others" (the way significant others see us, would like us to be, or feel we ought to be). The primary discrepancies of interest are those between the actual self and the ideal self (from one's own or another person's standpoint), and between the actual self and the ought self (from one's own or another person's standpoint). In other words, the main focus is on discrepancies between one of these abstract self-representations and

our perceived "actual" self.

A specific set of predictions from self-discrepancy theory focusses on the different affective experiences that are associated with different self-discrepancies (Higgins et al., 1985). It was hypothesized that a discrepancy between the actual/own self and the ideal/own self (called an ideal/own discrepancy) will result in feelings of dissatisfaction and disappointment. A discrepancy between the actual/own self and the ideal/other self (an ideal/other discrepancy) was predicted to result in feelings of shame, humiliation, and anger from frustration. If the actual/own self is discrepant from the ought/own self (an ought/own discrepancy), such feelings as guilt and worthlessness were predicted. If the discrepancy is between the actual/own self and ought/other self (ought/other discrepancy), such feelings as threat, apprehension, and fear of punishment are predicted. It should be noted, however, that most of the existing research has not focussed on these specific predictions; rather, research has focussed on the more general prediction that ideal discrepancies are generally associated with "dejection-related" emotions, and ought discrepancies with "agitation-related" emotions (see Higgins, 1987).

Initial evidence supporting these hypotheses from self-discrepancy theory came from a correlational investigation by Higgins, Klein, and Strauman (1985). In this study subjects completed the "Selves Questionnaire", a measure designed to assess self-discrepancies. This measure involves asking people to list traits that they feel describe their actual/own, ideal/own/, ideal/other, ought/own, and ought/other "selves". Discrepancies are measured by examining the number of times antonyms are listed for different selves (e.g., "shy" listed as an

actual/own trait, and "outgoing" listed as an ideal/own trait, would add one to the ideal/own discrepancy score). Correlations and partial correlations between ideal or ought discrepancies and a number of different measures of affect generally supported predictions from self-discrepancy theory. In general, dejection-related affect (e.g., "dissatisfied", "blue", "blameworthy") were more strongly associated with ideal discrepancies, and agitation-related emotions (e.g., "irritated", "suddenly scared for no reason") were associated with ought discrepancies.

Additional research testing hypotheses from self-discrepancy theory has taken a different approach. Several studies have been conducted using "priming" to study the effect of making ideal or ought self-discrepancies salient. Again, the expectation was that making an ideal discrepancy salient would evoke dejection-related emotions, and making an ought discrepancy salient would evoke agitation-related emotions. This was found in two studies reported by Higgins, Bond, Klein, and Strauman (1986). The first study demonstrated that, when asked to think about a negative event, subjects with chronic ideal discrepancies felt dejection-related affect (e.g., sad), whereas those with chronic ought discrepancies reported experiencing more agitation-related affect (e.g., afraid). In the second study reported, it was found that subjects who have both types of discrepancy reported experiencing dejection-related affect if made to think about their ideal standards, and reported experiencing greater agitation-related affect if their ought standard was primed. Two additional studies reported by Strauman and Higgins (1987) demonstrate that even a more indirect priming task, presenting subjects with traits that represent

an ideal or ought discrepancy for them as part of a task about other people, produced similar results. Presenting traits that represent mismatches between people's actual and their ideal or ought selves produced short-term increases in agitation-related affect and increased physiological arousal for ought-discrepant subjects, and produced short-term increases in dejection-related affect and decreased arousal for ideal-discrepant subjects. This research thus suggests that experiencing different self-discrepancies (ideal or ought) results in different affect.

Self-discrepancies and achievement

There is some evidence to suggest that self-discrepancies have implications for achievement. Some research has been conducted examining the possibility that people might be motivated by perceived discrepancies between the way they are and the way they would like to be. This has been done within the context of differences in achievement-related motives. Martire (1956), for example, found that people scoring high on a projective measure of achievement motivation also demonstrated a larger discrepancy between their reported rank-ordering of "importance of standing high on" a number of achievement-related traits, and the rank-ordering of extent to which they feel they do possess the trait, than did those scoring low on the achievement measure. Similarly, Reimanis (1964) found a positive correlation between achievement imagery using a projective measure of achievement motivation and reported discrepancies between how subjects actually feel, and the way they would feel if they attained their goals. These studies suggest a relationship between achievement motivation and perceived discrepancies between the way one is and one's

goals. It should be noted, however, that these studies used an earlier approach to the study of achievement motivation that did not include a separate measure to evaluate the "tendency to avoid failure" (see the previous discussion of Atkinson's conceptualization of achievement-related motives), and therefore the relationship between self-discrepancies and motivation examined in this research is relevant only to the positive "motive to strive for success". This earlier research does, however, imply a positive relationship between self-discrepancies (particularly from our "ideals" or goals) and motivation.

Higgins, Strauman, and Klein (1986, p.48-50) have suggested a possible link between self-discrepancy theory and achievement, specifically proposing that different self-discrepancies might have different effects on performance. It was suggested that "failure relative to an ideal/own guide...produces dissatisfaction that could spur the individual to try harder, whereas failure relative to an ought/other guide...produces fear of punishment and anxiety that could paralyze the individual" (Higgins et al., 1986, p. 49). This proposal thus extends the previous work linking self-discrepancies to achievement, suggesting that self-discrepancies may be associated with enhanced or inhibited performance, depending on the specific type of self-guide involved in the discrepancy. Following from these proposals, Higgins et al. (1986) speculated that different motivational effects of the two types of discrepancy might account for individual differences in achievement-related motives. Specifically, it was proposed that success-oriented people might be particularly inclined to experience ideal/own discrepancies, and failure-threatened people may

be particularly inclined to experience ought/other discrepancies. These ideas have not yet been empirically tested, and thus the present thesis will provide an initial test of them.

Chapter III

Statement of the Problem

<u>Uncertainty orientation, achievement-related motives, and</u>

<u>self-discrepancies as predictors of performance</u>

The purpose of the present investigation is to examine individual

differences in uncertainty orientation and achievement-related motives

as possible moderators of the relationship between self-discrepancies

and performance. Specifically, whether or not one experiences

self-discrepancies may be relevant to uncertainty orientation.

Self-discrepancies involve uncertainty about one's ability in relation

to the specific standard used (i.e., "will I be able to live up to

this"?). Subsequent behaviour relevant to the discrepancy (in the case

of the present investigation, achievement-related behaviour) would

therefore involve the resolution of this uncertainty. Where there is

no self-discrepancy there is less uncertainty because the individual

has lived up to the specific standard. Based on the research reported

by Sorrentino et al. (1984) and by Sorrentino and Roney (1986), it

would thus be expected that characteristic motivational tendencies

(i.e., for success-oriented people to outperform failure-threatened

people) will be greatest where a self-discrepancy is experienced, but

only for uncertainty-oriented people for whom the associated

uncertainty would be "relevant". The presence of a salient discrepancy

would not be expected to lead to differences between success-oriented

and failure-threatened subjects who are certainty-oriented, as the

uncertainty associated with this would not be relevant for them. For these certainty-oriented individuals, it is in situations where no self-discrepancy is experienced that differences in achievement-related motives would likely be maximized. The interactive approach presented by Sorrentino and his colleagues therefore leads to predictions that differ from those of self-discrepancy theory.

Another possible way of conceptualizing the predictions for the present research is in terms of different people having learned to cope with different situations (Sorrentino & Short, 1986). Sorrentino and Short (1986) propose that situations that enable a person to resolve uncertainty will be those where the uncertainty-oriented person is "in his or her element"; they have learned, possibly from an early age, to deal with, and possibly even prefer, such situations. Thus, when these people experience a self-discrepancy, the uncertainty of not knowing whether they can bring their "actual self" in line with their abstract self-guides (e.g., ideal/own self, ought/other self) creates a situation that they are used to dealing with. Where there is no uncertainty, however, the situation is not as important to these people who value discovering things about themselves and their environment, and their motivation is not aroused. Certainty-oriented people, however, are proposed by Sorrentino and Short (1986) to be quite different, having learned to cope by seeking situations where they do not have to deal with uncertainty. Results consistent with this hypothesis were presented by Sorrentino et al., (1988, study 2, discussed previously); when the uncertainty surrounding some issue had to be dealt with (i.e., the issue was personally relevant), certainty-oriented people were less likely to strive to resolve this

uncertainty themselves (by focussing on content associated with the issue) and instead were more likely to rely on expert opinion. For these people, then, a state of experiencing no discrepancy, and therefore knowing or believing that their "actual self" is in line with their self-guides would be preferred, as it is more like situations that these individuals have learned to adapt to: namely, situations relatively free of uncertainty. It is under these circumstances that the certainty-oriented person is expected to behave "in his or her characteristic way", in accordance with their motives. If uncertainty is involved, for example via a self-discrepancy, it was hypothesized that the situation would not be one certainty-oriented people have learned to deal with, and thus they would not behave in their "characteristic" manner (Sorrentino and Short, 1986, suggest that they may "tune out" such situations). It has been proposed that the influence of motives on performance is not conscious (e.g., see Biernat, 1988); it may be the case, therefore, that non-conscious, "automatic" influences of this type are engaged only in situations that one has learned to deal with.

The primary difference in the predictions from self-discrepancy theory and the theory of uncertainty orientation lies with certainty-oriented people. This is similar to previous research involving uncertainty orientation. For example, the prediction that performance differences between success-oriented and failure-threatened individuals would be greatest on tasks (performance in school) that are highly instrumental to future career goals (Raynor, 1974) was supported only for uncertainty-oriented people (Sorrentino, Short, & Raynor, 1984, Study 3). For certainty-oriented subjects, however, the

difference in grades reflecting achievement-related motives was greatest for courses that were not instrumental to their career goals. Similarly, Sorrentino and Roney (1986) found that for certainty-oriented people characteristic performance differences reflecting achievement-related motives were observed on tasks that were not perceived as diagnostic of ability. The predictions relating uncertainty orientation to self-discrepancies are similar, agreeing with Higgins et al. (1986) that self-discrepancies may be motivating (positively for success-oriented people, and negatively for failure-threatened people), but only for uncertainty-oriented individuals, because self-discrepancies involve uncertainty to be resolved. For certainty-oriented people it is where no self-discrepancy is experienced that success-oriented subjects would be expected to outperform failure-threatened subjects (as was found previously for non-instrumental and non-diagnostic tasks).

The different predictions derived from self-discrepancy theory and the theory of uncertainty orientation imply different sources of motivation. The proposals by Higgins, Strauman, and Klein (1986) imply that motivation would come from self-discrepancies themselves, with different motivational effects resulting from different types of discrepancy. The predictions based on previous work involving uncertainty orientation, however, implies that self-discrepancies will determine whether or not the individual's typical internal motivation is activated, depending on their uncertainty orientation. Specifically, for uncertainty-oriented people internal motives (success-oriented or failure-threatened) are expected to be activated in situations where there is a self-discrepancy, whereas for

certainty-oriented people these internal motives would be activated
when there is no self-discrepancy (and thus less uncertainty).

The only existing data relating uncertainty orientation to
self-discrepancies did not include an examination of
achievement-related behaviour. It was found that uncertainty-oriented
people are more likely to experience self-discrepancies of all four
types (ideal/own, ought/own, ideal/other, and ought/other) than are
certainty-oriented people (Roney & Sorrentino, 1989). In this study
self-discrepancies were measured using the "Selves Questionnaire" (see
Higgins, Klein, & Strauman, 1985), which asks people to list traits
that describe each type of self, both from their own and a significant
other's standpoint, as described previously. Also, on several scales
measuring chronic affective tendencies uncertainty-oriented people
reported experiencing more negative (and less positive) affect than did
certainty-oriented people. Although there are a number of ways that
such differences may have arisen, these findings are at least
consistent with the idea that self-discrepancies (and perhaps the use
of abstract self-standards in general) are particularly relevant for
uncertainty-oriented people, and it may be uncertainty-oriented people
who are more accustomed to dealing with them.

Summary: Purpose of the present research and hypotheses

The proposed research is intended to examine the relationship
between self-discrepancies and achievement behaviour as a function of
individual differences in uncertainty orientation and
achievement-related motives. Specifically, based on previous research
by Sorrentino and his colleagues (e.g., Sorrentino et al., 1984;
Sorrentino & Roney, 1986) it is predicted that individual differences

reflecting achievement-related motives (with success-oriented people outperforming failure-threatened people) will be greatest when self-discrepancies are experienced for uncertainty-oriented people, and when self-discrepancies are not experienced for certainty-oriented people. Two studies will test these predictions. The first study to be reported is a field study that will examine self-discrepancies and performance as they occur naturally in an academic setting. The second study is an experiment that will involve manipulating whether or not people live up to their standards (ideal/own or ought/other, because these are the two suggested by Higgins et al., 1986 to be relevant for achievement), and observing the effect of this on subsequent performance. Both studies will thus examine the effect of self-discrepancies on performance as a function of subjects' uncertainty-orientation and achievement-related motives.

Chapter IV

Study One

Outline and Purpose

The purpose of this study is to investigate individual differences in uncertainty orientation and achievement-related motives as possible moderators of the relationship between self-discrepancies and achievement. This was done in a field study using perfor..ance (grades) in a university course. Specifically, first-year university students were questioned early in the year about their self-standards for their academic performance (ideal and ought standards, from their own, and a significant other's, perspective), and how they expect to do in the course. From this questionnaire "expected" discrepancies are inferred, since any reported discrepancies between expected performance and the various standards were indicated <u>before</u> there had been any feedback regarding performance in the course.

Later in the year (just after feedback from midterm exams has been received) a sample of these subjects were contacted and asked to return for a second session. In this second session subjects completed a questionnaire identical to that completed earlier in the year, asking them to indicate their self-standards for the course at that time, and about their affective responses to their performance in the course to that time. Discrepancies measured at the first session were examined in relation to performance on the midterm examination for the course (which occurred shortly before the second session), and discrepancies

measured at both times were examined in relation to performance on the final examination at the end of the year. This allows an examination of both "expected" discrepancies (based on the questionnaire completed in the initial session), and discrepancies that may occur within the course (i.e., when a person's <u>actual</u> performance in the course fails to meet their standards). Individual differences in achievement-related motives and uncertainty orientation were assessed in the initial session early in the academic year.

This study is thus an initial investigation of the implications of self-discrepancies for achievement, both from the perspective of the theory of uncertainty orientation (Sorrentino, Short, & Raynor, 1984), and from the perspective of self-discrepancy theory (Higgins, 1987). The principal hypotheses for this study follow from the former theory, but predictions from the latter will also be tested. Only ideal/own and ought/other discrepancies will be examined in relation to performance because these are the discrepancies predicted by Higgins et al. (1986) to be relevant for motivation.

Principal Hypotheses: The Theory of Uncertainty Orientation

The primary predictions for the present study are based on the previously discussed work by Sorrentino and his colleagues suggesting that characteristic performance differences reflecting achievement-related motives (i.e., success-oriented outperforming failure-threatened persons) will occur only if the situation matches the individual's uncertainty orientation. Experiencing a self-discrepancy is expected to be relevant for uncertainty-oriented students, because uncertainty about one's ability would be made salient

(i.e., Can I live up to this standard?), and future performance will serve to resolve this uncertainty. Experiencing no discrepancy is expected to be relevant for certainty-oriented students, because in this case there is no uncertainty to be resolved: the individual <u>does</u> live up to their standard. Based on past research on uncertainty orientation it is therefore predicted that success-oriented students will outperform failure-threatened students to a greater extent if they experience a self-discrepancy for those who are uncertainty-oriented. For certainty-oriented people it is predicted that success-oriented students will outperform failure-threatened students to a greater extent if there is no self-discrepancy. The expected result following from the previous uncertainty orientation research, therefore, would be a three-way interaction involving achievement-related motives, uncertainty orientation, and self-discrepancies.

Secondary Hypotheses: Self-discrepancy Theory

One of the proposals by Higgins, Strauman, and Klein (1986) is that different types of self-discrepancy may have opposite influences on performance. Specifically, based on previous research involving self-discrepancies and affect, it was suggested that a discrepancy from one's ideal/own standard leads to feelings of dissatisfaction and disappointment, which may lead to greater effort to eliminate these feelings (by striving to perform better). A discrepancy from one's ought/other standard, however, would lead to feelings of fear and anxiety, emotions that may impede performance. From self-discrepancy theory, then, it would be predicted that ideal/own discrepancies will have a positive motivational influence (enhance performance), and

ought/other discrepancies will have a negative influence (impede performance). Higgins, Strauman, and Klein (1986) further suggested that these different motivational effects may account for performance differences reflecting achievement-related motives. They suggested that success-oriented people may be prone to experiencing ideal/own discrepancies, and failure-threatened people may be particularly prone to experiencing ought/other discrepancies, resulting in positive or negative motivation, respectively.

Method

Subjects

All subjects in this study participated in fulfillment of a course requirement. In testing sessions early in the academic year 596 students participated, 208 males and 388 females. Of these subjects 193 (72 male and 121 female) returned to participate in a second session approximately midway through the academic year. In addition to those who were willing to return for the second session, 164 of the students who had participated in the initial session were contacted and consented to have their grades used in this study. The resulting samples are thus 357 subjects for analyses involving time 1 responses and academic performance, and 193 subjects for analyses including the questionnaires from the second session.

Individual Difference Measures

Uncertainty Orientation

Separate measures are used to assess uncertainty-orientation and certainty-orientation. Orientation toward resolving uncertainty ($\underline{n}$ Uncertainty) is assessed using a projective measure following scoring criteria outlined by Frederick, Sorrentino, and Hewitt (1987); this scoring system was developed based on the scoring system that had been previously established for the assessment of $\underline{n}$ Achievement (Atkinson, 1958), described in the next section. Stories elicited using sentence leads are scored as containing uncertainty-resolution imagery if any one of four criteria is met. The first criterion is a statement of a character approaching some desired experience that has "an uncertain possibility of being realized", $\underline{or}$, a character seeking to understand

some "unknown". An example of the first type would be a story in which a student decides to take a difficult course that they are not sure they can pass, and an example of the second type would be a story in which a scientist is trying to gain an understanding of some phenomenon. The second criterion involves a character in the story attempting to resolve an inconsistency between two ideas (i.e., reconciling two inconsistent cognitions). An example of this would be a story in which a student likes two different subjects and is working to decide which to major in. The third criterion involves a character seeking to resolve an inconsistency between an experience and an established schema. This criterion would be used in any story in which a character encounters something that is not as they expected, and then attempts to resolve this discrepancy between their experience and their expectations, either by changing their schema, or by trying to understand why this particular experience "does not fit". The fourth criterion is whether concern is expressed by a character about an "incompatibility between an idea and his/her behaviour". This criterion is similar to the third, only this one specifically involves one's behaviour being the source of an inconsistency, as in the case where a character believes they should be a good student, but they end up "slacking off" and failing; if the character then works hard to become a good student afterwards, then the story would be scored under criterion 4.

