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SELF-HANDICAPPING AND OVERACHIEVEMENT: TWO STRATEGIES TO COPE WITH SELF-DOUBT

DISSERTATION

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

By

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* * * * *

The Ohio State University
1998

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ABSTRACT

People, especially those who are unsure about their own level of competence, often want to appear competent to others. These individuals who doubt their level of competence have two strategies at their disposal to create an image of competence: self-handicapping and overachievement.

Self-handicapping involves the creation of obstacles or the withdrawal of effort on a task. This strategy allows its user to maintain the appearance of competence by discounting ability attributions for failure and augmenting ability attributions for success. Overachievement involves an excessive expenditure of effort to guarantee a successful outcome. This strategy allows its user to maintain the appearance of competence through the demonstration of a successful outcome.

Both self-handicapping and overachievement allow self-doubting individuals to maintain an image of competence. It is suggested here that which strategy individuals with a shaky sense of self-confidence choose to use depends on their frame of reference about how competence is judged. Self-doubting individuals focused on the idea that competence is judged according to ability level are proposed to self-handicap. Self-doubting individuals focused on the idea that competence is judged according to demonstrating outcomes are proposed to overachieve.
Two studies are presented that demonstrate the role of feelings of self-doubt and a focus on either the importance of ability or outcome in creating self-handicapping and overachievement behavior. Self-handicapping arises from feelings of self-doubt and a concern about one's ability level, overachievement arises from feelings of self-doubt and a concern about one's performance.

Feelings of self-doubt lie behind two very different patterns of behavior- effort withdrawal in self-handicapping and excessive effort expenditure in overachievement. Yet, both strategies serve the same purpose- allowing their users to maintain the appearance of competence. When competence may be judged according to ability level, self-handicapping is effective while when competence may be judged by outcomes, overachievement is effective.
To my grandmothers, Margaret Goodenow and Maxine Storch.
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CHAPTER I

INTRODUCTION

“All’s the world’s a stage/All the men and women are merely players.”- William Shakespeare, As You Like It.

Although known more for his great works of literature, Shakespeare was also an amateur psychologist interested in what today is called self-presentation, “the process of establishing an identity through the appearance one presents to others” (Arkin & Sheppard, 1990, p. 175). Since Shakespeare’s time, many psychologists have been interested in how people try to present themselves in ways that shape what others think of them and what they think of themselves.

Erving Goffman (1959) articulated Shakespeare’s insight for psychology in his dramaturgical approach. He proposed that life is like the theater and each person is an actor in a play. As an actor, each person has a role to play. As such, each person has a face, a social image, he or she is attempting to create and foster in others. To accomplish this, each person acts out certain lines, through his or her words and actions, to create the
desired face in others. Thus, in everyday interactions, people try to convey an image of themselves, much as actors in a play try to convey the role they are playing.

Attribution theorist Fritz Heider (1958) similarly notes that a person is attuned to how he or she might be perceived by another person and might adjust his or her behavior to convey a certain impression. Specifically, Heider states that a person may “try to influence o’s [the other person’s] perception” (p. 78) of him or her. Heider continues, “what is perceived is often judged favorably or unfavorably. Also, p may influence o’s perception in order to influence o’s evaluation of x, especially of p himself; or p reveals himself and what belongs to him in order to produce a positive reaction; he brags and shows off. Or he hides himself to prevent a negative evaluation” (p. 78).

As Shakespeare, Goffman, and Heider all note, people are aware that others continually form impressions of them. Furthermore, people are aware that they can in some ways manage the impressions that others form about them by presenting themselves in a certain way. Jones and Pittman (1982) outlined five common self-presentational strategies: 1) ingratiation, used to appear likeable, 2) intimidation, used to appear powerful, 3) self-promotion, used to appear competent, 4) exemplification, used to appear worthy, and 5) supplication, used to appear weak or helpless. People, then, have several self-presentational strategies at their disposal to convey a particular image depending on their needs in a particular situation.
1.1 Appearing Competent

Of the many impressions a person might want to make on others, making the impression that he or she is competent might be one of the most important. Contemporary western society places a high value on competence. In deciding which classmate they want on their kickball team, in deciding which students to accept to colleges, or in deciding which potential employee to hire, people overwhelmingly want someone who is competent. As Edward Jones (1989) states, “one's competence is an extremely valuable attribute, an attribute closely linked to self-esteem, to social status, and to feelings of control, personal security, and mental health (p. 477).” Jones continues that because of the extreme value society attaches to competence, people are extremely interested in appearing competent.