Stories meeting _any_ of these four criteria are assigned a score of +1, and are subsequently scored for 10 subcategories, indicating the richness of the imagery. The scoring of any of these subcategories adds +1 to the scoring, making the highest possible score for a single

story +11.   If a story includes some reference to the mastery of uncertainty but fails to meet one of the four criteria ("Doubtful Imagery"), then a score of 0 is assigned. If no reference is made to uncertainty resolution ("Unrelated Imagery"), then a score of -1 is assigned.   Four stories are used, and the scores for the four are summed making the lowest possible total score -4 and the highest possible score +44.   This projective measure is scored by a trained expert scorer (whose scoring correlates .90 or better with practice materials presented by Frederick, Sorrentino, & Hewitt, 1987, for $\underline{n}$ Uncertainty).   This score is thus used as an indicator of uncertainty-orientation.

An acquiescence-free authoritarianism scale (Cherry & Byrne, 1977) is used to assess certainty-orientation (see Appendix A).   The rationale for using an authoritarianism measure is based in Rokeach's (1960) view of high authoritarians as being "oriented" toward the familiar.

A study undertaken to assess the test-retest reliability of these measures (Sorrentino, 1987) revealed good test-retest reliability for the authoritarianism measure ($\underline{r}$ (89) = .83, p<.001), but relatively low reliability for the projective $\underline{n}$ Uncertainty measure ($\underline{r}$ (95) = .28, p<.05).   The low reliability of the projective measure is consistent with previous research using projective measures, most notably $\underline{n}$ Achievement, and has been a major source of criticism of such measures (Entwistle, 1972).   Others (Atkinson, Bongart, & Price, 1977; McClelland, 1980) have suggested that traditional reliability measures underestimate the true stability of these measures, and that a better indicator is the fact that they are predictive anywhere from

several months to over 25 years (McClelland & Pilon, 1983) after assessment of the individuals' motives. The validity of the uncertainty orientation measures is demonstrated in previous research including uncertainty orientation (e.g., Sorrentino et al., 1984; Sorrentino & Hewitt, 1984; Sorrentino & Roney, 1986; Sorrentino et al., 1988), all of which involved predicting behaviour between 3 and 6 months after administration of the individual difference measures. One possible explanation for the low test-retest reliability of projective measures is that specific biases in the testing situation (for example, not wanting to write the same type of story twice) may influence the retest measure (McClelland, 1980).

The measure of uncertainty orientation is a composite of the projective n Uncertainty measure and the authoritarianism measure (the measures are standardized and then the latter is subtracted from the former). These are two distinct components of uncertainty orientation (see Sorrentino et al., 1984). They may be thought of as independent dimensions, one reflecting an orientation toward resolving uncertainty, and the other reflecting an orientation toward avoiding ambiguity; it is possible for one to be high in n Uncertainty and in authoritarianism, or to be low in both. For the present sample there was no significant correlation between these two components (r (596) = .02, n.s.). It is only those who score high on a resultant measure (i.e., score relatively high in n Uncertainty and relatively low in authoritarianism) who are categorized as being uncertainty-oriented, and only those who score relatively high in authoritarianism and low in n Uncertainty who are categorized as certainty-oriented.

Achievement-related Motives

In assessing achievement-related motives, separate measures are used to infer the motive to strive for success and that to avoid failure. Success orientation is assessed from a projective measure ($\underline{n}$ Achievement). For this measure, stories elicited from sentence leads are scored by an expert scorer (whose scoring correlates .90 or better on materials supplied by Smith and Feld, 1958) using three criteria, as outlined by McClelland, Atkinson, Clark, and Lowell (1958). The first of these is evidence in the story of competition with a standard of excellence; the key here is evidence of trying to do as well as possible at some activity. Examples of this would include stories in which a student is striving for a good grade, or in which a worker is trying to do a good job. The second criterion involves stories where one of the characters is involved in an activity that would be characterized as a "unique accomplishment"; this would include any accomplishment that would mark the character as a "personal success", such as inventions, writing a book, or making a major discovery. The third criterion is evidence of a character's long-term involvement in attaining an achievement goal. A common example of this occurs in stories in which a character is striving toward a career goal, such as going to medical school. As in the scoring of $\underline{n}$ Uncertainty, described previously, a story meeting any of these three criteria is scored +1 for having achievement imagery, and is also scored for 10 subcategories that indicate the richness of the achievement imagery in the story, making the maximum score 11. Stories with doubtful

achievement imagery are scored 0, and those with unrelated imagery are scored -1. The scores for four stories are summed, making the possible range for the overall score -4 to +44. This score is used as an index of success-orientation.

"Fear of failure" is inferred using the Mandler and Sarason (1952) Test Anxiety Questionnaire (see Appendix A). This measure assesses the extent to which anxiety is experienced in testing situations, and thus is used to assess the fear of failure. Smith (1964) found the first third of the Mandler and Sarason (1952) Test Anxiety scale to correlate between .84 and .90 with scores for the entire scale.

Sorrentino (1987) found the test anxiety measure to have good test-retest reliability (r (94) = .71, p<.001), but the projective n Achievement measure had relatively low reliability (r (95) = .29, p<.05). The issue of the low reliability of projective measures has been discussed previously in the section describing the uncertainty orientation measure. The validity of this way of measuring achievement-related motives has been demonstrated in many studies examining this construct (see Atkinson & Feather, 1966; Atkinson & Raynor, 1974), as well as in research examining these motives in interaction with uncertainty orientation (Sorrentino, Short, & Raynor, 1984; Sorrentino & Roney, 1986).

The measure used for achievement-related motives is a composite of these two measures, with standardized test anxiety scores subtracted from standardized n Achievement scores. As is the case with the uncertainty orientation measure, these are believed to be separate determinants of achievement-related motives. These are considered to

be competing motives (see Atkinson & Raynor, 1974). The two components were not found to be correlated in the present sample (r (592) = .01, p>.05). Success-oriented people are those who are relatively high in n Achievement and are also relatively low in test anxiety. Failure-threatened people are the opposite, scoring high in test anxiety and low in n Achievement.

Administration of Individual Difference Measures

The measures required for categorization according to achievement-related motives and uncertainty orientation were administered early in the academic year to a large number of students. Administration of these materials and determining achievement-related motive scores and uncertainty orientation scores were done according to procedures used in previous research (Sorrentino, Short, & Raynor, 1984; Sorrentino & Hewitt, 1984; Sorrentino & Roney, 1986).

The materials used to assess uncertainty orientation and achievement-related motives were administered in groups ranging from 20 to 30 students per session. First the projective tests from which n Achievement and n Uncertainty are scored were administered according to standard procedures (Atkinson, 1958, Appendix 3). Four sentence leads were used to elicit fantasy material (see Appendix A). Three of the sentences used correspond to pictures suggested for use by Atkinson (1958) as follows: (2) two persons are working in a laboratory on a piece of equipment; (7) a young person is standing: a vague operation scene is in the background; (1) an older person is talking to a younger person (the numbers in parentheses indicate the corresponding picture

listed by Atkinson). The fourth sentence used was developed primarily for the purpose of assessing uncertainty orientation; this sentence is: a person is sitting wondering what may happen. This same set of sentences has been used in past research to measure both n Achievement and n Uncertainty (Sorrentino et al., 1984; Sorrentino & Hewitt, 1984; Sorrentino & Roney, 1986).

The final classification of subjects is based on tertile splits on the resultant achievement and uncertainty measures; there is a significant correlation between the resultant uncertainty orientation measure and the resultant achievement-related motives measure for the current sample (r (592) = .15, p<.01). This correlation is not problematic for the present research, however, as the independent effects of these two variables will be examined by including both in analyses. The strongest correlation among the components of these two measures is that between the projective n Uncertainty and n Achievement measures (r (592) = .27, p<.001). There was also a smaller, but significant, correlation between the self-report authoritarianism and test anxiety measures (r (592) = .12, p<.01). None of the correlations between either self-report measure was significantly correlated with either of the projective measures.

Subjects scoring in the middle tertile are excluded from analyses involving achievement-related motives or uncertainty orientation. This is done because previous research raises questions as to the validity of moderate scores on these measures (see Sorrentino & Short, 1977). Specifically, rather than scoring between the high and low groups on a variety of different dependent measures, moderates appear to fluctuate

in a manner that is difficult to predict. Because of this, only subjects who are exclusively uncertainty- or certainty-oriented and exclusively success-oriented or failure-threatened are included in analyses involving individual differences. Appendix B presents tables of means associated with several of the major analyses from both studies of this thesis, with the inclusion of moderates. These tables reveal that the performance of individuals scoring in the middle tertile is often discontinuous, consistent with Sorrentino & Short (1977), and suggesting that the exclusion of these subjects from analyses is justified.

Self-discrepancy Measures

In addition to the measures described above, a brief questionnaire was administered during the initial group testing session (see Appendix C). This questionnaire asked the students what they perceive as "ideal" grades, and the grades they "ought" to obtain in a course (introductory psychology, since this course was common to all subjects). This involved describing the distinction between the two types of standard, and subsequently asking subjects to indicate the grades that represent their "ideal" (hopes and aspirations) and their "ought" (sense of duty or obligation). These were asked twice, once from their own perspective, and once from the perspective of significant others. An additional question was included asking what grade these students realistically thought they would get in the course. This type of measure has not been used in previous research, but it should provide an indication of student's ideal and ought

self-standards for their academic performance. Since this questionnaire was completed early in the academic year, before any feedback had yet been given regarding performance in the course, any discrepancies between the "actual" expected grade and the "ideal" and "ought" grades listed will be assumed to represent "expected" discrepancies. In addition to asking what grade defines students' ideal and ought standards (and a significant other's ideal and ought standards for them), the questionnaire included questions as to how important each of these self-standards is to them.

Several months after the initial testing sessions (and shortly after receiving feedback on mid-year examinations) a sample of subjects who had participated in the initial session were called back to see if they would be willing to participate in a second session. The second session was conducted in groups of up to 20 students per session. The purpose of this second session was to find out how these students actually were doing in introductory psychology at that time, and to assess their perceived self-discrepancies at this time, as well as including a number of questions aimed at evaluating their affective responses to this performance.

Subjects were told that the study is concerned with their standards for, and their feelings about, their course grades in the introductory psychology course. First subjects were given a questionnaire similar to the one that they completed earlier in the year assessing their self-standards (ideal and ought, from their own and from a significant other's perspectives) for the introductory psychology course (see Appendix C). In this second version of the

questionnaire subjects were asked to indicate, if they were willing, their current grade in their introductory psychology course, and also to indicate the grades that represent their ideal/own, ideal/other, ought/own, and ought/other standards. As in the earlier questionnaire, subjects were also asked how important each of these standards is to them. Whereas the version of this questionnaire administered earlier in the year is intended to indicate expected discrepancies (those anticipated even before there has been feedback for the course), this measure should reflect discrepancies that may arise in the process of receiving performance feedback.

The difference between subjects' expected grade (time 1 measure) or their actual grade after the midterm exam (time 2 measure) and the grade indicated as representing each of the four self-standards will be used as a measure of self-discrepancies. Subjects indicating an expected grade (or whose actual grade as of the midterm exam) exceeds their standards will be classified as having no discrepancy; grades in a course represent a unidirectional continuum (more is better), and therefore exceeding one's standards likely does not present a discrepancy that one would be concerned with, and wish to reduce. The more subjects' standards exceed their expected or actual grades, the greater their discrepancy score. Median splits were done on this variable, categorizing subjects as being high or low in self-discrepancies; this was done for analyses of variance in which level of self-discrepancy was included as an independent variable. Exploratory analyses comparing subjects high or low in self-discrepancies revealed that these groups differ significantly in

both components of the discrepancy measure (magnitude of the self-standard and actual or expected performance), suggesting that this measure does not reflect differences in performance only or differences in self-standards only, but rather the two in combination.

In a second questionnaire subjects were asked about their feelings about their academic performance in introductory psychology (see Appendix C). This questionnaire asked the students about their affective reactions to their grade in introductory psychology. These affect items include a number of "dejection-related" emotions (as in Higgins et al., 1985), including such feelings as dissatisfaction and disappointment, as well as "agitation-related" emotions such as anxiety and fear. In addition, a range of other types of affect were also included in this questionnaire.

The primary dependent measures used to assess the role of these influences on performance are subjects' grades on the midterm examination, and on the final exam in this course; these exams are common to all students taking the course, and therefore difficulty will be constant. All subjects participating in the second session were asked for their consent to access their grades. Of the 193 subjects who participated in the second session, all but 15 consented to have their grades used as part of this study. In addition, 165 students were contacted who had participated in the first session, but not in the second, and all but one consented to have their grades used for the study.

Results

Individual Differences in Self-standards and Self-discrepancies

Since this study is correlational, relations between the individual difference constructs of interest and the self-standards reported and self-discrepancies, as well as the self-rated importance of each standard to the individual, should be noted. Specifically, analyses were done comparing the groups that are to be used in subsequent analyses: uncertainty-oriente or certainty-oriented, and success-oriented or failure-threatened. Two-way analyses of variance were used with uncertainty orientation and achievement-related motives as between-subjects factors. The means for these groups on self-standards, importance of these standards to them, expected performance, and self-discrepancies as measured at the first session are presented in Tables 1 and 2, and as measured at the second session (including reported actual performance to that time) are presented in Tables 3 and 4. Separate tables are presented for uncertainty orientation and achievement-related motives because no significant interactions were found between these variables.

Analyses done on expected grade and each of the four standards (ideal/own, ideal/other, ought/own, and ought/other) reported by subjects in the first session revealed only two significant effects. A significant main effect was found for achievement-related motives on expected grades in introductory psychology, F (1,273) = 6.13, $p < .05$. Success-oriented students expected a higher grade (M = 77.08) than did failure-threatened students (M = 74.89). The only other

Table 1

Mean Time 1 Self-standards, Self-discrepancies, and Importance
of Standards as a Function of Uncertainty Orientation

	Uncertainty Orientation	
	Certainty-oriented	Uncertainty-oriented
Performance Standards		
Ideal/own	81.20 %	82.65 %
Ideal/other	80.32 %	80.46 %
Ought/own	75.51 %	76.89 %
Ought/other	76.34 %	76.07 %
Expected Grade	75.41 %	76.71 %
Self-discrepancies		
Ideal/own	5.79	5.95
Ideal/other	4.98	3.70
Ought/own	.09	.18
Ought/other	1.04	-.68
Importance		
Ideal/own	2.02	2.11
Ideal/other	2.41	3.17
Ought/own	1.82	1.91
Ought/other	2.57	3.19

Note: lower scores represent greater importance

Table 2

Mean Time 1 Self-standards, Self-discrepancies, and Importance
of Standards as a Function of Achievement-related Motives

	Achievement-related Motives	
	Failure-threatened	Success-oriented
Performance Standards		
Ideal/own	80.56 %	83.14 %
Ideal/other	80.12 %	80.63 %
Ought/own	75.38 %	76.92 %
Ought/other	75.96 %	76.43 %
Expected Grade	74.89 %	77.08 %
Self-discrepancies		
Ideal/own	5.67	6.04
Ideal/other	5.15	3.63
Ought/own	.49	-.18
Ought/other	1.02	-.55
Importance		
Ideal/own	1.99	2.13
Ideal/other	2.70	2.86
Ought/own	1.87	1.86
Ought/other	2.77	2.96

Note: lower scores represent greater importance

Table 3

Mean Time 2 Self-standards, Self-discrepancies, and Importance
of Standards as a Function of Uncertainty Orientation

| | Uncertainty Orientation | |
	Certainty-oriented	Uncertainty-oriented
Performance Standards		
Ideal/own	78.58 %	81.98 %
Ideal/other	77.71 %	80.45 %
Ought/own	73.91 %	75.84 %
Ought/other	75.05 %	74.00 %
Grade after 1st term	68.65 %	73.46 %
Self-discrepancies		
Ideal/own	9.93	8.52
Ideal/other	9.02	6.98
Ought/own	5.26	2.38
Ought/other	6.40	0.54
Importance		
Ideal/own	2.12	2.25
Ideal/other	2.95	2.82
Ought/own	2.04	1.68
Ought/other	2.81	2.75

Note: lower scores represent greater importance

Table 4

Mean Time 2 Self-standards, Self-discrepancies, and Importance
of Standards as a Function of Achievement-related Motives

| | Achievement-related Motives | |
	Failure-threatened	Success-oriented
Performance Standards		
Ideal/own	79.63 %	80.98 %
Ideal/other	78.56 %	79.66 %
Ought/own	74.72 %	75.04 %
Ought/other	74.63 %	74.42 %
Grade after 1st term	69.20 %	73.11 %
Self-discrepancies		
Ideal/own	10.43	7.87
Ideal/other	9.31	6.55
Ought/own	5.52	1.92
Ought/other	5.43	1.30
Importance		
Ideal/own	2.05	2.34
Ideal/other	2.59	3.21
Ought/own	1.83	1.89
Ought/other	2.61	2.96

Note: lower scores represent greater importance

significant effect was a main effect for achievement-related motives on ideal/own standards, F (1,272) = 10.10, p<.05. Success-oriented people indicated higher ideal/own standards (M = 83.14) than failure-threatened people did (M = 80.56).

Four self-discrepancy measures were calculated using the difference between each of the four self-standards reported in the initial session and expected grade; thus, for example, a person who indicated that they expected to get a grade of 70% in the course and whose ideal/own standard was to receive 80% would have an ideal/own discrepancy of 10. Two-way analyses of variance on these discrepancy scores revealed no significant effects for either uncertainty orientation or achievement-related motives.

In addition to indicating the grade that represented their various standards, subjects were also asked the importance of each standard for them, on a seven-point rating scale. Two-way analyses of variance on these ratings revealed significant uncertainty orientation main effects for both types of standard (ideal and ought) from a significant other's standpoint. Certainty-oriented people rated both their ideal/other (F (1,267) = 15.29, p<.01) and ought/other standards (F (1,265) = 8.73, p<.01) as more important (M s =2.41 and 2.57, respectively, with low scores representing greater importance) than did uncertainty-oriented subjects (M s = 3.17 and 3.19, respectively). There were no significant differences for the two types of standard from subject's own standpoint.

At the second session those subjects who returned again indicated their standards as well as their performance in the introductory

psychology course at that time (just after the midterm exam). There was considerable stability for all four types of standard from time 1 to time 2 (r s between .51 and .57, all p<.001). Two-way analyses were also done on these items with uncertainty orientation and achievement-related motives as independent variables. There was a significant main effect for uncertainty o__entation on grades after the midterm examination, F (1,109) = 6.58, p<.05, and a marginally significant main effect for achievement-related motives, F (1,109) = 3.49, p<.07. Uncertainty-oriented students reported having higher grades (M = 73.46) than did certainty-oriented subjects (M = 68.65), and success-oriented students reported a higher average (M = 73.11) than did failure-threatened students (M = 69.20). Although this measure was based on self-reports of grades, and thus is susceptible to distortion, analyses on actual grades on the midterm exam (see next section) revealed a significant main effect for uncertainty orientation, and a non-significant trend for achievement-related motives, consistent with the effects reported here. Also, a strong correlation was found between subjects' self-reported grade after the midterm exam and their actual final grade in the course (r (180) = .87, p<.001). Analyzing subjects' ideal/own standards after the midterm, a significant main effect was found for uncertainty orientation, F (1,109) = 7.81, p<.01. Uncertainty-oriented subjects indicated a higher ideal/own grade (M = 81.98) than did certainty-oriented subjects (M = 78.58). Analyzing ideal/other standards, a marginally significant uncertainty orientation main effect was revealed, F (1,109) = 3.70, p<.06. Again, uncertainty-oriented

subjects reported a higher ideal grade from a significant other's perspective ($\underline{M}$ = 80.45) than did certainty-oriented subjects ($\underline{M}$ = 77.71). No other significant main-effects or interactions were found in analyses on the self-standards as measured at the second session.