What is critical here is that although it is important to actually be competent, what might be more important is to appear competent. It is so important that people might use self-presentation “to try to actively arrange the circumstances of their behavior so as to protect their conceptions of themselves as competent, intelligent persons (Jones & Berglas, 1978, p. 200).” In particular, Jones and Berglas (1978) suggest two strategies that allow a person to protect their image of competency: self-handicapping and overachievement.

1.2 Self-handicapping

Self-handicapping is one particularly compelling form of behavior designed to maintain the image that one is competent; one that has intrigued researchers for more
than two decades (Arkin & Oleson, 1998). Jones and Berglas (1978) proposed that individuals are sometimes willing to forgo a successful outcome, and actually create obstacles which interfere with their own performance or withdraw effort, in the service of self-esteem maintenance. They termed this pattern of behavior “self-handicapping.”

Berglas and Jones (1978) provided the initial demonstration of self-handicapping. In this classic example of self-handicapping behavior, Berglas and Jones demonstrated that prior to taking an intelligence test, some people would choose to take drugs that were presented as likely to impair intellectual performance. For half of the participants, the problems on an initial intelligence test were solvable and the experimenter told the participant that they had scored extremely high on the test. The other half of the participants were presented with unsolvable problems on the first test. Despite the difficulty of the problems, participants were repeatedly told that their forced guesses on the test were correct. Prior to taking a second intelligence test, this latter group of participants chose to take the performance-impairing drug rather than a performance enhancing-drug, thus attempting to sabotage their performance. For these participants, their success surely felt illegitimate and unearned. In their view, their brilliance on the intelligence test felt more like a series of lucky guesses. Surely, these participants were overwhelmed with self-doubt, making them unsure if they could repeat that performance. Their performance reflected directly on their self worth—whether or not they were intelligent. In other words, the participants’ doubt had a powerful reference to themselves; the outcome of the second test was directly related to their sense of competence and self-worth. Rather than disproving their heroic success, these
participants chose to self-handicap—to take the performance impairing drug that would provide a ready excuse if they did indeed fail on the second intelligence test.

Self-handicappers want to avoid appearing incompetent to others. Specifically, they do not want others to perceive that they lack ability. Their self-handicapping behaviors render attributionally ambiguous the causes of any failure. By creating or seeking inhibitory factors that interfere with performance, an individual strategically obscures the link between performance and evaluation. The inhibitory factors, such as lack of effort or claiming a handicap, make it impossible to be definite in attributing a failure to lack of ability. For example, on the night before an important exam, a self-handicapper may opt to go to a movie rather than to study. If the self-handicapper scores poorly on the exam, it is not clear whether his or her subpar performance resulted from a lack of ability or from a lack of studying. By engaging in self-handicapping behavior, the self-handicapper discounts lack of ability as the most plausible account for failure, and thus can maintain an image of competence.

An additional benefit of self-handicapping behavior is that in the case of success, ability attributions are secured. If a person succeeds despite the obstacles he or she encounters, he or she must possess a high level of ability. In the example above, if the student performs exceedingly well on the exam, despite his or her not studying, the implication is that he must be exceptionally intelligent. In attributional terminology, then, self-handicapping is a strategy that is implemented to discount ability attributions as explanations for poor performance, but to augment ability attributions for exceptional
performance. In the case of both success and failure, the individual who self-handicapped is still seen as competent.

There also are obvious costs to self-handicapping behavior. By deliberately setting up obstacles to interfere with performance or by withdrawing effort, self-handicappers make success less likely and failure more probable. According to Baumeister (1998), self-handicapping is a clear illustration of a tradeoff pattern. In such a situation, the person chooses an action in order to reap the positive benefits that accrue from it, while at the same time accepting the negative costs that accompany it. Specifically, self-handicapping has the positive benefits of protecting the self-handicapper's self-esteem from attributions to lack of ability in the face of failure. At the same time, self-handicapping boosts self-handicappers' ability to take credit for success. On the negative side, self-handicapping can make failure more likely.

One particularly intriguing facet of self-handicapping is its active nature. Self-handicappers intentionally sabotage their performance. They often take active steps to underachieve, be it by withdrawing effort or by drinking excessive amounts of alcohol. This facet of self-handicapping raises several questions. Why are self-handicappers willing (and possibly eager) to suffer the cost of a hampered performance in order to avoid negative information about their ability? What motivates this pattern of self-defeating behavior?
1.2.1 Etiology of self-handicapping: The importance of self-doubt

Jones and Berglas (1978) suggest that self-handicapping may be a strategy in the service of “self-image protection” (p. 200). Self-handicappers try to arrange the circumstances so that they can protect their conceptions of themselves as worthy people. Why does the self-handicapper develop a “competence complex” (p. 204), having an overriding concern with maintaining the image that he or she is competent?