Self-discrepancy measures were calculated based on responses to the questionnaire administered at the second session by subtracting each subject's performance in introductory psychology up to that point from each of the four standards as they were reported at that time. Analyzing for ideal/own discrepancies, only a marginal main effect was found for achievement-related motives, $\underline{F}$ (1,109) = 3.39, p<.07. Failure-threatened subjects had greater ideal/own discrepancies ($\underline{M}$ = 10.43) than did success-oriented subjects ($\underline{M}$ = 7.87). Analyzing for ought/own discrepancies, a marginal uncertainty orientation main effect was observed, $\underline{F}$ (1,109) = 3.14, p<.08, and a significant achievement-related motives main effect was found, $\underline{F}$ (1,109) = 5.12, p<.05. Certainty-oriented subjects tended to have greater ought/own discrepancies ($\underline{M}$ = 5.26) than uncertainty-oriented subjects ($\underline{M}$ = 2.38), and failure-threatened subjects had greater ought/own discrepancies ($\underline{M}$ = 5.52) than success-oriented subjects ($\underline{M}$ = 1.92). Analyzing ought/other discrepancies, a significant main effect was found for uncertainty orientation, $\underline{F}$ (1,109) = 8.04, p<.01, as well as a marginal main effect for achievement-related motives, $\underline{F}$ (1,109) = 3.04, p<.09. Certainty-oriented subjects had greater ought/other discrepancies ($\underline{M}$ = 6.40) than did uncertainty-oriented subjects ($\underline{M}$ = 0.54), and failure-threatened subjects tended to have somewhat greater discrepancies ($\underline{M}$ = 5.43) than did success-oriented subjects (

$\underline{M}$ = 1.30).

Analyzing ratings of importance of the various standards at this later session, only a significant main effect for achievement-related motives on importance of ideal/other standards ($\underline{F}$ (1,108) = 6.25, p<.05) was found. Failure-threatened subjects rated the ideal/own standard as more important to them ($\underline{M}$ = 2.59, with low scores representing greater importance) than did success-oriented subjects ($\underline{M}$ = 3.21).

Principal Analyses: Performance as a Function of Individual Differences and Self-discrepancies

Analyses were done on performance on the midterm exam and the final exam for the introductory psychology course, with uncertainty orientation (uncertainty-oriented, certainty-oriented), achievement-related motives (success-oriented, failure-threatened), and self-discrepancies (high, low, as determined using a median split) as between-groups independent variables. Separate analyses were done using ideal/own and ought/other discrepancies (these were the specific types of discrepancy suggested by Higgins, Strauman, & Klein, 1986), to be of particular relevance for achievement). Separate analyses were done although the predicted three-way interaction is expected using either type of discrepancy, because the two discrepancies are measured within-subjects, making it impossible to collapse across this variable. In addition, analyses were done separately using "expected" discrepancies (those indicated early in the academic year) to predict performance on the midterm and final exam, and those measured at the

second session, using subject's actual performance in the course at that time, to predict final exam grades.

Analyses including gender as a variable were conducted, but since they did not modify the results of primary interest, the results reported here will not include gender. The results of the analyses including gender are presented in Appendix D. These analyses revealed a significant uncertainty orientation by gender interaction (F (1,169) = 5.88, p<.05), and an achievement-related motives by discrepancy by gender interaction (F (1,169) = 3.92, p=.05) for the midterm exam. T~ former interaction was such that uncertainty-oriented males outperformed any other group. The three-way interaction was such that the difference between subjects with high ought/other discrepancies and those with low discrepancies (with the latter outperforming the former) was greatest for failure-threatened males, and for success-oriented females. These effects were not repeated for the final exam, however, as there were no significant effects involving gender at that time.

Analyses Using Time 1 Indices of Self-discrepancies

Tests of the Principal Hypothesis

For both performance on the midterm exam, and on the final exam, analyses were done separately using ought/other and ideal/own discrepancies, based on responses at the initial group testing session. These indices of self-discrepancies are intended to reflect "expected" experiences of self-discrepancy for academic performance, as they are indicated in the absence of any feedback regarding the introductory psychology course. They were calculated by subtracting expected grade

at the begining of the year from the self-standards (ideal/own, ought/other) indicated at that time.

Planned comparisons (see Winer, 1971, p.215) were done to test the overall principal hypothesis (i.e., the specific interaction between uncertainty orientation, achievement-related motives, and self-discrepancies, as described in the Introduction), and, where this test revealed a significant interaction, additional planned contrasts were done comparing the performance of success-oriented and failure-threatened subjects at each level of uncertainty orientation X discrepancy. These were done rather than using an analysis of variance followed by pairwise comparisons, because previous research has led to the specific prediction regarding the three-way interaction, and the more specific contrasts address the predictions of interest (specifically, where characteristic motives are or are not engaged, as inferred from performance differences between success-oriented and failure-threatened subjects).

Using midterm exam performance as the dependent measure the test of the principal hypothesis was marginally significant when ought/other discrepancies were examined ($\underline{t}$ (177) = 1.80, p<.08, two-tailed). The means associated with this interaction are presented in Table 5. Because of the discrepancy in cell sizes, a test of homogeneity was done; using Bartlett's test (see Weiner, 1971, p.208-209) it was assertained that the variances are homogeneous. It can be seen that the pattern of means is as predicted; success-oriented subjects outperform failure-threatened subjects to a greater extent if they have a self-discrepancy for uncertainty-oriented subjects, and if they have

Table 5

Mean Midterm Exam Grades and Final Exam Grades as a Function of Uncertainty Orientation, Achievement-related Motives, and Ought/other Discrepancy (as Measured at Time 1)

	Uncertainty Orientation			
	Certainty-oriented		Uncertainty-oriented	
	Success-oriented	Failure-threatened	Success-oriented	Failure-threatened
MIDTERM EXAM				
High Ought/other Discrepancy	61.44 (16)	65.83 (18)	72.08 (24)	65.29 (14)
Low Ought/other Discrepancy	73.09 (22)	69.06 (32)	76.54 (39)	74.20 (20)
FINAL EXAM				
High Ought/other Discrepancy	62.63 (16)	66.33 (18)	71.17 (24)	63.31 (13)
Low Ought/other Discrepancy	72.55 (22)	67.25 (32)	73.92 (39)	72.25 (20)

Note: the number in parentheses represents the number of subjects

no discrepancy for certainty-oriented subjects. Among the more specific contrasts comparing the performance of success-oriented and failure-threatened subjects within levels of uncertainty orientation and self-discrepancy, only one contrast was marginally significant (t (177) = 1.75, p<.10); for uncertainty-oriented subjects who have an ought/other discrepancy, success-oriented subjects (M = 72.08) tended to outperform failure-threatened subjects (M = 65.29).

Using final exam performance as the dependent measure the test of the principal hypothesis was significant using ought/other discrepancies, t (176) = 2.24, p<.05, two-tailed. The means involved in this interaction are presented in Table 5. The pattern of means here is like those for the midterm exam results. Success-oriented subjects outperformed failure-threatened subjects to a greater extent if they have an ought other discrepancy for uncertainty-oriented subjects, and if they have no discrepancy for certainty-oriented subjects. The pattern is reversed (failure-threatened subjects did better than success-oriented) for certainty-oriented subjects who have a discrepancy. Again using planned contrasts comparing success-oriented and failure-threatened subjects' grades at each level of uncertainty-orientation X discrepancy, one comparison was found to be significant and another was marginal. For certainty-oriented subjects with no ought/other discrepancy, there was a trend for success-oriented subjects to outperform (M = 72.55) failure-threatened subjects (M = 67.25), t (1,176) = 1.76, p<.10. For uncertainty-oriented subjects who have an ought/other discrepancy, success-oriented subjects did significantly better (M = 71.17) than

failure-threatened subjects (M = 63.31), t (1,176) = 2.09, p<.05.

For analyses using ideal/own discrepancies rather than ought/other discrepancies the test of the hypothesis was not significant for either the midterm exam (t (182)= -1.17, n.s.), or for performance on the final exam (t (181) = .09, n.s.). The means associated with these analyses are presented in Table 6.

Overall Analyses of Variance

Analyses of variance were done, in addition to the tests of the principal hypotheses, for exploratory purposes to determine whether any additional effects are present. Performance on the midterm examination was analysed as a function of uncertainty orientation, achievement-related motives, and ought/other discrepancies (see Table 7). Significant main effects were found for uncertainty orientation, F (1,177) = 6.79, p<.01, and for ought/other discrepancy, F (1,177) = 15.54, p<.001. Uncertainty-oriented people attained a higher grade on the midterm exam (M = 73.33) than did certainty-oriented people (M = 68.03). Subjects with no ought/other discrepancy also did better (M = 73.34) than those with discrepancies (M = 66.83), as predicted by Higgins et al., (1986). These two main effects were subsumed, however, by a marginally significant three-way interaction between uncertainty orientation, achievement-related motives, and ought/other discrepancy, F (1,177) = 3.23, p<.08, as indicated previously in the test of the principal hypothesis.

Analysis of variance for performance on the final examination in the introductory psychology course (see Table 8) revealed a marginally

Table 6

Mean Midterm Exam Grades and Final Exam Grades as a Function of Uncertainty Orientation, Achievement-related Motives, and Ideal/own Discrepancy (as Measured at Time 1)

| | Uncertainty Orientation | | | |
| | Certainty-oriented | | Uncertainty-oriented | |
	Success-oriented	Failure-threatened	Success-oriented	Failure-threatened
	MIDTERM EXAM			
High Ideal/own Discrepancy	69.06 (18)	69.79 (14)	72.10 (30)	74.00 (11)
Low Ideal/own Discrepancy	68.61 (23)	67.17 (36)	77.41 (34)	68.46 (24)
	FINAL EXAM			
High Ideal/own Discrepancy	68.39 (18)	69.86 (14)	72.00 (30)	70.27 (11)
Low Ideal/own Discrepancy	69.91 (23)	65.78 (36)	73.88 (34)	67.17 (23)

Note: the number in parentheses represents the number of subjects

Table 7

Analysis of Variance Summary Table

Grade on Midterm Exam with Uncertainty Orientation, Achievement-related Motives, and Ought/other Discrepancies (Measured at Time 1) as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation	(A)	910.22	1	910.22	6.79	.009
Achievement-related Motives	(B)	200.50	1	200.50	1.50	n.s.
Ought/other Discrepancy	(C)	2081.31	1	2081.31	15.54	.0001
A X B		235.51	1	235.51	1.76	n.s.
A X C		5.97	1	5.97	0.04	n.s.
B X C		41.00	1	41.00	0.31	n.s.
A X B X C		432.81	1	432.81	3.23	.074
Error		23711.71	177	133.96		

Table 8

Analysis of Variance Summary Table

Grade on Final Exam with Uncertainty Orientation, Achievement-related Motives, and Ought/other Discrepancies (Measured at Time 1) as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation	(A)	363.66	1	363.66	3.08	.081
Achievement-related Motives	(B)	317.84	1	317.84	2.69	n.s.
Ought/other Discrepancy	(C)	1305.59	1	1305.59	11.05	.001
A X B		162.27	1	162.27	1.37	n.s.
A X C		1.91	1	1.91	0.02	n.s.
B X C		20.41	1	20.41	0.17	n.s.
A X B X C		593.14	1	593.14	5.02	.03
Error		20795.83	176	118.16		

significant main effect for uncertainty orientation, F (1,176) = 3.08, p<.09, and a significant main effect for ought/other discrepancy, F (1,176) = 11.05), p<.01. Again, uncertainty-oriented subjects tended to do better (M = 71.45) than certainty-oriented subjects (M = 67.55), and subjects with no ought/other discrepancy did better (M = 71.47) than did those with a discrepancy (M = 66.58). Also, as indicated previously from the test of the hypothesis, the three-way interaction between uncertainty orientation, achievement-related motives, and discrepancies was significant, F (1,176) = 5.02, p<.05.

Repeating the analyses described above using ideal/own discrepancies rather than ought/other discrepancies (see Table 9 and Table 10), the only significant effect was a significant main effect for uncertainty orientation, F (1,182) = 5.35, p<.05, on performance on the midterm exam. The average grade on this exam . s higher for uncertainty-oriented subjects (M = 73.25) than for certainty-oriented subjects (M = 68.31). No other effect was found significant.

Analyses Using Time 2 Indices of Self-discrepancies

Tests of the Principal Hypothesis

In addition to the questionnaire administered at the beginning of the academic year, a subsample of subjects returned for a second session shortly after the midterm exam. Self-discrepancies were measured at this time by subtracting subjects' actual grade in the course to that point from each of their standards, as indicated at that time. Rather than indicating "expected" discrepancies, this measure indicates discrepancies from self-standards as they may occur as

Table 9

Analysis of Variance Summary Table

Grade on Midterm Exam with Uncertainty Orientation, Achievement-related Motives, and Ideal/own Discrepancies (Measured at Time 1) as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation	(A)	765.17	1	765.17	5.35	.02
Achievement-related Motives	(B)	153.22	1	153.22	1.07	n.s.
Ideal/own Discrepancy	(C)	27.60	1	27.60	0.19	n.s.
A X B		102.18	1	102.18	0.71	n.s.
A X C		20.44	1	20.44	0.14	n.s.
B X C		431.11	1	431.11	3.01	.08
A X B X C		191.49	1	191.49	1.34	n.s.
Error		26050.67	182	143.14		

Table 10

Analysis of Variance Summary Table

Grade on Final Exam with Uncertainty Orientation, Achievement-related Motives, and Ideal/own Discrepancies (Measured at Time 1) as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation	(A)	223.11	1	223.11	1.75	n.s.
Achievement-related Motives	(B)	311.78	1	311.78	2.45	n.s.
Ideal/own Discrepancy	(C)	35.98	1	35.98	0.28	n.s.
A X B		84.17	1	84.17	0.66	n.s.
A X C		4.53	1	4.53	0.04	n.s.
B X C		283.37	1	283.37	2.23	n.s.
A X B X C		0.98	1	0.98	0.01	n.s.
Error		23011.06	181	127.13		

feedback is received in the course. These discrepancies were then examined in relation to performance on the final exam.

Testing the principal hypothesis of an inceraction between uncertainty-orientation, achievement-related motives, and ought/other discrepancies based on subjects' performance in the first half of the course, it was found that the test of the hypothesis was significant using performance on the final examination as the dependent measure, t (97) = 2.75, p<.01, two-tailed. The means involved in this interaction can be seen in Table 11. These means are in the predicted direction, with success-oriented students outperforming failure-threatened students to a greater extent if they have an ought/other discrepancy for uncertainty-oriented students, and if they have no discrepancy for certainty-oriented students. Again there was a reversal for certainty-oriented students with a discrepancy such that those who are failure-threatened actually outperformed the success-oriented. Contrasts were done comparing the performance of success-oriented and failure-threatened subjects at each level of uncertainty orientation X ought/other discrepancy. A significant difference was found for certainty-oriented subjects with high ought/other discrepancies, t (97) = 3.09, p<.01, with failure-threatened subjects (M = 66.04) outperforming success-oriented subjects (M = 55.75). In addition, a marginally significant difference was found for uncertainty-oriented students with high ought/other discrepancies, t (97) = 1.73, p<.10; this trend was for success-oriented students to get higher grades on the final exam (M = 69.54) than failure-threatened students (M = 62.93). No other contrast was significant.

Table 11

Mean Final Exam Grades as a Function of
Uncertainty Orientation, Achievement-related Motives,
and Ought/other Discrepancy (as Measured at Time 2)

| | Uncertainty Orientation | | | |
| | Certainty-oriented | | Uncertainty-oriented | |
	Success-oriented	Failure-threatened	Success-oriented	Failure-threatened
	FINAL EXAM			
High Ought/other Discrepancy	55.75 (12)	66.04 (26)	69.55 (11)	62.93 (15)
Low Ought/other Discrepancy	77.00 (7)	68.67 (6)	76.63 (19)	74.11 (9)

Note: the number in parentheses represents the number of subjects

Using the ideal/own discrepancy as measured at time two, again the test of the hypothesized interaction was not significant, t (97) = 1.20, n.s.. The means involved in this test are presented in Table 12.

Overall Analyses of Variance

Analyses of variance were done on performance on the final exam in introductory psychology as a function of uncertainty orientation, achievement-related motives, and self-discrepancies (again, separate analyses were done using ought/other and ideal/own discrepancies), for exploratory purposes to examine effects other than the hypothesized three-way interaction.

The analysis of variance on the final exam using ought/other discrepancies (see Table 13) revealed a significant main effect for ought/other discrepancy, F (1,97) = 26.10, and a marginally significant main effect for uncertainty orientation, F (1,97) = 3.65, p<.06. Students with an ought/other discrepancy (M = 63.98) did worse than those who had no discrepancy (M = 70.96). In addition, uncertainty-oriented students tended to get higher grades on the final exam (M = 70.96) than certainty-oriented subjects did (M = 65.43). As indicated previously, a significant three-way interaction was also found, F (1,97) = 7.58, p<.01.

The analysis of variance done using ideal/own discrepancies (see Table 14) again revealed only a significant main effect for uncertainty orientation, F (1,97) = 7.66, p<.01, and a significant ideal/own discrepancy main effect, F (1,97) = 25.92, p<.001.

Uncertainty-oriented subjects again were found to outperform (M =

Table 12

Mean Final Exam Grades as a Function of
Uncertainty Orientation, Achievement-related Motives,
and Ideal/own Discrepancy (as Measured at Time 2)

	Uncertainty Orientation			
	Certainty-oriented		Uncertainty-oriented	
	Success-oriented	Failure-threatened	Success-oriented	Failure-threatened
	FINAL EXAM			
High Ideal/own Discrepancy	54.33 (9)	64.76 (21)	68.23 (13)	64.40 (15)
Low Ideal/own Discrepancy	71.90 (10)	69.91 (11)	78.47 (17)	71.67 (9)

Note: the number in parentheses represents the number of subjects

Table 13

Analysis of Variance Summary Table

Grade on Final Exam with Uncertainty Orientation, Achievement-related Motives, and Ought/other Discrepancies (Measured at Time 2) as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation	(A)	330.28	1	330.28	3.65	.058
Achievement-related Motives	(B)	68.4	1	68.45	0.76	n.s.
Ought/other Discrepancy	(C)	2359.65	1	2359.65	26.10	.0001
A X B		163.34	1	163.34	1.31	n.s.
A X C		41.88	1	41.88	0.46	n.s.
B X C		280.51	1	280.51	3.10	.08
A X B X C		685.46	1	685.46	7.58	.007
Error		8769.52	97	90.41		

Table 14

Analysis of Variance Summary Table

Grade on Final Exam with Uncertainty Orientation, Achievement-related Motives, and Ideal/own Discrepancies (Measured at Time 2) as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation (A)		720.82	1	720.82	7.66	.006
Achievement-related Motives	(B)	7.28	1	7.28	0.08	n.s.
Ideal/own Discrepancy	(C)	2439.33	1	2439.33	25.92	.0001
A X B		548.51	1	548.51	5.83	.017
A X C		40.89	1	40.89	0.43	n.s.
B X C		357.28	1	357.28	3.80	.054
A X B X C		134.56	1	134.56	1.43	n.s.
Error		9129.76	97	94.12		

70.92) certainty-oriented subjects ($\underline{M}$ = 65.43), and subjects with high ideal/own discrepancies did worse ($\underline{M}$ = 63.83) than did those with a low discrepancy ($\underline{M}$ = 73.77). This is opposite what was predicted by Higgins et al. (1986), however, since it is performance in the first half of the course that is used here to measure self-discrepancies, this effect likely reflects, at least in part, a tendency for those who did relatively poorly in the first half to also do poorly on the final exam.