According to Berglas and Jones (1978), “a basic uncertainty concerning how competent one is” (p. 406) underlies the desire to be seen as competent. People who have a shaky sense of how competent they are are just those who are most interested in appearing competent. Those who are certain that they are competent will have no need to engage in self-image protection through self-promotion. In fact, as Jones and Pittman (1982) suggest, there might even be a “self-promoter's paradox” such that “those who are truly secure in their talents are, if anything, less likely to refer to them than those who have self-doubts...truly competent people can let their performances speak for them without any self-presentational embellishment” (Jones, 1989, p. 487).

Likewise, the individual who is a “perpetual loser” (Jones & Berglas, 1978, p. 205) is not likely to be overwhelmingly concerned with maintaining the image he or she is competent. These individuals might be certain that they lack competence and have no real image to protect.

Accordingly, the people most prone to worry about their image of competence are those who “have a precarious and fragile, but not entirely negative self-concept” (Arkin & Baumgardner, 1985, p. 179). Individuals who doubt their level of competence
ironically are the ones most likely to be concerned about promoting the image that they are competent. It is not that these individuals feel that they are competent or that they lack competence; instead they are just unsure as to what their level of competence is. Harris and Snyder (1986) conclude, “When it comes to self-handicapping, therefore, it might not be how much sense of personal worth one has, but rather how firmly one senses that personal worth is the key (p. 457).” Self-doubts and uncertainty about one's competence and ability to appear competent in evaluative situations form the root of a concern about appearing competent.

Jones and Berglas (1978) suggest two possible sources of such self-doubt about one's competence. First, a shaky sense of competence can develop from a person's difficulty in determining whether the love of significant others is unconditional. Specifically, a person might be unable to determine whether or not parental approval is based on the demonstration of competence or on their parents' love and esteem. As a result, the person develops a “vital concern with the signifying implications of performance for his self-image of competence” (p. 205) because appearing competent is the condition for others' approval. One solution to this concern is to self-handicap. In the view of self-handicapper, competence is a crucial determinant of others' love. As Jones and Berglas (1978) put so well, “He who tries and fails loses everything. He who fails without trying maintains a precarious hold on the illusion of love and admiration” (p. 204). By self-handicapping and muddying the attributional waters, a person can maintain the appearance that he or she is competent. For self-handicappers, maintaining this perception is more important than obtaining a successful outcome. They use a self-
handicapping strategy to prevent clear diagnostic information about their ability; information that might implicate a lack of competence. Of course, this strategy is only effective for those who have a competence image to protect. The "perpetual loser," who has no competence image to protect, would not be expected to use a self-handicapping strategy.

Berglas and Jones (1978) suggest yet another scenario in which a person might develop doubts about his or her competence. Specifically, a concern with appearing competent can develop from "a [person's] capricious reinforcement history. It is not that their histories are pocked with repeated failures; they have been amply rewarded, but in ways and on occasions that leave them deeply uncertain about what the reward was for (p. 407)." Thus, with noncontingent reinforcement, rewards are uninformative regarding one's level of competence. Again, self-handicapping might be an effective strategy for the person with this shaky sense of confidence to use to maintain an image of competence.

In sum, individuals who are uncertain about their competence, whether this self-doubt developed from a sense that others' approval is contingent on being competent or from a chaotic reinforcement history, are particularly interested in maintaining the image that they are competent. Self-handicapping is one strategy individuals with a shaky sense of competence might use to preserve the illusion they are indeed capable. Overachievement, the topic to which we now turn, is another self-presentational strategy available to those uncertain about their competence.
Jones and Berglas (1978) suggested that the "self-handicapper may in many ways be similar to the overachiever" (p. 205). At first, this assertion that overachievers are similar to self-handicappers may seem counterintuitive, but as will be argued further below, "an exaggerated importance of one's own private self-competence and the need to protect that conception from unequivocal feedback" (Jones & Berglas, 1978, p. 202) may lie at the root of both overachievement and self-handicapping.

1.3 Self-doubt and Overachievement

Unlike underachievement, overachievement has received little attention by researchers. Overachievers are fulfilling their potential and are contributing all that society expects—in fact, more than society may expect or demand. They have therefore not been of particular interest to researchers except as a group with which to compare underachievers. For instance, consider two students. The first achieves straight A's in school and exceeds both the teacher's and parent's expectations. This student is a "good" student and is not demonstrating deviant behavior as he or she is proceeding satisfactorily—or even better than satisfactorily—through the educational system. The second student, on the other hand, consistently brings home poor marks and fails to live up to his or her full potential. This student creates more concern for researchers. This second student is a "bad" student, deviating from the proper course of educational development, resulting in a loss of human capital.

Traditionally, overachievement has been objectively defined to occur when a person's performance, such as their grade point average (GPA), exceeds an expected level
of performance, such as their GPA predicted by their Scholastic Aptitude Test (SAT) scores. Most people would argue that in this sense, overachievement benefits the individual. These traditional conceptions of overachievement, however, are merely descriptive and overlook the richness of the psychological experience of the overachiever. Thus, it is critical to distinguish between objective overachievement and the more subjective experience associated with overachievement.

Overachievers are very similar to self-handicappers in that they are doubtful about their competence and are overly concerned with maintaining the illusion that they are capable. However, this same belief pattern manifests itself as a very different pattern of behavior.

1.3.1 Self-doubt and overachievement

Jones and Berglas (1978) suggest that:

[...]

As suggested by Jones and Berglas twenty years ago, both self-handicappers and overachievers are overly concerned with their competence as an indication of self-worth.
However, they use different strategies to deal with the concern. As was discussed above, when uncertain about their ability to succeed, the self-handicapper seeks out or creates an inhibitory factors that will serve as a ready excuse in the face of failure. Self-handicappers are willing to trade off successful outcomes for the avoidance of negative feedback about their ability.

To ensure others' approval, overachievers, like self-handicappers, are also concerned with maintaining the image that they are competent. However, the overachiever uses persistent and excessive effort to avoid failure. This heroic effort expenditure will in most cases lead to a success. There is a cost to excessive effort expenditure. When a successful outcome occurs, the overachiever renders ambiguous the cause of that success. It is unclear whether the success was due to ability or to effort. Like the self-handicapper, the overachiever is faced with a tradeoff. The overachiever garners the benefit of a successful outcome at the expense of heroic expenditures of effort that render attributions for success ambiguous.

There is another more dangerous downside associated with overachievement. One could exert effort and still fail, which "carries unequivocal implications about ability" (Jones & Berglas, 1978, p. 205). The person who attempts to appear competent by striving to succeed runs the risk of failing despite his or her effort, thus shattering any image of competence he or she might have had. Thus, as Jones and Berglas (1978) suggest the "overachievement strategy is a precarious one" in promoting the image of competence. However, in the appropriate circumstances, which will be discussed later, overachievement might be a useful self-promotion technique.
In sum, both overachievers and self-handicappers doubt their competence and have an overinvestment in the question of their self-worth. To receive the love and approval of others, they yearn to keep their perception of competence intact. Overachievers accomplish this through the heroic expenditure of effort and self-handicappers through the acquisition of a handicap.

Since overachievement is a relatively new research area and no comprehensive review of the literature exists as is the case with self-handicapping (see Arkin & Baumgardner, 1985; Arkin & Oleson, 1998), a brief review of the research on overachievement is presented next.

1.3.2 Attributional model of overachievement

Recently, a new attributional model of overachievement was proposed by Robert Arkin and his colleagues to examine the subjective experience of overachievement, including its emotional and cognitive underpinnings (Oleson, Poehlmann, Yost, Lynch, & Arkin, 1998). According to this view, subjective overachievers are defined by two characteristics: 1) a high concern for performance and a belief that a person's worth is judged according to their performance, and 2) a high level of doubt in their ability. For these overachievers, it is critical to maintain their self worth by receiving the approval that comes with success. In a performance situation, though, overachievers remain uncertain as to whether their ability alone is sufficient to lead to success. They consequently put forth large amounts of effort, which they do not enjoy doing (Poehlmann, 1994). Overachievers cannot determine if their success resulted from their
ability or their effort. As a result, their self-doubt in their ability persists. When confronted with another performance situation, overachievers again want to succeed but continue to doubt their ability and the cycle begins anew. This model of overachievement is presented in Figure 1.