Testing Predictions from Self-Discrepancy Theory

To test the predictions from self-discrepancy theory that ideal/own and ought/other discrepancies have opposite effects on performance, partial correlations were done examining the independent relation of each of these two discrepancies with performance. The discrepancy measures used were those based on the questionnaire administered early in the academic year (Time 1).

For performance on the midterm examination, only ought/other discrepancies yielded a significant partial correlation. Partialling out the effect of ideal/own discrepancies, a negative correlation was observed between ought/other discrepancies and midterm exam performance, $\underline{r}$ (338) = -.25, p<.001. There was no significant correlation between ideal/own discrepancies and performance, partialling ought/other discrepancies, however, $\underline{r}$ (338) = .07, n.s..

Performance on the final examination was significantly correlated with both ideal/own and ought/other discrepancies, independently. Partial correlations between each type of discrepancy and performance

with the other controlled for, revealed a positive correlation between ideal/own discrepancies and performance (r (338) = .13, p<.05), and a negative correlation between ought/other discrepancies and performance (r (338) = -.22, p<.001).

Affect and Self-discrepancies, and Possible Affective Mediators of Performance Effects

In the second session subjects were asked to indicate the extent to which each of 25 affect items describe how they feel about their performance in introductory psychology; these items were selected to include a broad range of affective experiences. For present purposes the emphasis was on those types of affect suggested by Higgins, Strauman, & Klein (1986) to be relevant for motivation: namely, dissatisfaction and anxiety. The specific items relevant to dissatisfaction were "pleased", "satisfied", "contented", "proud", "disappointed", and "dissatisfied". The specific items relevant to anxiety were ""afraid", "panicky", "tense", "nervous", "worried", "calm", and "relaxed". An exploratory factor analysis revealed that the items associated with each general class of affect did load together in two separate factors.

The specific items were analyzed in relation to ideal/own and ought/other discrepancies. This was done to test the prediction by Higgins et al. (1986) that ideal/own discrepancies are associated with dissatisfaction and disappointment, whereas ought/other discrepancies are associated with fear and anxiety. To analyze this while controlling the error rate for the various measures, a multivariate

analysis of variance was used. Ideal/own and ought/other discrepancies were the independent variables, with both of these split at the median (as was done for the principle analyses) dividing each into high and low discrepancy groups. In addition, students' grade at the midterm was used as a covariate to ensure that differences do not simply reflect performance differences (for example, between those with high ideal/own and those with high ought/other discrepancies). The multivariate analysis on the dissatisfaction-related items revealed a significant main effect for ideal/own discrepancies, F (6,179) = 5.06, p<.001, but no effect for ought/other discrepancies, F (6,179) = 1.21, n.s.. The multivariate analysis on the anxiety-related items revealed no significant main effect for ideal/own discrepancies, F (7, 177) = 0.99, n.s., but a significant ought/other main effect, F (7, 177) = 4.04, p<.001. The means associated with these analyses are presented in Table 13. These findings are consistent with hypotheses from self-discrepancy theory.

To examine the possibility that these two different types of affect mediate the performance effects described in the previous sections, these analyses were redone with the variance accounted for by "(dis)satisfaction" and "anxiety" controlled for, using the items described above to form two composite measures. These analyses did not result in any diminishing of the effects reported previously. For example, the three-way interaction that was predicted between uncertainty orientation, achievement-related motives and self-discrepancies is not eliminated when both affect composites are partialled out (e.g., using ought/other discrepancies as measured at

Table 15

Mean Dissatisfaction-related and Anxiety-related Affect
(Adjusted for Midterm Grade) as a Function of Ideal/own
and Ought/other Discrepancies

	Self-discrepancy			
	Ideal/own		Ought/other	
	High Discrepancy (n = 85)	Low Discrepancy (n = 104)	High Discrepancy (n = 101)	Low Discrepancy (n = 88)
Affect				
	Dissatisfaction-related Affect			
Pleased	3.14	4.19	3.48	3.85
Satisfied	2.40	3.77	2.94	3.24
Contented	2.53	3.71	3.03	3.21
Proud	2.36	3.29	2.71	2.94
Disappointed	4.26	3.37	4.15	3.47
Dissatisfied	4.62	3.30	4.16	3.76
	Anxiety-related Affect			
Afraid	2.36	1.97	2.36	1.97
Panicky	2.39	2.15	2.54	2.01
Tense	2.80	2.77	3.12	2.45
Nervous	2.81	2.57	2.85	2.53
Worried	2.96	2.86	3.38	2.43
Calm	4.14	4.51	4.38	4.27
Relaxed	3.62	4.09	3.86	3.85

Note: higher scores represent greater affect

time 2, there is still a significant uncertainty orientation X Achievement-related motives X discrepancy interaction on final exam grades, F (1,94) = 6.28, p<.02). Thus, based on self-reported affect, there is no evidence to suggest that the predicted three-way interaction on performance is mediated by feelings of dissatisfaction or anxiety.

Repeating the partial correlation analyses between ideal/own or ought/other discrepancies and performance also partialling out the two affect composites, again the effects are not substantially altered. For example, there remains a significant positive partial correlation between ideal/own discrepancies (measured at time 1) and final exam performance, controlling for ought/other discrepancies and dissatisfaction (r (168) =.19, p<.05), and a significant negative correlation between ought/other discrepancies and performance with ideal/own discrepancies and anxiety controlled for (r (168) = -.24, p<.01. again, the self-report affect composites do not provide evidence that dissatisfaction and anxiety are underlying these effects.

Discussion

The present study provided some support for the principal hypothesis that uncertainty orientation and achievement-related motives would interact with self-discrepancies in predicting performance. Specifically, the hypothesis was generally supported when analyses were done using ought/other discrepancies (using "expected" discrepancies, p<.08 for the midterm exam, and p<.05 for the final exam, and using

actual discrepancies after the midterm, p<.01 for the final exam). The hypothesis was not supported, however, using ideal/own discrepancies (this difference between the two standards will be discussed more fully subsequently). The support demonstrated for the principal hypothesis, albeit only for ought/other discrepancies, suggests that self-discrepancies are primarily relevant for uncertainty-oriented people, and situations where they have lived up to their self-standards are more relevant for certainty-oriented people. It is in these "relevant" situations for the individual that characteristic achievement-related motives are aroused (as inferred from performance differences between success-oriented and failure-threatened subjects).

Higgins, Strauman, and Klein (1986) suggested that individual differences in achievement-related motives might be accounted for by differences in self-discrepancies. Success-oriented subjects did report higher ideal/own standards (significantly higher at Time 1) than did failure-threatened subjects, as predicted, but they also expected to do better (p<,05), and did do better (p<.07), and thus did not have larger ideal/own discrepancies. There was a trend for failure-threatened subjects to have greater ought/other discrepancies as measured at Time 2 (p<.09), reflecting the fact that they did not tend to do as well as success-oriented students. Although these individual differences are at least partly as Higgins et al. suggested, it does not appear that achievement-related motives are completely accounted for by these differences. The results of the principal analyses suggest that achievement-related motives and

self-discrepancies interact, in conjunction with uncertainty-orientation, rather than self-discrepancies accounting for performance differences between success-oriented and failure-threatened people.

There was some support for the more general notion that ought/other discrepancies and ideal/own discrepancies have opposite motivational effects. Ought/other discrepancies (partialling out ideal/own discrepancies) were negatively correlated with performance (r =-.25, p<.001 with midterm exam grades, and r =-.22, p<.001 with final exam grades), consistent with the argument by Higgins et al. (1986) that ought/other discrepancies would inhibit performance. A significant positive correlation was found for ideal/own discrepancies (partialling out ought/other discrepancies) and performance, but only for the final exam (r = .13, p<.05); this provides some support (although fairly weak) for the argument that ideal/own discrepancies have a positive motivational impact.

Taken together, the results of this study suggest that Higgins et al. (1986) are correct in suggesting that self-discrepancies have important implications for achievement motivation, but their specific proposals regarding the nature of the impact of self-discrepancies on performance are subsumed by individual differences in uncertainty orientation and achievement-related motives.

It may be noteworthy that both for analyses testing the principal hypothesis and for those testing proposals based on self-discrepancy theory, the results were strongest when ought/other discrepancies were used. An "ideal grade" may be perceived quite differently than the

grade one "ought to" get; when asked to indicate an "ideal/own" grade
in a course, the majority of students seem to have set a standard that
is higher than their "expected" grade (by approximately 5% on average,
as compared to no discrepancy, on average, for ought/other standards),
suggesting that for many this may represent only a best-case scenario,
perhaps often being fantasy-based, and not a realistic standard that
one thinks they can attain. If this is the case, these standards would
not likely be a source of uncertainty, as people would not expect to be
able to attain them. Also consistent with this, collapsing over
standpoints of the self (own and other), people tended to rate their
"ought" standards as slightly more important ($\underline{M}$ = 2.42, with a low
score representing greater importance) than their "ideal" standards ($\underline{M}$
= 2.51), $\underline{F}$ (1,558) = 4.10, p<.05. Also, subjects who had large
ideal/own discrepancies (as measured at time 1) rated their ideal/own
standard as being less important ($\underline{M}$ =2.42) than did those with small
ideal/own discrepancies ($\underline{M}$ =1.99), $\underline{F}$ (1,580) = 19.59, p<.0005. Ideal
standards are therefore rated as being somewhat less important than
ought standards, and ideal/own standards are rated less important when
there is a large discrepancy, as might be expected if these standards
are fantasy-based, and not realistic standards.

A number of the findings regarding initial individual differences
between the groups of interest (certainty-oriented and
uncertainty-oriented, failure-threatened and success-oriented) on the
self-standards questionnaire are also of interest. In the initial
session, before students had received feedback in the course, there
were relatively few differences. As noted earlier, success-oriented

students both expected to do better, and set higher ideal/own standards, than failure-threatened students. The only other significant effects at that time involved certainty-oriented students reporting that their ideal/other and ought/other standards were more important than did uncertainty-oriented students (both p<.05). Given that certainty-oriented people are more authoritarian, this effect may reflect greater concern about what significant others (and therefore, in many cases, authority figures) expect of them.

There were more significant effects found using the time 2 measure, given after students had received feedback for the first half of the course. Most notably, there were a number of differences in self-discrepancies (as compared to no significant differences at the beginning of the year). Bearing in mind that this discrepancy measure is calculated using first term performance, these differences later in the year appear to be attributable to the fact that certainty-oriented students have lower grades than uncertainty-oriented students (p<.05), and failure-threatened students do worse than success-oriented students (p<.07), resulting in greater discrepancies.

Analyses examining affect in relation to self-discrepancies yielded results that are consistent with self-discrepancy theory: dissatisfaction and disappointment were significantly related to ideal/own discrepancies, and fear and anxiety were significantly related to ought/other discrepancies. There was no evidence to suggest that these specific types of affect (dissatisfaction versus anxiety) underlie any of the performance effects found in this study, however. This may mean that the performance el   s are not mediated by these

2
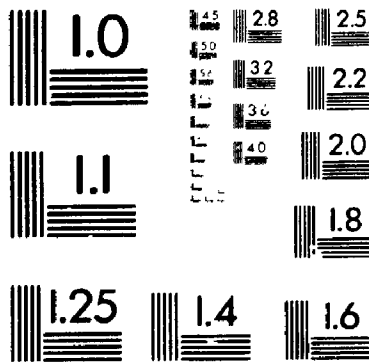
affective experiences, or it may mean that people may not be particularly conscious of their specific underlying feelings, and therefore self-report measures of affect do not reflect performance. If this latter explanation is the case, it would parallel the argument that "nonconscious" measures of achievement-related motives (e.g., projective measures) predict performance where "conscious" (e.g., self-report) measures do not (Biernat, 1989).

Although the present study does provide some support for the principal predictions, the correlational nature of this investigation makes it impossible to determine the exact causal nature of these performance effects. Specifically, rather than the presence or absence of self-discrepancies engaging or failing to engage achievement-related motives, it could be the case that (for example) uncertainty-oriented people with self-discrepancies actually tend to differ in ability from uncertainty-oriented people who have no discrepancies. Although the complex nature of the results (a three-way interaction) may make such explanations seem somewhat less plausible, they can not be ruled out. To study the effects of experiencing (or not experiencing) self-discrepancies more directly for different types of people, a second study was done in which self-discrepancies were manipulated experimentally.

Chapter V

Study Two

Outline and Purpose

The rationale for this study was identical to that for study one;
it was designed to examine the role of self-discrepancies in
achievement, and more specifically, to examine uncertainty-orientation
and achievement-related motives as moderators of the relation between
self-discrepancies and performance. In this study the presence or
absence of different self-discrepancies will be varied experimentally
in order to determine that it is the presence or absence of a
self-discrepancy that has different motivational implications for
uncertainty-oriented and certainty-oriented people, ruling out possible
alternative explanations that cannot be ruled out from the
correlational field study described previously.

In the present investigation two variables were experimentally
varied: the type of standard considered, and whether or not there is a
self-discrepancy. The first manipulation was done by describing for
subjects, and then having them indicate, either their ideal/own
standard for performance on an achievement task, or their ought/other
standard. The second manipulation was done by having subjects perform
an initial task, and then giving them feedback suggesting either that
they met their standard (no discrepancy), or that they failed to meet
their standard (discrepancy). After receiving this feedback subjects

then performed a second task which provided the primary dependent measure.

Predictions for this study are identical to those for study 1. The principal hypothesis, based on previous research on uncertainty orientation described previously (e.g., Sorrentino, Short, & Raynor, 1984; Sorrentino and Roney, 1986), is that there should be an interaction between uncertainty orientation, achievement-related motives, and self-discrepancies. It is predicted that characteristic performance differences between success-oriented and failure threatened subjects (with the former outperforming the latter) will be greatest for uncertainty-oriented subjects if they have a self-discrepancy, and for certainty-oriented subjects if they have no self-discrepancy. After receiving feedback indicating a self-discrepancy, subsequent performance would be relevant for resolving uncertainty associated with the discrepancy ("can I meet this standard?"), and thus would be relevant for uncertainty-oriented people. The relative "certainty" associated with feedback indicating no discrepancy (thus indicating that the individual does meet their standard) would be more relevant for certainty-oriented people.

In addition to the principal hypothesis, the present study will also allow a second test of the proposals by Higgins, Strauman, and Klein (1986) regarding the different motivational impact of different self-discrepancies. To reiterate, it was argued that ideal/own discrepancies have a positive motivational impact (enhance performance), and that ought/other discrepancies have a negative motivational impact (inhibit performance). If correct, a two-way

interaction would be expected between self-standard condition and presence/absence of discrepancy condition. Subjects in the ideal/own standard condition who are given "discrepancy" feedback would be expected to outperform those who receive "no discrepancy" feedback, whereas in the ought/other condition the "discrepancy" feedback subjects would be expected to do worse than those in the "no discrepancy" feedback condition.

Method

Subjects

The present study included 330 students at the University of Western Ontario, 107 males and 223 females (analyses were done including gender, but they did not modify any of the principal results; these analyses are presented in Appendix E). All subjects participated in partial fulfilment of a course requirement for the introductory psychology course.

Measurement of Individual Differences

The procedure for measuring individual differences in uncertainty orientation and achievement-related motives was identical to that used for study 1 (see Appendix A). Group testing was done early in the academic year, at which time the projective measures were administered from which $\underline{n}$ Uncertainty and $\underline{n}$ Achievement were scored, in addition to the acquiescence-free authoritarianism measure (Cherry & Byrne, 1977), and the Test Anxiety Questionnaire (Mandler and Sarason, 1952). These were described in detail in the Method section for Study 1.

The final classification of subjects was based on resultant measures of uncertainty orientation (standardized $\underline{n}$ Uncertainty scores - standardized authoritarianism scores) and of achievement-related motives (standardized $\underline{n}$ Achievement scores - standardized test anxiety scores). Tertile splits were done on these resultant measures, and the upper and lower tertile on each were labelled uncertainty-oriented and certainty-oriented, success-oriented and failure-threatened, with the moderates on both dimensions excluded from analyses. Again, a more detailed rationale for this method of classification was provided in the Method section for the previous study.

Consistent with the results from the sample for the first study, the two component measures of uncertainty orientation ($\underline{n}$ Uncertainty and authoritarianism) were uncorrelated ($\underline{r}$ (357) = .03, n.s.) as were the component measures of achievement-related motives ($\underline{n}$ Achievement and test anxiety, $\underline{r}$ (359) = .07, n.s.). The two projective measures, $\underline{n}$ Uncertainty and $\underline{n}$ Achievement, were significantly correlated ($\underline{r}$ (359) = .35, p<.001), as were the two self-report measures (authoritarianism and test anxiety, $\underline{r}$ (359) = .17, p<.01). These latter two correlations result in an overall significant correlation between the resultant achievement-related motives and resultant uncertainty orientation measures, $\underline{r}$ (357) = .27, p<.001. Although correlated, as in study 1, the effect of these variables will be determined independently, as both are included in the analyses.

Procedure: Experimental Session

At the end of the group testing session all subjects were given the opportunity to sign up for a follow-up session several weeks later. The sample for the present study (330 subjects) are those who volunteered to return (out of 428 who participated in the earlier group testing).

Subjects participated in groups ranging from two to seven participants. The session took place in a complex of small rooms, each containing a microcomputer (Apple IIe), set up along a larger room. Instructions were given to all subjects at once in the common room, and then the study itself was done individually by subjects in individual rooms using the microcomputers.

At the beginning of the sessions subjects were told that the research they were participating in would consist of two parts (see instructions, Appendix F). The first part was described as dealing with the standards that people have for their performance. At this point the specific type of standard of interest was described, either ideal/own or ought/other depending on the condition those subjects were assigned to. In the ideal/own condition subjects were given a definition of the "ideal" standard as representing their own "hopes, goals, and aspirations". In the ought/other condition subjects were given a definition of the "ought" standard as representing their sense of duty or obligation that they feel, and specifically, what they feel specific significant others expect of them. It was explained to subjects that in the first part of the study they would be asked what their ideal/own or ought/other (depending on condition) standard would be for performance on an ability task, in terms of performance relative

to others.

Subjects were then told that the second part of the study would involve completing two tests of "general mental ability"; it was explained that these measures reflect one's mental ability much as I.Q. tests do. It was also explained that these were to be completed on the computer, one of the advantages being that participants can be given immediate feedback as to how they have done.

After being given general instructions as a group, subjects then went into individual rooms to do the experiment. Once the computer program was begun for each subject, the first part of the program asked subjects to indicate their performance standards. The type of standard that subjects were to indicate (ideal/own or ought/other) was once again described to them, and they were asked to indicate the percentage of first year psychology students they would ideally hope to do better than, or that an important significant other feels they "ought to" do better than. Upon typing and entering their response to this first question, subjects then went on to the performance tasks.

The first performance task that subjects were asked to do was a number strings task (see Appendix F); this task was primarily included to set up the discrepancy manipulation. Subjects were first presented with instructions for the number string task, as well as an example to ensure that they understood the instructions. This task involved showing subjects strings of numbers in some sequence, with one of the numbers omitted. The subject's task was to determine the correct number that would fit with the rest of the sequence. Subjects were instructed that they would have three minutes to answer as many of the

questions as possible. If they had no questions subjects then began the task by pressing a specified key. Once begun, the questions appeared one at a time. Upon determining the correct response subjects were instructed to type in the response and press return to enter it. At that time the next question was immediately presented. Subjects continued answering these questions until they answered all ten, or until three minutes were up.

Upon completion of the first task subjects were asked to wait while their score was calculated. After several seconds subjects were given bogus feedback that was to provide the manipulation of whether the subject experienced a self-discrepancy. In the discrepancy condition subjects were shown a score (in percentile of subjects) that was somewhat (15%) below the standard that they had provided previously. This standard was also shown again, and it was indicated that their score was significantly below the standard they had indicated. In the no discrepancy condition subjects were shown a score that was somewhat (4%) higher than the standard they had indicated, and it was pointed out that they had met the standard they had indicated.

After reading about their performance on the first task, subjects were asked to press a key when they were ready to continue on to the next task; performance at this task was to be the primary dependent measure. This task (see Appendix F) has been used in a number of other studies as a performance measure (e.g., Atkinson, 1958; Sorrentino, Short, & Raynor, 1984; Sorrentino & Roney, 1986; Trope, 1982). Subjects were instructed that this next task was also a timed task, and that they would have 2 1/2 minutes to answer as many questions as

possible. The instructions for this task were then given in some detail to ensure that all subjects understood them. This task consists of 25 two-line stings of three numbers, with the numbers in each line to be added or subtracted, as indicated. After completing the two lines, the results for each line are to be compared, and the two numbers are to be added if the resulting number for the top line is smaller than that for the bottom, or the bottom line result is to be subtracted from that for the top if the latter result is larger. To ensure that all subjects understood the instructions, an example problem was given, and subjects could not continue on to the actual task until they correctly answered it. Once they had read and understood the instructions, subjects were asked to press a key to begin the task. At that time, pairs of number strings appeared on the screen, one pair at a time. Upon arriving at a solution for the pair of strings on the screen at that time, subjects were asked to type in their answer and enter it by pressing the "return" key. The next pair of strings appeared on the screen immediately once the "return" key was pressed. This continued until subjects completed all 25 pairs, or 2 1/2 minutes elapsed.

Finally, upon completion of this task, subjects were asked to answer four post-experimental questions which were presented on the computer. These questions asked subjects how important the self-standard that they had been asked about is to them, how well they did on the first task relative to the self-standard they indicated (this is a manipulation check for the discrepancy manipulation), how well, in general, they felt that they had done on the tasks, and

finally, how well they felt the tasks measure mental ability.

Because this experiment involved deception, great care was taken in debriefing subjects. Subjects received both written and verbal debriefing. It was made very clear to subjects that the feedback they received did _not_ reflect their actual level of ability, but rather was determined by their random assignment into condition. It was also explained that the tasks they completed are not designed to measure their "mental ability" so much as their motivational state. In explaining the hypotheses for the experiment it was emphasized that the same people often perform very differently in different situations, and that it is this type of phenomenon that is of interest.

Results

Manipulation Check for the Discrepancy Manipulation

One of the items included in the post-experimental questionnaire was designed to serve as a check for the self-discrepancy manipulation; this item asked subjects how well they did relative to their self-standard. Examining the frequency distribution of responses on this seven-point scale as a function of the discrepancy condition subjects were assigned to (discrepancy, no discrepancy), it was revealed that only 10% of the subjects in the "no discrepancy" condition responded below the midpoint (i.e., indicating not doing well relative to their standard), and only 7.3% of the subjects in the "discrepancy" condition responded above the midpoint.

An analysis of variance was also done on this item as a function of discrepancy condition (discrepancy, no discrepancy), standard condition (ideal/own, ought/other), uncertainty orientation (uncertainty-oriented, certainty-oriented), and achievement-related motives. There was a significant main effect for discrepancy condition, F (1, 138) = 145.26, p<.001, with those in the no discrepancy condition reporting doing better relative to their self-standard (M = 5.12) than those in the discrepancy condition (M = 2.51). This suggests that the manipulation was effective. The only other significant effect revealed in this analysis of variance was a main effect for achievement-related motives, F (1,138) = 8.74, p<.01. Success-oriented subjects reported doing better relative to their standard (M = 4.10) than did failure-threatened subjects (M = 3.63).

Test of the Principal Hypothesis

As in study 1, the principal hypothesis was that there would be a three-way interaction between uncertainty orientation, achievement-related motives, and self discrepancies. For the present study this is being tested collapsing across types of self-standard, as no difference was expected as a function of type of standard. In study 1 the principal analyses were done separately because all types of standard were measured for all subjects, and therefore could not be collapsed across.

A planned contrast (see Winer, 1971, p.215) was done to test the hypothesized three-way interaction between uncertainty orientation,

achievement-related motives, and self-discrepancy condition, and then separate contrasts were done comparing the performance of success-oriented and failure-threatened subjects at each level of uncertainty orientation and self-discrepancy condition. The dependent measures were the number of items attempted, and the number answered correctly, on the second task; these two measures are highly correlated, r (361) = .91, p<.001, and thus no differences are anticipated in results using either measure.

The test of the hypothesized interaction was significant using number of items attempted as the dependent measure (t (145) = 2.88, p<.01, two-tailed), and using number of items answered correctly (t (145) = 2.62, p<.01). The means associated with these effects are presented in Table 16. It can be seen that these cell sizes are unequal, but Bartlett's test (Winer, 1971, p. 208-209) revealed that the variances of the cells were homogenous. It can be seen here that the pattern of means is as predicted; success-oriented subjects outperformed failure-threatened subjects only in the self-discrepancy condition for uncertainty-oriented subjects, and only in the no self-discrepancy condition for certainty-oriented subjects. Contrasts examining achievement-related motives effects within levels of uncertainty orientation and self-discrepancy condition revealed two significant contrasts using number of items attempted as the dependent measure, and one significant contrast when number of items correct is used. For uncertainty-oriented subjects in the discrepancy feedback condition, success-oriented subjects attempted more items (M = 11.87) and correctly answered significantly more items (M = 9.81) than did

Table 16

Mean Number of Items Attempted and Correct as a Function of Uncertainty Orientation, Achievement-related Motives, and Self-discrepancy condition

| | Uncertainty Orientation | | | |
| | Certainty-oriented | | Uncertainty-oriented | |
	Success-oriented	Failure-threatened	Success-oriented	Failure-threatened
	Number of Items Attempted			
No Discrepancy	12.38 (13)	10.00 (27)	10.78 (32)	11.15 (13)
Discrepancy	10.38 (13)	12.09 (23)	11.87 (31)	9.22 (9)
	Number of Items Correct			
No Discrepancy	10.15 (13)	8.11 (27)	8.59 (32)	9.00 (13)
Discrepancy	8.08 (13)	9.39 (23)	9.81 (31)	6.78 (9)

Note: the number in parentheses represents the number of subjects

failure-threatened subjects ($\underline{M}$ s = 9.22 and 6.78, respectively), $\underline{t}$ (145) = 1.98, p<.05 for number attempted, and $\underline{t}$ (145) = 2.15, p<.05 for number correct. A significant contrast was also found indicating that success-oriented subjects attempted more items ($\underline{M}$ = 12.38) than did failure-threatened subjects ($\underline{M}$ = 10.00), if they are also certainty-oriented, in the no discrepancy condition, $\underline{t}$ (145) = 2.00, p<.05. This same contrast was not significant, however, when number of items correctly answered was used as the dependent measure, $\underline{t}$ (145) = 1.62, n.s..

Overall Analyses of Variance

In order to investigate any additional effects, analyses of variance were done on the number of items attempted (see Table 17) and correctly answered (see Table 18) as a function of uncertainty orientation (uncertainty-oriented, certainty-oriented), achievement-related motives (success-oriented, failure-threatened), self-discrepancy condition (discrepancy, no discrepancy), and self-standard condition (ideal/own, ought/other). None of the effects from these analyses were significant except for the three-way interaction between uncertainty-orientation, achievement-related motives, and self-discrepancy condition ($\underline{F}$ (1,145) = 8.12, p<.01 for number of items attempted, and $\underline{F}$ (1,145) = 7.36, p<.01 for number answered correctly), reflecting the effect reported previously from the test of the principal hypothesis.

Examining the Effect of Ideal/own and Ought/other Discrepancies on

Table 17
Analysis of Variance Summary Table

Number of Items Attempted, with Uncertainty Orientation,
Achievement-related Motives, Self-discrepancy Condition,
and Self-standard Condition as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation (A)		5.55	1	5.55	0.44	n.s.
Achievement-related Motives	(B)	16.36	1	16.36	1.31	n.s.
Discrepancy Condition	(C)	2.88	1	2.88	0.23	n.s.
Self-standard Condition	(D)	0.73	1	0.73	0.06	n.s.
A X B		4.85	1	4.85	0.39	n.s.
A X C		4.46	1	4.46	0.36	n.s.
A X D		0.02	1	0.02	0.00	n.s.
B X C		0.76	1	0.76	0.06	n.s.
B X D		0.16	1	0.16	0.01	n.s.
C X D		11.84	1	11.84	0.95	n.s.
A X B X C		101.66	1	101.66	8.12	.005
A X B X D		1.22	1	1.22	0.10	n.s.
A X C X D		14.56	1	14.56	1.16	n.s.
B X C X D		1.19	1	1.19	0.10	n.s.
A X B X C X D		3.30	1	3.30	0.26	n.s.
Error		1815.37	145	12.52		

Table 18

Analysis of Variance Summary Table

Number of Items Correct, with Uncertainty Orientation,
Achievement-related Motives, Self-discrepancy Condition,
and Self-standard Condition as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation (A)		2.76	1	2.76	0.20	n.s.
Achievement-related Motives	(B)	24.69	1	24.69	1.78	n.s.
Discrepancy Condition	(C)	18.94	1	18.94	1.37	n.s.
Self-standard Condition	(D)	0.43	1	0.43	0.03	n.s.
A X B		6.37	1	6.37	0.46	n.s.
A X C		0.34	1	0.34	0.02	n.s.
A X D		0.02	1	0.02	0.00	n.s.
B X C		0.36	1	0.36	0.03	n.s.
B X D		4.76	1	4.76	0.34	n.s.
C X D		14.40	1	14.40	1.04	n.s.
A X B X C		101.93	1	101.93	7.36	.007
A X B X D		2.50	1	2.50	0.18	n.s.
A X C X D		34.74	1	34.74	2.51	n.s.
B X C X D		0.42	1	0.42	0.03	n.s.
A X B X C X D		12.53	1	12.53	0.90	n.s.
Error		2007.52	145	13.84		

Performance

In addition to testing the principal hypothesis, analyses were done to examine the proposals from self-discrepancy theory regarding different types of self-discrepancy: namely, that ideal/own discrepancies would have a facilitative effect on performance, and ought/other discrepancies would have an inhibitory effect. If correct, this would suggest a standard X discrepancy interaction in the present study, because performance would be better if given "discrepancy" feedback than "no discrepancy" feedback for subjects assigned to the ideal/own condition, but would be worse following "discrepancy" feedback in the ought/other condition.

There was no standard X discrepancy interaction in the overall analysis of variance including uncertainty orientation and achievement-related motives, F (1,145) = 0.95, n.s. for number attempted, and F (1,145) = 1.04, n.s.. Similarly, there were no significant effects in an analysis on the entire sample (with subjects scoring moderate in uncertainty orientation and achievement-related motives) included. Finally, repeating this analysis separately for certainty-oriented and uncertainty-oriented subjects reveals no significant effects.

Rated Importance of Self-standard

One of the questions that subjects were asked after the performance tasks, was how important the self-standard that they were asked about previously is to them. An analysis of variance was done on this item with uncertainty orientation, achievement-related motives,

self-discrepancy condition, and self-standard condition (see Table 19). This analysis revealed a number of significant effects. A significant uncertainty orientation by achievement-related motives interaction was found ($\underline{F}$ (1,145) = 7.42, p<.01); for those subjects who are uncertainty-oriented, success-oriented subjects rated the standard as more important ($\underline{M}$ = 2.49, with a low number representing greater importance) than did failure-threatened subjects ($\underline{M}$ = 3.64), but this difference between success-oriented and failure-threatened subjects was smaller for certainty-oriented subjects ($\underline{M}$ s = 2.77 and 2.93, respectively).

An interaction was also found between self-discrepancy condition and uncertainty orientation, $\underline{F}$ (1,145) = 5.21, p<.05. Uncertainty-oriented subjects who were given feedback indicating no discrepancy reported their self-standard to be more important ($\underline{M}$ = 2.47, with lower scores representing greater importance) than did those in the discrepancy condition ($\underline{M}$ = 3.15). For certainty-oriented subjects the opposite pattern was observed, as those given feedback indicating a self-discrepancy rated the self-standard to be more important to them than did those in the "no discrepancy" condition.

These interactions were subsumed, however, by a three-way self-discrepancy condition X uncertainty orientation X self-standard interaction, $\underline{F}$ (1,145) = 4.02, p<.05. The means associated with this interaction are presented in Table 20. In general, it can be seen that the previously described pattern (with uncertainty-oriented subjects reporting their self-standard to be more important to them if they were given feedback suggesting no self-discrepancy) occurs for both their

Table 19

Analysis of Variance Summary Table

Importance of Self-standard, with Uncertainty Orientation,
Achievement-related Motives, Self-discrepancy Condition, and
Self-standard Condition as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation	(A)	0.50	1	0.50	0.28	n.s.
Achievement-related Motives	(B)	6.34	1	6.34	3.50	.06
Discrepancy Condition	(C)	3.11	1	3.11	1.72	n.s.
Self-standard Condition	(D)	2.57	1	2.57	1.42	n.s.
A X B		13.45	1	13.45	7.42	.007
A X C		9.44	1	9.44	5.21	.02
A X D		2.59	1	2.59	1.43	n.s.
B X C		0.04	1	0.04	0.02	n.s.
B X D		0.10	1	0.10	0.05	n.s.
C X D		3.79	1	3.79	2.09	n.s.
A X B X C		2.02	1	2.02	1.11	n.s.
A X B X D		1.86	1	1.86	1.02	n.s.
A X C X D		7.29	1	7.29	4.02	.046
3 X C X D		0.56	1	0.56	0.31	n.s.
A X B X C X D		0.15	1	0.15	0.08	n.s.
Error		262.75	145	1.81		

Table 20

Mean Rated Importance of Self-standard as a Function of
Uncertainty Orientation, Self-discrepancy condition, and
Type of Self-standard

| | Uncertainty Orientation | | | |
| | Certainty-oriented | | Uncertainty-oriented | |
	Ideal/ own	Ought/ other	Ideal/ own	Ought/ other
No Discrepancy	2.60 (20)	3.35 (20)	2.18 (17)	2.64 (28)
Discrepancy	3.17 (18)	2.39 (18)	2.78 (18)	3.45 (22)

(Lower Scores Represent Greater Importance)

Note: the number in parentheses represents the number of subjects

ideal/own and ought/other standard. For certainty-oriented people
there was a reversal, however, such that they reported their
ought/other standard to be most important in the condition where they
were given feedback indicating a self-discrepancy, but for the
ideal/own standard the opposite was true, with that standard being
reported to be more important in the "no discrepancy" condition.

Discussion

The results of the present study support the principal hypothesis
that uncertainty-orientation and achievement-related motives interact
with the presence or absence of self-discrepancies in determining
performance (p<.01). Specifically, consistent with previous research
(e.g., Sorrentino, Short, & Raynor, 1984; Sorrentino & Roney, 1986),
performance reflecting characteristic achievement-related motives
(success-oriented subjects outperforming failure-threatened subjects)
was greatest where there was a self-discrepancy for
uncertainty-oriented subjects, and where there was no discrepancy for
certainty-oriented subjects. Again, this suggests that
self-discrepancies are important in understanding motivation, but that
the nature of this motivation depends on other characteristics of the
individual. This study also indicates that it is the presence or
absence of a discrepancy that differentially affects these people,
extending the results of the field study because in this case whether
subjects experienced a discrepancy or not was determined randomly. It

might also be noted that an analysis of variance done on the initial task that was used to set up the discrepancy manipulation revealed no significant effects except for a main effect for achievement-related motives (with success-oriented subjects correctly answering more items, $\underline{M}$ =3.16, than failure-threatened subjects, $\underline{M}$ =2.53, $\underline{F}$ (1,145) = 4.80, P<.05).

Unlike the field study, there was no evidence in this study that the hypothesized interaction occurred only with ought/other discrepancies, as there was no higher-order interaction with type of standard. It is not clear why this should be the case, since the previous argument, that ideal/own discrepancies are more fantasy-based, should also apply here. In fact, once again, ideal/own standards were significantly higher ($\underline{M}$ = 74.61%) than were ought/other standards ($\underline{M}$ =70.04%), $\underline{F}$ (1,357) = 11.05, p<.01. The primary difference between the standards indicated in the two studies is that for the field study the standard was asked for in terms of grades, and in this study they were asked for in terms of percentile rankings. Perhaps, even though the standards differ in this latter case as well, the higher "ideal/own" percentile is still seen as attainable; for example, it might be perceived that nobody will attain an ideal/own grade if it is too high (95%), but somebody has to score in the 95th percentile, perhaps making this more plausible. Although speculative, this could account for the disparity between the two studies.

The present study did not reveal any different effects of ideal/own and ought/other discrepancies on performance as predicted by Higgins, Strauman, and Klein (1986). The results of the manipulation

check and the test of the principal hypotheses suggest that the discrepancy manipulation was effective, but the present methodology may not have been ideal for testing predictions about specific types of discrepancies. Subjects assigned to the ideal/own or ought/other condition were given a description of what that specific standard is and asked to indicate what that standard is for them, but no mention was made of the other type of standard. To the extent that the two standards are related (and results from the field study, as well as previous research by Higgins and his colleagues suggest that they are, e.g., Higgins, Klein, & Strauman, 1985), this methodology may not adequately unconfound them. Although the present methodology should make one standard or the other more salient, it cannot be determined with certainty that creating one type of discrepancy does not, in some cases at least, also involve the other type of discrepancy. In previous priming research (e.g., Higgins, Bond, Strauman, & Klein, 1986), "ideal" and "ought" priming was done for subjects who have both types of discrepancy, and for those who have neither. It might be speculated that the manipulation of type of standard used in this study would only work for subjects who are prone to the type of discrepancy created in the condition they were in. In any case, no evidence was found in this study to suggest that different types of self-discrepancy have different motivational effects, and in the first study the evidence was weak for ideal/own discrepancies. Although there was stronger evidence of a negative correlation between ought/other discrepancies and performanc in the field study, this was also subsumed by the predicted three-way interaction. For both studies,

therefore, the results were more in line with predictions based on the theory of uncertainty orientation than with those based on self-discrepancy theory.

The results regarding subjects' ratings of the importance of their self-standard revealed some interesting findings. Uncerta...ity-oriented subjects rated the self-standard that they had been asked about as being more important to them after receiving "no discrepancy" feedback than after receiving "discrepancy" feedback. Certainty-oriented people did the opposite, however (in the ought-other condition specifically), rating their standard as more important to them after receiving feedback indicating a discrepancy. It might be noted that no such effect was in evidence in Study 1: that is, time two indices of the importance of self-standards were not different for subjects with or without discrepancies for either certainty-oriented or uncertainty-oriented subjects. This suggests that this effect may be a short-term consequence of receiving discrepancy versus no-discrepancy feedback. This could reflect a self-protective strategy such that people will downplay the importance of a standard immediately after failing to live up to it, but it is noteworthy that certainty-oriented subjects did the opposite in the ought/other condition, reporting the standard to be more important after receiving discrepancy feedback. If this interpretation of this effect (that is, as reflecting self-protection) is correct, then it would seem that certainty-oriented subjects are behaving in a particularly counterproductive manner; it is not clear why these individuals would do this.

Chapter VI

General Discussion

The results of the field study and experiment reported here are
consistent with the hypothesis that individual differences in
uncertainty orientation, in interaction with achievement-related
motives, determine the motivational impact of self-discrepancies on
performance. Specifically, for uncertainty-oriented subjects
self-discrepancies appear to engage achievement-related motives (as
inferred from the observation of characteristic performance differences
such that success-oriented subjects outperform failure-threatened
subjects), whereas for certainty-oriented subjects it appears to be
where there is no self-discrepancy that achievement-related motives are
engaged.

In the field study there was also some support for the notion that
some self-discrepancies (discrepancies from ideal/own standards) would
facilitate performance, and others (discrepancies from ought/other
standards) would inhibit performance; the evidence regarding ideal/own
discrepancies was very weak, however. No evidence of different
motivational effects of ideal/own and ought/other discrepancies was
found in the second study.

Relevance of the Results for the Theory of Uncertainty Orientation

The results of the present study are consistent with previous

research indicating that individual differences in uncertainty
orientation and achievement-related motives interact with the
characteristics of the achievement situation in determining performance
(Sorrentino, Short, & Raynor, 1 34; Sorrentino & Roney, 1986).
Performance differences consistent with achievement-related motives
have been found for uncertainty-oriented people if they believe that
the task is moderately difficult (Sorrentino et al., 1984, Study 1),
part of a contingent path (Sorrentino et al., 1984, study 2),
instrumental for future goals (Sorrentino et al., 1984, Study 3),
diagnostic of their level of ability (Sorrentino & Roney, 1986), and
now, in the present research, if the task occurs in the context of a
self-discrepancy. For certainty-oriented people characteristic
performance effects between success-oriented and failure-threatened
subjects have been found if the task is believed to be very easy or
very difficult, is not part of a contingent path, is not instrumental
for future goals, is relatively non-diagnostic of ability, and in the
present research, if the task occurs in a context where there is no
self-discrepancy.

It has been hypothesized that the key element that determines
whether an achievement situation is relevant for uncertainty
orientation is the extent to which it involves the individual in
resolving uncertainty (Sorrentino & Short, 1986). In
achievement-related situations that uncertainty will likely be related
to an individual's level of ability ("how good am I?"). Sorrentino,
Short and Raynor (1984) primarily emphasized outcome uncertainty (e.g.,
is success uncertain in this situation?), but situations with uncertain

outcomes also are most informative about the self as well (e.g.,
Weiner, 1974), suggesting that outcome uncertainty and reducing
uncertainty about the self are related. In addition, a task may serve
to resolve uncertainty about our ability directly (as in the case of a
diagnostic task), or may be part of a process of determining whether or
not a person can attain some goal. The present research relates to
this latter process, and more specifically, uncertainty that results
when performance raises doubts as to whether or not one can live up to
their performance standards (in other words, future outcomes become
increasingly uncertain). The results of the two studies reported in
this thesis thus extend previous research, showing that self-standards
are important for motivation, but that the nature of their impact is
complex, depending on whether or not the individual perceives his or
her "actual self" as consistent with or discrepant from the standard,
in interaction with his or her uncertainty orientation and
achievement-related motives.

It was noted earlier that Roney and Sorrentino (1989) found that
uncertainty-oriented people are more inclined to experience
self-discrepancies than are certainty-oriented people, based on the
number of "matching" and "mismatching" traits they listed as describing
their "actual self" as compared to their other abstract "selves" (e.g.,
ideal/own, ought/other). Uncertainty-oriented subjects were more
likely to indicate "actual" selves that were discrepant from their
other possible "selves". In the present research, however,
certainty-oriented people were at least as likely to experience a
self-discrepancy as uncertainty-oriented people were. One possible

explanation for this difference is that the present research involved a single specific dimension, achievement, that is very direct and salient, and therefore is difficult to ignore or distort. There are likely some situations where one cannot help but confront "self-discrepancies", and achievement-related situations may be an example.

Overall, the results of the present research, along with previous research involving uncertainty orientation, have been interpreted in light of the view that this variable is related to information seeking, and orienting either toward situations that involve resolving uncertainty or situations that do not involve resolution of uncertainty. Sorrentino and Short (1986) suggested that uncertainty orientation is related to "information value" (wanting to find out new things versus wanting to avoid confusion: Raynor and McFarlin, 1986) rather than to "affective value" (wanting to feel good versus wanting to avoid feeling bad: Raynor and McFarlin, 1986).

An alternative to this view of uncertainty orientation as reflecting "information value" might be considered, however; recent research on depression has suggested that depressives may be particularly inclined toward information seeking (e.g., Hildebrand-Saints, & Weary, 1989), suggesting the alternative explanation that uncertainty orientation actually reflects affective differences (e.g. depression), primarily. Although Roney and Sorrentino (1989) did show that uncertainty-oriented people were more likely to report experiencing negative affect than were certainty-oriented people, it was argued that this was more likely the

result of information-seeking (for example, leading people to realize that they do not live up to their self guides) rather than the cause of it. The magnitude of the affect differences found by Roney and Sorrentino (1989) was not particularly large, and Hafer (1987) found no differences between uncertainty-oriented and certainty-oriented students in self-esteem, suggesting that it is not the case that uncertainty-oriented people are necessarily depressives. In addition, much of the previous research on uncertainty orientation can not easily be explained in terms of differences in depression. For example, Sorrentino and Hewitt (1984) found that uncertainty-oriented people are more likely than certainty-oriented people to construct a test that would tell them something new about their ability, in both a condition where the test was believed to yield information relevant to success, and one where the information was believed to be relevant to failure, suggesting that the primary difference was in wanting to "find out", regardless of whether the information was likely to be positive or negative. Roney and Sorrentino (1987) found differences in the "clarity" in the person-categories of uncertainty-oriented and certainty-oriented people using a categorization task that should have been relatively affect-neutral. Although perhaps not yet definitive, the mounting evidence supports the view that uncertainty orientation is primarily related to individual differences related to "information value", and that any observed differences in affect may occur as a result of differences in information seeking.

The results of the present research might also be interpreted using an affective explanation emphasizing the reinforcement value of

success versus failure, since experiencing a self-discrepancy in this context also provides a failure experience, and experiencing no discrepancy a success experience. Although this can not be ruled out in the present research, it seems somewhat unlikely given the complex nature of the results. Such a model would have to account for the fact that success and failure have opposite effects on certainty-oriented and uncertainty-oriented people, implying that success and failure would have to have different reinforcement effects for different people. In addition, previous research (discussed above) found the same pattern of results in situations that did not involve prior success or failure (for example, diagnostic versus nondiagnostic tasks). At present the best interpretation therefore would seem to be that uncertainty orientation is related to information value, and that the match between the person and the environment on this dimension determines whether or not the person's normal internal motive is activated or aroused.

Relevance of the Results to Self-discrepancy Theory

The present research represented an initial attempt to examine the implications of self-discrepancy theory for achievement. As noted in the previous section, self-discrepancies in general are important for achievement, with the nature of their impact interacting with individual differences in uncertainty orientation and achievement-related motives. Rather than accounting for why performance differences occur as a function of achievement-related

motives (as proposed by Higgins, Strauman, & Klein, 1986), self-discrepancies interacted with uncertainty-orientation in determining when achievement-related motives were engaged (as inferred from characteristic performance differences).

One important implication of the present research for self-discrepancy theory lies in the fact that experiencing no self-discrepancy (i.e., living up to our abstract "selves") appears to be as important motivationally as is experiencing self-discrepancies. This extends the original ideas by Higgins, Strauman, and Klein (1986), who emphasized the motivating properties of self-discrepancies, suggesting that different types of discrepancy will determine the nature of the motivation impact. The two studies reported here suggest that the relative "certainty" associated with finding out that we live up to our standards leads to the engaging of characteristic achievement-related motives for some people (certainty-oriented), and therefore that it is not only discrepancies that are important. More generally, this suggests that self-discrepancies not only determine affective experiences as suggested by self-discrepancy theory, but they also determine "information value" (Raynor & McFarlin, 1986): that is, a relative state of "knowing" versus confusion or uncertainty. When prior performance indicates that we have lived up to our standards we then "know" we are capable of meeting them, but when we fail to attain them this leaves us uncertain as to whether or not we can live up to them. The motivational implications of these two states was shown to be determined by people's uncertainty orientation, in interaction with achievement-related motives.

The field study also provided some support for the notion that ideal/own discrepancies are associated with better performance (although this support was weak), and also that ought/other discrepancies are associated with worse performance, as suggested by Higgins, Strauman, and Klein (1986). Results were also consistent with prior work examining self-discrepancies and affect (e.g., Higgins, Klein, & Strauman, 1985), as ideal/own discrepancies predicted dissatisfaction and disappointment, and ought/other discrepancies predicted anxiety and fear. A number of questions remain, however, concerning the role of these two different self-discrepancies for achievement. In the field study performance results were strongest when ought/other discrepancies were examined. It was suggested that this might be because "ought" standards were more realistic than "ideal" standards for most people. No differences were found between the two types of discrepancy, however, in the second study. Although the manipulation of the type of standard in the second study may not have been adequate to ensure that each type of discrepancy was evoked independently, there still remain some disparities between the two studies. For example, the predicted interaction was not found in the field study when ideal/own discrepancies were used, but type of standard did not moderate this effect in the experiment. It is not clear why this difference occurred, but as noted previously the higher ideal/own standards in the experiment (indicated in terms of the percentile in which the subject would like to score rather than in terms of grades as in the first study) may have still been perceived as attainable. Overall, the evidence regarding the role of these

different types of discrepancies is not very strong in supporting the proposals by Higgins, Strauman, and Klein (1986), and a number of questions remain as to what role ideal/own as opposed to ought/other discrepancies play. The evidence was much stronger suggesting that self-discrepancies involve uncertainty, and thus interact with uncertainty orientation and achievement-related motives.

Limitations of the Present Research

One limitation of the present research lies in the fact that, although predicted, it does not reveal why the interaction effects occur with uncertainty-orientation, achievement-related motives, and performance. The underlying mechanisms accounting for these effects are not yet know for certain. Sorrentino, Short, and Raynor (1984) suggested that these findings may be linked to individual differences in self-schemata or accessible constructs, with the relative uncertainty or certainty involved in the situation determining when these would become "activated". Sorrentino and Short (1986) elaborated this hypothesis, suggesting that people may have learned to adapt to different situations (e.g., where there is an opportunity to resolve uncertainty for uncertainty-oriented people, and where there is no uncertainty to resolve for certainty oriented-people). It is in those situations that they have learned to deal with that their characteristic motives are engaged. This remains speculative, however, as there is no direct evidence from the present research to clarify the underlying cause of this effect.

The results of the present research also revealed some disparities

that raise a number of questions about the role of different types of self-discrepancy for achievement, as discussed above. The first study provided some evidence consistent with Higgins, Strauman, and Klein (1986), but this study was entirely correlational, making it impossible to rule out alternative explanations for the effects. These findings were also not replicated in the second study. There also remains some ambiguity regarding the role of these two different types of discrepancy for achievement as a result of the finding in the field study that the main predictions were supported only when ought/other discrepancies were used. In the second study, however, the predicted interaction was not moderated by type of discrepancy. These disparities in findings make it difficult to draw definitive conclusions regarding the role of ideal/own as opposed to ought/other standards for achievement.

Although many questions remain regarding the different motivational effects of different self-discrepancies, the research reported in this thesis does indicate the importance of self-discrepancies for motivation, in interaction with individual differences. Although the underlying mechanisms accounting for the three-way interaction between uncertainty-orientation, achievement-related motives, and self-discrepancies are not yet fully understood, convergent evidence for the effect was found using two different methodologies (field study and experiment), and different performance measures (exams written as part of a university course and an arithmetic-based performance task).

Implications for Future Research

The present studies suggest a number of possible directions for future research. One important direction for future research is to test the hypotheses by Sorrentino et al. (1984) and Sorrentino and Short (1986) as to why the three-way interaction occurs between uncertainty orientation and achievement-related motives with the presence or absence of a self-discrepancy. Future research might be undertaken testing the notion that situations where there is little or no uncertainty to be resolved is where self-schemas relevant to achievement become activated for certainty-oriented people, and those involving uncertainty activate them for uncertainty-oriented people. This might be done, for example, by observing whether schemas related to "striving to succeed", or "avoiding failure", are activated when people anticipate a situation that will entail resolving uncertainty versus situations that do not, as a function of uncertainty orientation.

Another important line of research that the present thesis points to is more detailed examination of the role of self-guides such as "ideal/own self" and "ought/other self" for achievement. For example, a study similar to study two, but including a measure of people's "chronic" tendencies to experience ideal/own and ought/other discrepancies might provide a more stringent test of the proposals by Higgins, Strauman, and Klein (1986). More generally, the issue of the relative role of "priming" versus "chronic" discrepancies may require clarification via future research. In addition, the present research used one specific operationalization of self discrepancies: namely,

performance standards. Self-discrepancies may also be represented in other ways, such as more general achievement-related traits (e.g., hard-working, talented), or in terms of longer-term goals (e.g., to become a doctor). The research in this thesis might be extended by examining self-discrepancies as operationalized in these other ways to determine whether these different representations of self-discrepancies work in a similar fashion, or if they have motivational properties that are different from those associated with more specific performance standards.

Conclusions

The primary conclusion to be drawn from the present thesis is that self-discrepancies (and the absence of self-discrepancies) are important sources of motivation, interacting with uncertainty-orientation and achievement-related motives in determining performance. This research extends the argument by Higgins, Strauman, and Klein (1986) that self-discrepancies are motivating, demonstrating that experiencing no self-discrepancy also has important implications for motivation. Specifically, for uncertainty-oriented people their achievement-related motives are engaged when there is a self-discrepancy, and for certainty-oriented people motives are engaged when there is no discrepancy. These results suggest that failing to live up to one's self-standards is not only a source of negative affect, as stipulated in self-discrepancy theory, but it is also a source of uncertainty.

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4.   AN OLDER PERSON IS TALKING TO A YOUNGER PERSON.

Thematic Apperception Test

Name _____

SENTENCE INTERPRETATIONS

Instructions

You are going to see a series of sentences, and your task is to tell a story that is suggested to you by each sentence. Try to imagine what is going on. Then tell what the situation is, what led up to the situation, what the people are thinking and feeling, and what they will do.

In other words, write as complete a story as you can--a story with plot and characters.

You will have twenty (20) seconds to look at a sentence and then 4 minutes to write your story about it. Write your first impressions and work rapidly. I will keep time and tell you when it is time to finish your story and to get ready for the next sentence.

There are no right or wrong stories or kinds of stories, so you may feel free to write whatever story is suggested to you when you look at a sentence. Spelling, punctuation, and grammar are not important. What is important is to write out as fully and as quickly as possible the story that comes into your mind as you imagine what is going on.

Notice that there is one page for writing each story. If you need more space for writing any story, use the reverse side of the paper.

1.   TWO PEOPLE ARE WORKING IN A LABORATORY ON A PIECE OF EQUIPMENT.

Sentence Number _____   Code Number _____

1. What is happening? Who is(are) the person(s)?

2. What has led up to this situation? That is, what has happened in the past?

3. What is being thought? What is wanted? By whom?

4. What will happen? What will be done?

2. A PERSON IS SITTING, WONDERING ABOUT WHAT MAY HAPPEN.

Sentence Number _____   Code Number _____

1. What is happening? Who is(are) the person(s)?

2. What has led up to this situation? That is, what has happened in the past?

3. What is being thought? What is wanted? By whom?

4. What will happen? What will be done?

3.   A YOUNG PERSON IS STANDING; A VAGUE OPERATION SCENE IS IN THE BACKGROUND.

Sentence Number _____   Code Number _____

1. What is happening? Who is(are) the person(s)?

2. What has led up to this situation? That is, what has happened in the
    past?

3. What is being thought? What is wanted? By whom?

4. What will happen? What will be done?

4.   AN OLDER PERSON IS TALKING TO A YOUNGER PERSON.

Sentence Number _____   Code Number _____

1. What is happening? Who is(are) the person(s)?

2. What has led up to this situation? That is, what has happened in the past?

3. What is being thought? What is wanted? By whom?

4. What will happen? What will be done?

Authoritarianism Scale

NAME _____

GENERAL ATTITUDE SURVEY

The following is a study of what the general public thinks and feels about a number of important social and personal questions. The best answer to each statement below is your personal opinion. We have tried to cover many different and opposing points of view; you may find yourself agreeing strongly with some of the statements, disagreeing just as strongly with others, and perhaps uncertain about others; whether you agree or disagree with any statement, you can be sure that many people feel the same as you do.

Circle a number on the right margin of each statement to show how much you agree or disagree with it. Please mark each statement.

Circle +3, +2, +1, or -1, -2, -3, depending on how you feel in each case.

+1:	I AGREE A LITTLE	-1:	I DISAGREE A LITTLE
+2:	I AGREE ON THE WHOLE	-2:	I DISAGREE ON THE WHOLE
+3:	I AGREE VERY MUCH	-3:	I DISAGREE VERY MUCH

1. There is hardly anything lower than a person who does not feel a great love, gratitude, and respect for his parents. +3 +2 +1 -1 -2 -3

2. An insult to our honor should always be punished. +3 +2 +1 -1 -2 -3

3. Books and movies ought not to deal so much with the unpleasant and seamy side of life; they ought to concentrate on themes that are entertaining or uplifting. +3 +2 +1 -1 -2 -3

4. What the youth needs most is strict discipline, rugged determination and the will to work and fight for family and country. +. +2 +1 -1 -2 -3

5. No sane, normal, decent person could ever think of hurting a close friend or relative. +3 +2 +1 -1 -2 -3

6. Young people sometimes get rebellious ideas, but as they grow up they ought to get over them and settle down. +3 +2 +1 -1 -2 -3

General Attitude Survey (continued) ,   P. 2

7. The findings of science may some day show that   +3   +2   +1   -1   -2   -3
    many of our most cherished beliefs are wrong.

8. It is highly unlikely that astrology will   +3   +2   +1   -1   -2   -3
    ever be able to explain anything.

9. People ought to pay more attention to new ideas,   +3   +2   +1   -1   -2   -3
    even if they seem to go against the Canadian
    way of life.

10. If people would talk less and work more   +3   +2   +1   -1   -2   -3
    everybody would be better off.

11. A person who has bad manners, habits, and   +3   +2   +1   -1   -2   -3
    breeding can hardly expect to get along
    with decent people.

12. Insults to our honor are not always important   +3   +2   +1   -1   -2   -3
    enough to bother about.

13. It's all right for people to raise questions   +3   +2   +1   -1   -2   -3
    about even the most sacred matters.

14. Obedience and respect for authority are the   +3   +2   +1   -1   -2   -3
    most important virtues children should learn.

15. There is no reason to punish any crime with   +3   +2   +1   -1   -2   -3
    the death penalty.

16. Anyone who would interpret the Bible literally   +3   +2   +1   -1   -2   -3
    just doesn't know much about geology, biology,
    or history.

17. In this scientific age the need for a religious   +3   +2   +1   -1   -2   -3
    belief is more important than ever before.

18. When they are little, kids sometimes think about   +3   +2   +1   -1   -2   -3
    doing harm to one or both of their parents.

19. It is possible that creatures on other planets   +3   +2   +1   -1   -2   -3
    have founded a better society than ours.

20. The prisoners in our corrective institutions,   +3   +2   +1   -1   -2   -3
    regardless of the nature of their crime,
    should be humanely treated.

21. The sooner people realize that we can't get rid   +3   +2   +1   -1   -2   -3
    of all the traitors in the government, the
    better off we'll be.

22. Some of the greatest atrocities in man's history   +3   +2   +1   -1   -2   -3
    have been committed in the name of religion and
    morality.

Test Anxiety Questionnaire

QUESTIONNAIRE ON ATTITUDES TOWARD THREE
KINDS OF TESTING SITUATIONS

(Preliminary Form)

NAME: _____   CLASS: _____

This questionnaire is designed to give you an opportunity to indicate how and what you feel in regard to three types of testing situations:

(a) The <u>group</u> intelligence or aptitude test, such as those you took upon entrance to college.

(b) The <u>course examination</u>.

(c) The <u>individual</u> (face-to-face) type of intelligence test.

One of the main reasons for constructing this questionnaire is the fact that very little is known about people's feelings toward the taking of various kinds of tests. We can assume that people differ in the degree to which they are affective by the fact that they are going to take a test or by the fact that they have taken a test. What we are particularly interested in here is how widely people differ in their opinions of and reactions to the various kinds of testing situations.

The value of this questionnaire will in large part depend on how frank you are in stating your opinions, feelings, and attitudes. <u>Needless to say, your answers to the questions will be kept strictly confidential; they will under no circumstances be made known to any instructor or official of the University.</u>

We are requesting you to give name and class only because it may be necessary for research purposes.

Each of you has taken a course examination and a group intelligence or aptitude test, but not all of you have taken an individual intelligence test. Those of you who have not taken such a test are requested to answer the relevant question in terms of how you think you <u>would</u> react to them. We want to know what you think your attitudes and feelings toward taking such a test would be and not what you think they ought to be. Those who have taken an individual intelligence test will, of course, answer the questions in terms of what they actually experienced.

For each question there is a line or scale on the ends of which are statements of opposing feelings or attitudes. In the middle of the line you will find either the word "Midpoint" or a phrase, both of which are intended to reflect a feeling or attitude which is in-between the statements of opposing feelings described above. You are required to put a mark (X) on that point on the line which you think best indicates the strength of your feeling or attitude about the particular question. <u>The midpoint is only for your guidance. Do not hesitate to put a mark on anywhere on the line as long as that mark reflects the strength of your feeling or attitude.</u>

When you are answering each scale, however, please put your mark somewhere <u>between the dots</u> on the line, <u>not on</u> the dots.

for example, <u>mark</u>   <u>/ . x . / . . /</u>,   <u>not</u>   <u>/x . / . . /</u>

If you have any questions at this time, please ask the person who has passed out the questionnaire.

THERE ARE NO "CATCH" QUESTIONS IN THIS QUESTIONNAIRE. PLEASE READ EACH QUESTION AND EACH SCALE <u>VERY CAREFULLY</u>. THERE IS NO TIME LIMIT.

- 2 -

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY PLACE ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

SECTION 1

The following questions relate to your attitude toward and experience with group intelligence or aptitude tests. By group intelligence tests we refer to tests which are administered to several individuals at a time. These tests contain different types of items and are usually paper and pencil tests with answers requiring either fill-ins or choices of several possible answers. Scores on these tests are given with reference to the standing of the individual within the group tested or within specific age and educational norms. The Medical College Aptitude Test (or the Canadian Scholastic Aptitude Test) which you may have taken represents this type of test. Please try to remember how you usually reacted toward these tests and how you felt while taking them.

1. How valuable do you think group intelligence tests are in determining a person's ability?

/_____._____._____/_____._____._____/
Very valuable   Valuable in some respects   Valueless
                     and valueless in others

2. Do you think that group intelligence tests should be used more widely than at present to classify students?

/_____._____._____/_____._____._____/
Should be used   Should be used   Should be used
less widely   as at present   more widely

3. Would you be willing to stake your continuance in college on the outcome of a group intelligence test which has previously predicted success in a highly reliable fashion?

/_____._____._____/_____._____._____/
Very willing   Uncertain   Not willing

4. If you know that you are going to take a group intelligence test, how do you feel beforehand?

/_____._____._____/_____._____._____/
Feel very unconfident   Midpoint   Feel very confident

5. After you have taken a group intelligence test, how confident do you feel that you have done your best?

/_____._____._____/_____._____._____/
Feel very unconfident   Midpoint   Feel very confident

6. When you are taking a group intelligence test, to what extent do your emotional feelings interfere with or lower your performance?

/_____._____._____/_____._____._____/
Do not interfere at all   Midpoint   Interfere a great deal

Appendix B

Tables of Means for Analyses Including Moderates for Both Studies

Study 1: Mean Final Exam Grades as a Function of
Uncertainty Orientation (Including Moderates),
Achievement-related Motives, and Ought/other
Discrepancy (as Measured at Time 1)

	Ought/other Discrepancy			
	High		Low	
	Success-oriented	Failure-threatened	Success-oriented	Failure-threatened
Uncertainty-oriented	71.17	63.31	73.92	72.25
Moderate	72.83 (66.90)	67.70 (64.82)	70.71 (73.24)	71.05 (69.75)
Certainty-oriented	62.63	66.33	72.55	67.25

Note: the number in parentheses represents the expected mean if
moderate scores were continuous. They are the average of the
means for certainty-oriented and uncertainty-oriented
subjects within each level of achievement-related motives
and self-discrepancy

Study 2: Mea· Number of Items Correct as a Function of
Achievement-related Motives (Including Moderates),
Uncertainty orientation, and Self-discrepancy Condition

| | Experimental Condition | | | |
| | Discrepancy | | No Discrepancy | |
	Certainty-oriented	Uncertainty-oriented	Certainty-oriented	Uncertainty-oriented
Success-oriented	8.08	9.81	10.15	8.59
Moderate	8.50 (8.74)	9.20 (8.30)	8.56 (9.13)	8.61 (8.80)
Failure-threatened	9.39	6.78	8.11	9.00

Note: the number in parentheses represents the expected mean if
moderate scores were continuous. They are the average of the
means for success-oriented and failure-threatened
subjects within each level of uncertainty orientation and
self-discrepancy condition

Study 2: Mean Number of Items Correct as a Function of
Uncertainty Orientation (Including Moderates),
Achievement-related Motives, and Self-discrepancy Condition

| | Experimental Condition | | | |
| | Discrepancy | | No Discrepancy | |
	Success-oriented	Failure-threatened	Success-oriented	Failure-threatened
Uncertainty-oriented	9.81	6.78	8.59	9.00
Moderate	9.32 (8.95)	8.04 (8.09)	8.78 (9.37)	9.00 (8.55)
Certainty-oriented	8.08	9.39	10.15	8.11

Note: the number in parentheses represents the expected mean if
moderate scores were continuous. They are the average of the
means for certainty-oriented and uncertainty-oriented
subjects within each level of achievement-related motives
and self-discrepancy condition

<u>Study 1 : Mean Final Exam Grades as a Function of</u>
<u>Achievement-related Motives (Including Moderates),</u>
<u>Uncertainty Orientation, and Ought/other Discrepancy</u>
<u>(as Measured at Time 1)</u>

Ought/other Discrepancy

	High		Low	
	Certainty-oriented	Uncertainty-oriented	Certainty-oriented	Uncertainty-oriented
Success-oriented	62.63	71.17	72.55	73.92
Moderate	65.08 (64.48)	70.75 (67.24)	66.05 (69.90)	75.38 (73.38)
Failure-threatened	66.33	63.31	67.25	72.25

Note: the number in parentheses represents the expected mean if moderate scores were continuous. They are the average of the means for success-oriented and failure-threatened subjects within each level of uncertainty orientation and ought/other discrepancy

Appendix C

Materials for Study 1

Academic Expectations Questionnaire

The purpose of this short questionnaire is to find out what academic goals and standards university students have. We wish to find out what standards students set for themselves, and also the standards that other people may set for them. Psychologists have discussed three different types of standards: what we actually think we will accomplish, what we ideally would like to, or hope to accomplish (called "ideal" standards), and what we feel a sense of duty or responsibility to accomplish (called "ought" standards). These last two standards represent the difference between what we hope to accomplish (ideal), and what we feel is expected of us (ought).

1. What grade do you realistically think you will get in psychology 020?_____%

2. If we think about grades as "ideals", what grade would your parents (or some other significant other if more important to you) <u>ideally</u> like you to get or do better than?_____%

How important is this standard to you?

1	2	3	4	5	6	7
Extremely			Moderately			Not at all

3. If we think about grades as "oughts", what grade would your parents (or some other significant other if more important to you) expect, or think that you should get or do better than?_____%

How important is this standard to you?

1	2	3	4	5	6	7
Extremely			Moderately			Not at all

4. What grade would you <u>ideally</u> like to get or do better than?_____%

How important is this standard to you?

1	2	3	4	5	6	7
Extremely			Moderately			Not at all

5. What grade do you feel that you "ought to" get or do better than?_____%

How important is this standard to you?

1	2	3	4	5	6	7
Extremely			Moderately			Not at all

Study 1 Instructions

You have all been called back from our sessions that you participated in early in the first term. The study you will be participating in today is about student's academic standards, how they are doing academically, and how they feel about their performance. You will be asked to complete two short questionnaires that are aimed at examining this. This study is a follow-up to a short questionnaire that you filled out earlier this year. Some of the questions will look familiar to you, because they are similar to some you answered earlier. To give us a common frame of reference for everyone, the questions will focus on psychology 020. All of the information that you provide us with will be completely anonymous. We use code numbers from the first session to match up your responses from that session to that from this session; your names are not used. If you have any questions about any of the questions, please feel free to ask.

Participant information and consent form

This study involves filling out two questionnaires. These questionnaires are aimed at finding out how people are doing in psychology 020, what academic standards they set, and how students feel about how they are doing. All of the information that you provide us with will be kept completely confidential, and will be used for research only. If you have any questions or concerns about the study at this point, please feel free to ask the experimenter about them. At the conclusion of the study you will be given a written explanation of the research.

Once you have read the description above of what this study entails, please sign below if you are willing to participate.

Name _____

Signature_____

Academic Expectations Questionnaire

Earlier this year you filled out a questionnaire about your academic goals and standards. This quesionnaire is similar to that one. We are interested in seeing what standards students set for themselves, and also the standards that other people may set for them. We are looking at this on two different occasions to see how these standards change over time. In this questionnaire we are interested in two different types of standards: what we actually think we will accomplish, what we ideally would like to, or hope to accomplish (called "ideal" standards), and what we feel a sense of duty or responsibility to accomplish (called "ought" standards). These last two standards represent the difference between what we hope to accomplish (ideal), and what we feel is expected of us (ought).

1. What grade do you realistically think you will get in psychology 020?_____%

2. If we think about grades as "ideals", what grade would your parents (or some other significant o r if more important to you) _ideally_ like you to get or do better   n?_____%

How important is this standard to you?

1	2	3	4	5	6	7
Extremely			Moderately			Not at all

3. If we think about grades as "oughts", what grade would your parents (or some other significant other if more important to you) expect, or think that you should get or do better than?_____%

How important is this standard to you?

1	2	3	4	5	6	7
Extremely			Moderately			Not at all

4. What grade would you _ideally_ like to get or do better than?_____%

How important is this standard to you?

1	2	3	4	5	6	7
Extremely			Moderately			Not at all

5. What grade do you feel that you "ought to" get or do better than?_____%

How important is this standard to you?

1	2	3	4	5	6	7
Extremely			Moderately			Not at all

Responses to Academic Performance

This questionnaire is designed to find out how students feel about their academic performance in a specific course. Specifically, these questions will ask about the emotions that you feel regarding your performance to date, as well as some of your thoughts about a number of aspects of the course.

Please answer this questionnaire based on your feelings about how you are doing in psychology 020 so far.

Please indicate on the scales below, the extent to which you feel the following emotions with respect to how you are doing in psycholgy 020:

Pleased

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Sad

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Ashamed

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Afraid

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Not at all | | | Somewhat | | | Extremely |

Satisfied

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Not at all | | | Somewhat | | | Extremely |

Angry

| 1 | | 3 | 4 | 5 | 6 | 7 |
| Not at all | | | Somewhat | | | Extremely |

Hopeless

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Not at all | | | Somewhat | | | Extremely |

Panicky

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Not at all | | | Somewhat | | | Extremely |

Happy

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Not at all | | | Somewhat | | | Extremely |

Treated unfairly

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Not at all | | | Somewhat | | | Extremely |

Tense

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Enraged

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Blameworthy

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Gloomy

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Calm

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Discouraged

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Nervous

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Motivated to try harder

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Contented

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Outraged

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Worried

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Proud

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Forlorn

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Resentful

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Unhappy

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Frustrated

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Indifferent

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Dissatisfied

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Apprehensive

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Competent

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Anxious

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Guilty

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Relaxed

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Annoyed

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Helpless

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Disappointed

1	2	3	4	5	6	7
Not at all			Somewhat			Extremely

Grade release consent form

If you have not already read the debriefing sheet, please do so before reading and completing this form.

As explained in the debriefing, this research is studying the way people's performance in a course and their self-standards are related for different people. We feel that our research has important implications for education, as it may help us to better understand some of the factors that may help student's performance, and some that may interfere with their performance. An important part of our research will therefore involve seeing how people end up doing in this course (Psychology 020). As is true for all of the data in this research, this information will be entirely confidential. The grades will be accessed anonymously, using only your student number (please fill in below) and matching this up with a code number; your name will therefore not be associated with the grades in any way. If you have any questions or concerns about this, please ask the experimenter.

Having read the information above, please sign below if you consent to allow us to use your final psychology 020 grade in our research. Thank you very much for your help with our research.

Name _____

Signature_____

Student number_____

Debriefing

As you were told at the begining of today's session, in this study we are interested in looking at the standards that student's have for their academic performance. More specifically, we are interested in how these different types of standards are related to how students do, and how they feel about their performance. We will be examining two different theories that try to explain how these will be related to each other.

A recent theory has been presented by Higgins (1987) that discusses the way different self-standards are related to different emotions. The two types of standards described in Questionnaire one, "ideal" standards and "ought" standards, were suggested to produce different emotions when we find that we don't live up to them. These different emotions, in turn, were predicted to have different effects on latter performance. When we don't live up to our ideals (hopes, goals, and aspirations), Higgins suggests that we will feel disappointed and dissatisfied, and that this will make us work harder to do better later. When we don't live up to ought standards (especially what we think important other people think we ought to do) Higgins predicts that people experience anxiety and fear, and that these emotions interfere with our later performance. This theory suggests that different self-standards will lead to different feelings about people's performance when they don't live up to them, and that this, in turn, may affect later performance.

The second theory that we are looking at was presented by Sorrentino and Short (1986). They suggest that evaluating ourselves compared to our standards will be important for some people (called uncertainty-oriented), but not for others (called certainty-oriented). Past research related to this theory suggests that feeling that we live up to these standards or don't live up to them might affect later performance differently for uncertainty-oriented people and certainty-orented people. Research by Sorrentino, Short, and Raynor (1984) suggests that it is in situations that are important to people that their characteristic feelings about achievement (wanting to work hard to do well or feeling anxiety that interferes with performace) will influence their performance, and that different situations are important for certaity-oriented and uncertainty-oriented people. In the study we are doing today, it might be expected that not living up to our standards might provide information that is important to some people (uncertainty-oriented), but not for others (certainty-oriented). For uncertainty-oriented people, then, not living up to standards would be expected to motivate some to work harder, but would lead to feelings of anxiety for others. This would not be expected to be true for certainty-oriented people who do not feel that they live up to their standards. Somewhat surpris..gly, it might actually be when they don't see any discrepancy between their standards and how they are actually doing that certainty-oriented people might be motivated to work hard or to experience anxiety, depending on their characteristic tendency. The measures of uncertainty orientation come from some of the questionnaires that you filled out in the first term, as well as measures of characteristic feelings about achievement.

The study that you participated in is therefore intended to

examine the standards we set for our performance, and how this might affect the way we will eventually feel about our performance, and how we will do later on. There is not very much research available on this topic, and we feel that this research will provide some information that may prove to be important, for example for education.

Thank you very much for your help with this research. If you you have any questions about any aspect of this research, please feel free to contact me.

Chris Roney (Ph.D. student)

Room 4217 SSC

Here are some references that are relevant to our research:

Higgins, E.T. (1987). Self-discrepancy: A theory relating self and affect. Psychological Review , 94 , 319-340.

Sorrentino, R.M. & Short, J.C. (1986). Uncertainty, motivation, and cognition. In R.M. Sorrentino,& E.T. Higgins (Eds.), The handbook of motivation and cognition: Foundations of social behavior (pp. 379-403). New York: The Guilford Press.

Sorrentino, R.M., Short, J.C., & Raynor, J.O. (1984). Uncertainty orientation: Implications for affective and cognitive views of achievement behavior. Journal of Personality and Social Psychology , 46 , 189-206.

Appendix D

Analyses Including Gender for Both Studies

Analysis of Variance Summary Table

Grade on Midterm Exam with Uncertainty Orientation, Achievement-related Motives, Ought/other Discrepancies (Measured at Time 1), and Gender as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation	(A)	1693.65	1	1693.65	13.16	.001
Achievement-related Motives	(B)	518.11	1	518.11	4.03	.04
Ought/other Discrepancy	(C)	1267.44	1	1267.44	9.85	.002
Gender	(D)	369.51	1	369.51	2.87	.09
A X B		124.96	1	124.96	0.97	n.s.
A X C		70.42	1	70.42	0.55	n.s.
A X D		757.19	1	757.19	5.88	.02
B X C		72.82	1	72.82	0.57	n.s.
B X D		391.06	1	391.06	3.04	.08
C X D		6.72	1	6.72	0.05	n.s.
A X B X C		450.97	1	450.97	3.50	.06
A X B X D		87.36	1	87.36	0.68	n.s.
A X C X D		85.73	1	85.73	0.67	n.s.
B X C X D		504.10	1	504.10	3.92	.05
A X B X C X D		0.01	1	0.01	0.00	n.s.
Error		21751.47	169	128.71		

Analysis of Variance Summary Table

Grade on Final Exam with Uncertainty Orientation, Achievement-related Motives, Ought/other Discrepancies (Measured at Time 1), and Gender as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation (A)		650.83	1	650.83	5.45	.02
Achievement-related Motives	(B)	339.33	1	339.33	2.84	.09
Ought/other Discrepancy	(C)	1035.07	1	1035.07	8.67	.003
Gender	(D)	110.23	1	110.23	0.92	n.s.
A X B		92.74	1	92.74	0.78	n.s.
A X C		3.03	1	3.03	0.03	n.s.
A X D		247.50	1	247.50	2.07	n.s.
B X C		0.09	1	0.09	0.00	n.s.
B X D		101.20	1	101.20	0.85	n.s.
C X D		48.22	1	48.22	0.40	n.s.
A X B X C		557.29	1	557.29	4.67	.03
A X B X D		44.57	1	44.57	0.37	n.s.
A X C X D		0.26	1	0.26	0.00	n.s.
B X C X D		2.89	1	2.89	0.02	n.s.
A X B X C X D		15.43	1	15.43	0.13	n.s.
Error		20065.39	168	119.44		

Analysis of Variance Summary Table

Number of Items attempted with Uncertainty Orientation, Achievement-related Motives, Self-discrepancy condition, and Gender as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation (A)		6.70	1	6.70	0.58	n.s.
Achievement-related Motives	(B)	6.71	1	6.71	0.58	n.s.
Discrepancy Condition	(C)	2.30	1	2.30	0.20	n.s.
Gender	(D)	28.11	1	28.11	2.45	n.s.
A X B		0.03	1	0.03	0.00	n.s.
A X C		4.41	1	4.41	0.38	n.s.
A X D		45.72	1	45.72	3.98	.05
B X C		3.63	1	3.63	0.32	n.s.
B X D		0.24	1	0.24	0.02	n.s.
C X D		9.31	1	9.31	0.81	n.s.
A X B X C		120.54	1	120.54	10.49	.002
A X B X D		0.09	1	0.09	0.01	n.s.
A X C X D		9.31	1	9.31	0.81	n.s.
B X C X D		0.06	1	0.06	0.01	n.s.
A X B X C X D		11.57	1	11.57	1.01	n.s.
Error		1528.53	133	11.49		

Analysis of Variance Summary Table

Number of Items Correct with Uncertainty Orientation, Achievement-related Motives, Self-discrepancy condition, and Gender as Between-subjects Factors

Factor		SS	df	MS	F	p
Uncertainty Orientation	(A)	3.43	1	3.43	0.27	n.s.
Achievement-related Motives	(B)	9.88	1	9.88	0.77	n.s.
Ought/other Discrepancy	(C)	1.50	1	1.50	0.12	n.s.
Gender	(D)	22.88	1	22.88	1.79	n.s.
A X B		0.26	1	0.26	0.02	n.s.
A X C		7.37	1	7.37	0.58	n.s.
A X D		52.57	1	52.57	4.11	.04
B X C		0.41	1	0.41	C.03	n.s.
B X D		0.57	1	0.57	0.04	n.s.
C X D		8.63	1	8.63	0.67	n.s.
A X B X C		133.91	1	133.91	10.47	.001
A X B X D		5.68	1	5.68	0.44	n.s.
A X C X D		10.72	1	10.72	0.84	n.s.
B X C X D		1.20	1	1.20	0.16	n.s.
A X B X C X D		41.07	1	41.07	3.21	.08
Error		1701.19	133	12.79		

**Mean Midterm Exam Grades as a Function of Gender,
Achievement-related Motives, and Ought/other Discrepancy
(as Measured at Time 1)**

	Gender			
	Male		Female	
	Success-oriented	Failure-threatened	Success-oriented	Failure-threatened
High Ought/other Discrepancy	75.88 (8)	62.33 (9)	65.81 (32)	66.87 (23)
Low Ought/other Discrepancy	76.43 (28)	72.43 (14)	74.33 (33)	70.53 (38)

Note: the number in parentheses represents the number of subjects

Mean Midterm Exam Grades as a Function of Gender and Uncertainty Orientation

	Gender	
	Male	Female
Uncertainty Orientation		
Uncertainty-oriented	78.68 (28)	71.16 (69)
Certainty-oriented	68.35 (31)	67.84 (57)

Note: the number in parentheses represents the number of subjects

Mean Items Attempted as a Function of Gender and Uncertainty Orientation

	Gender	
	Male	Female
Uncertainty Orientation		
Uncertainty-oriented	12.96 (27)	10.37 (52)
Certainty-oriented	10.74 (23)	11.06 (47)

Note: the number in parentheses represents the number of subjects

Mean Items Correct as a Function of Gender and Uncertainty Orientation

	Gender	
	Male	Female
Uncertainty Orientation		
Uncertainty-oriented	10.78 (27)	8.08 (52)
Certainty-oriented	8.39 (23)	8.83 (47)

Note: the number in parentheses represents the number of subjects

Appendix E

Raw Data for Study 1

Data: Session One

Line	Column	Variable
1	1-3	Participant Code Number
1	5	Gender (1 = Male 2 = Female)
1	7-28	Individual Authoritarianism Scale Items (1-22, respectively)
1	30-31	$\underline{n}$ Uncertainty, Story 1
1	32-33	$\underline{n}$ Uncertainty, Story 2
1	34-35	$\underline{n}$ Uncertainty, Story 3
1	36-37	$\underline{n}$ Uncertainty, Story 4
2	1-2	Expected Grade in Introductory Psychology
2	3-5	Ideal/other Grade
2	7	Importance of Ideal/other Standard
2	8-10	Ought/other Grade
2	12	Importance of Ought/other Standard
2	13-15	Ideal/own Grade
2	17	Importance of Ideal/own Standard
2	18-20	Ought/own Grade
2	22	Importance of Ought/own Standard
2	24-25	$\underline{n}$ Achievement, Story 1
2	26-27	$\underline{n}$ Achievement, Story 2
2	27-28	$\underline{n}$ Achievement, Story 3
2	29-30	$\underline{n}$ Achievement, Story 4
2	33-47	Test Anxiety Questic.naire Items (1-15, respectively)
2	49-50	Midterm Exam Grade

2	52-53	Final Exam Grade
2	55-56	Overall Grade

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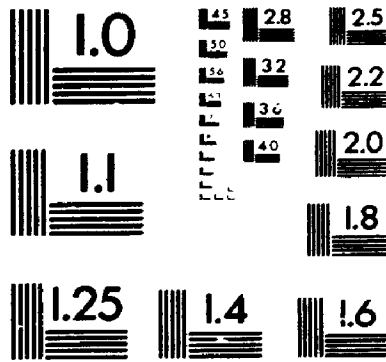
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Data: Session Two

Line	Column	Variable
1	1-3	Participant Code Number
1	5-6	First Term Grade in Introductory Psychology
1	8-9	Ideal/other Grade
1	10	Importance of Ideal/other Standard
1	12-13	Ought/other Grade
1	14	Importance of Ought/other Standard
1	16-17	Ideal/own Grade
1	18	Importance of Ideal/own Standard
1	20-21	Ought/own Grade
1	22	Importance cf Ought/own Standard
1	24-48	Individual Affect Items (1 to 25, respectively)

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Appendix F

Materials for Study 2

Instructions

In the study you will be helping me with today we are studying the standards that people have for their performance. Specifically, you will be asked about a type of standard that has been called an (ideal or ought, depending on condition).

Ideal/own condition:

Psychologists have defined "ideal" standards as "hopes, goals, and aspirations". In the first part of today's experiment you will be asked to think about what your personal ideal standard would be, in terms of where you would ideally hope to score, relative to other first year students, on any type of mental performance test. In other words, what ranking would you ideally like to accomplish. Before we go on, are there any questions about what we mean by an "ideal" standard?

Ought/other condition

Psychologists have defined "ought" standards, as "a sense of duty or obligation". In the first part of today's experiment you will be asked to indicate what "ought" standard you think some significant other would have for you, in terms of where they would feel you "ought to" score, relative to other first year students, on any type of mental performance test. In other words, what ranking would an important significant other see as tour duty, or obligatiopn to accomplish? You should think of this standard in terms of the significant other whose expectations would be most important to you. Before we go on, are there any questions about what we mean by an "ought" standard?

All Subjects

You have probably noticed all of these rooms all around us; each of these rooms has a microcomputer in it, and you will be doing today's experiment on these computers. Once we get started, the first thing you will be doing is answering some questions about your (ideal or ought, depending on condition), as we have already discussed. The other thing that I will be asking you to do today, is to do two ability tests. These tests are measures of mental abilitly, much like what you get from an intelligence test. The instructions for these tests will be presented on the computer screen, and you will have a chance to do a practice question for each test to make sure you know how they work. Please let me know before you start the tests if you have any questions. Both are timed tests, so you will want to make sure you understand the instructions before beginning. One of the advantages of doing these tests on the computer is that we can give you feedback immediately about how you have done. I have written a program for the first test to calculate your score and tell you how you have done.
Are there any questions before you begin?

Task :

This test is a measure of mental ability. It involves finding a pattern in a series of numbers and filling in the missing number in the series. Below is an example:

2, 4, 6, 8, 10, ____

The correct response for this example would be 12.

You will have three minutes to answer as many of these questions as you can. The task therefore requires speed as well as accuracy. If you have any questions about this test please see the experimenter, otherwise, press any key to begin.

3, 6 1/3, 9 2/3, 13, 14 1/3, ____

2 1/2, 6 3/4, 11, 15 1/4, ____

3, 5, 9, 17, ____

3, 7, 18, 26, 37, 53, ____, 96

1, 5, 13, 17, 25, ____

3 1/3, 5, 8, 12 1/2, 18 1/2, ____

____, 7, 9, 12, 16

2, 3, 4, 6, 8, 11, ____

2, 7, 11, 14, ____, 17

____, 8, 12, 18, 27

.

Task 2

Instructions for Alternation Test

You will be asked to do 25 three-step problems. Each problem is done by solving one line at a time, paying close attention to the signs. There can be either plus signs or minus signs. For example, the answer to the first two steps of the following problem is:

Step 1:   9 + 7 - 3 = 13

Step 2:   6 - 4 + 3 = 5

To complete the third step, we look to see if the answer to the first line is bigger or smaller than the answer to the second line. In the example above, the answer to the first line is bigger. When this happens, we <u>subtract</u> the answer to the second line from the answer to the first line. Here, 13 is larger than 5, so we subtract 5 from 13 to get 8. The <u>final answer</u> is 8.

A Review of the Problem:

9 + 7 - 3 = 13   Answer to line one (this is larger)

6 - 4 + 3 = 5   Answer to line two (this is smaller)

8 is the final answer

<u>Here is another example</u>:

8 - 4 + 2

9 + 5 - 6

The answer to line one is 8 minus 4 plus 2 equals 6. The answer to line two is 9 plus 5 minus 6 equals 8. In this example, line one is smaller than line two. When this happens, we <u>add</u> the answer for line one to the answer for line two. Thus 6 plus 8 equals 14, which is the final answer. When you are doing the test, you should <u>not</u> write down the answer to lines one and two. Write down only the final answer.

Remember, if the answer to line one is larger than the answer to line two, you subtract. If the answer to line one is smaller than the answer to line two, you add.

Try the following two examples:

(A)   9 - 4 + 7   (B)   8 - 6 + 1

6 - 3 + 2   7 + 4 - 2

The Final Answer to A is 7.   The Final Answer to B is 12.

Be sure you understand how to do these problems before you go on. Remember, for the problem to be correct, you must write down only one final answer. You must not write down the answer to line one and line two. That is, you are to do each problem <u>in your mind</u>, and then write down the answer.

(PLEASE DO NOT GO ON TO THE NEXT PAGE UNTIL ASKED TO DO SO)

4 + 5 + 8	9 + 3 - 7	5 - 2 + 8	9 + 2 - 4
7 + 6 - 4	5 + 8 + 3	6 + 3 - 4	8 + 5 + 3
7 - 2 + 6	3 + 4 - 2	6 - 3 + 9	8 + 5 - 7
8 + 3 - 9	9 - 5 + 4	5 + 6 - 4	4 + 9 - 5
5 - 3 + 2	6 - 2 + 8	3 + 9 + 5	8 + 5 - 7
3 + 8 + 6	5 + 7 + 3	7 - 4 + 6	5 + 9 + 4
6 - 2 + 8	4 + 3 - 2	9 + 5 - 6	8 - 3 + 7
9 + 2 - 8	5 + 6 - 4	4 + 8 + 5	9 + 2 - 6
7 + 4 - 5	2 + 9 - 7	7 - 2 + 9	4 + 8 - 7
9 - 6 + 5	3 + 8 + 6	7 + 4 - 3	3 + 9 - 4
5 + 8 - 2	9 - 5 + 3	8 - 3 + 7	2 + 6 - 5
7 + 4 - 8	4 + 7 + 5	4 + 9 - 6	7 + 4 - 3
4 + 6 + 8			
3 + 7 + 9			

Debriefing

As you were told at the begining of today's session, in this study we are interested in looking at the standards that people have for their performance. What you were not told, however, is that we are interested in studying how these different types of standards are related to motivation. In fact, the tasks that you did are not actually measures of mental ability, and do no reflect intelligence. We had to tell you that they are, to make them sound important enough that people will care about how they do. What these measures <u>really</u> are, are simply performance measures that are sensitive to temporary motivational states. Rather than reflecting mental ability, then, these measures simply indicate your motivation at the time you complete them.

In our research, we are examining two different theories that try to explain how our standards affect our performance. One recent theory has been presented by Higgins (1987) that discusses the way different self-standards are related to different emotions. The two types of standards described to you earlier, "ideal" standards and "ought" standards, were suggested to produce different emotions when we find that we don't live up to them. These different emotions, in turn, were predicted to have different effects on latter performance. When we don't live up to our ideals (hopes, goals, and aspirations), Higgins suggests that we will feel disappointed and dissatisfied, and that this will make us work harder to do better later. When we don't live up to ought standards (especially what we think important other people think we ought to do) Higgins predicts that people experience anxiety and fear, and that these emotions interfere with our later performance. This theory suggests that different self-standards will lead to different feelings about people's performance when they don't live up to them, and that this, in turn, may affect later performance.

The second theory that we are looking at was presented by Sorrentino and Short (1986). They suggest that the uncertainty inherent in self-discrepancies (i.e., "will I be able to accomplish this?") will be important for some people ("uncertainty-oriented"), but not for others. We have found that these other people ("certainty-oriented") are more comfortable in situations that do not require resolving uncertainty, as would be the case when we live up to our standards (i.e., there is no doubt regarding whether the standard can be attained). Research by Sorrentino, Short, and Raynor (1984) suggests that it is in situations that match people's orientation that their characteristic feelings about achievement (wanting to work hard to do well versus feeling anxiety that interferes with performace) will influence their performance. For uncertainty-oriented people, then, not living up to standards would be expected to activate people's motivation, because this creates uncertainty. Somewhat surprisingly, it is when they don't see any discrepancy between their standards and how they are actually doing that certainty-oriented people are expected to show their typical motivation. The measures of uncertainty orientation come from some of the questionnaires that you filled out in the first term, as well as measures of characteristic feelings about achievement.

To study these two theories, it was therefore necessary for us to

create a situation where people either live up to their standards, or
fail to achieve their standards. To do this, it was necessary for us
to give you feedback one way or the other. What this means, is that
the feedback you were given does not reflect your actual standing .
The computer randomly decided whether you were to be in the condition
where people reach their standards, or that where they don't reach
their standards. The feedback you got was determined by what condition
you were assigned to, and not your performance .
    The study that you participated in is therefore intended to
examine the standards we set for our performance, and how this might
affect the way we will eventually feel about our performance, and how
we will do later on. There is not very much research available on this
topic, and we feel that this research will provide some information
that may prove to be important, for example for education.
    Thank you very much for your help with this research. If you you
have any questions about any aspect of this research, please feel free
to contact me.

                                              Chris Roney (Ph.D.
student)

                                              Room 4217 SSC

        Here are some references that are relevant to our research:
Higgins, E.T. (1987). Self-discrepancy: A theory relating self and
        affect. Psychological Review , 94 , 319-340.
Sorrentino, R.M. & Short, J.C. (1986). Uncertainty, motivation, and
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Sorrentino, R.M., Short, J.C., & Raynor, J.O. (1984). Uncertainty
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        achievement behavior. Journal of Personality and Social
        Psychology , 46 , 189-206.

Appendix G

Raw Data for Study 2

Data

Line	Column	Variable
1	1-3	Participant Code Number
1	5	Gender (1 = Male 2 = Female)
1	7-21	Test Anxiety Questionnaire Items (1-15, respectively)
1	23-44	Authoritarianism Scale Items (1-22, respectively)
2	2-3	n Uncertainty, Story 1
2	4-5	n Uncertainty, Story 2
2	6-7	n Uncertainty, Story 3
2	8-9	n Uncertainty, Story 4
2	11-12	n Achievement, Story 1
2	13-14	n Achievement, Story 2
2	15-16	n Achievement, Story 3
2	17-18	n Achievement, Story 4
2	20	Self-standard Condition (1 = Ideal/own 2 = Ought/other)
2	22	Discrepancy Condition (1 = No Discrepancy 2 = Discrepancy)
2	24-25	Self-standard (percentile)
2	27-28	Items Attempted, Task 1
2	30-31	Items Correctly Answered, Task 1
2	33-34	Items Attempted, Task 2
2	36-37	Items Correctly Answered, Task 2
2	39	"How important is this standard to you?" (1 = very much 7 = not at all)
2	41	"How well did you do relative to your

standard?"
(1 = not at all   7 = very well)

2   43   "How well did you do in general?"
                   (1 = not at all well   7 = very well)

2   45   "How well do you feel these tasks
                    reflect mental ability?"
                   (1 = not at all   7 = very well)

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