Figure 1: The Model of Overachievement
1.3.3 The subjective overachiever

It is important to note that an objective achiever, a person who performs better than would have been expected according to objective standards, may not be a subjective overachiever. Objective overachievers are usually defined to be individuals for whom their objective performance, such as their grade point average, exceeds what would have been predicted based on objective measures of their ability, such as intelligence scores. Objective overachievers are identified by objective standards (e.g. outcomes such as GPA). Subjective overachievers, on the other hand, are not identified objectively and instead are identified by their phenomenology- a high concern for performance and self-doubt in their ability. Objective overachievers may accomplish high levels of objective success without experiencing the pattern of thoughts and feelings that characterize the subjective overachiever (a powerful sense of self-doubt coupled with a compelling drive to succeed) described by the present model of overachievement.

Likewise, a subjective overachiever need not be an objective achiever. An individual may need to succeed and have “gripping self-doubt” yet not actually objectively overachieve (i.e., objectively performing better than expected). Yet, based on their phenomenology these individuals are still subjective overachievers. Because of the heroic effort expenditure that is proposed to accompany self-doubt and a concern for performance, though, subjective overachievers may also overachieve objectively (Yost, Poehlmann, & Arkin, 1994). Objective and subjective overachievement are not, however, inextricably linked.
Finally, it is important to distinguish between the subjective overachiever and an individual who is high in achievement motivation. Like the subjective overachiever, those who are high in achievement motivation might also be concerned about their performance. However, "achievement motivation might be seen as more internally motivated, reflecting enjoyment of performing challenging tasks that require hard work" (Oleson, Poehlmann, Yost, Lynch, & Arkin, 1998, p. 15) while the concern for performance of the subjective overachiever might be more extrinsically focused as these individuals are trying to appear competent to others (Lynch, 1996). Thus, although the person high in achievement motivation and the subjective overachiever might share a concern for performance, this concern might differ. The person high in achievement motivation might have an intrinsic need to perform or find pleasure in challenge. The subjective overachiever, though, might be concerned with performance to appear competent to others.

Furthermore, a person high in achievement motivation need not experience feelings of self-doubt like the subjective overachiever. The person high in achievement motivation may be concerned with performing well without being battered by uncertainty about their ability. In fact, such self-doubt might actually lower achievement motivation.²

The subjective overachiever is defined by a certain phenomenology - self-doubt in one's ability and a high concern for the appearance of high performance. As such, subjective overachievement is distinguishable from both the objective overachiever (who are defined based on objective standards, not on a pattern of thoughts and feelings) and...
the person high in achievement motivation (who may be intrinsically concerned with performance but may not be experiencing self-doubt).

1.3.4 The Overachievement Scale

From the attributional model of overachievement, Oleson, Poehlmann, Yost, Lynch, & Arkin (1998) have developed a 17-item Overachievement Scale that identifies subjective overachievers and non-overachievers on the two dimensions of self-doubt in ability and concern for performance. The scale is comprised of two subscales: Concern for Performance (9 items) and Doubt in Ability Level (8 items). The two-factor structure as well as the reliability, convergent validity, discriminant validity, and construct validity of the scale have been demonstrated in previous studies (Poehlmann & Oleson, 1995). Overachievers are conceptualized as individuals who score high on both of these subscales; they are high in the concern for performance and are high in self-doubt about their ability. Non-overachievers are individuals who do not score high on both subscales. The Overachievement Scale is presented in Appendix A.

1.3.5 The phenomenology of overachievement

A program of research has explored the affective, behavioral, and cognitive experience of subjective overachievers. A recent study by Poehlmann (1994) was conducted to explore the pattern of affective and cognitive responses that distinguish overachievers from non-overachievers. As would be expected by their compelling desire to achieve successful outcomes, compared to non-overachievers, overachievers reported especially negative emotions, such as depression and hopelessness, in response to failure.
Following a success, overachievers were unable to enjoy their accomplishments as much as non-overachievers, reporting that their success was due to luck and concerns about whether others will discover that they might lack competence. Presumably, a successful outcome also raises the expectation that subsequent performances will be successes which, given their doubt in their ability, can be particularly distressing for the overachiever. Thus, they are prevented from enjoying their success, and instead feel discontented and concerned.

Overachievers also expressed a strong belief in the efficacy of effort. They seemed to believe, "That with effort, anything is possible." This may be a reasonable conclusion for an overachiever to reach. Given their pervasive doubt in their ability, any success they do achieve might more readily be attributed to effort rather than ability. Interestingly, overachievers also reported a strong dislike of hard work and effort.

In addition, past research by the author has shown that overachievers are extrinsically rather than intrinsically motivated (Lynch, 1996). She concludes "For overachievers, the motivational impetus for engaging in activities might not be enjoyment, interest, or personal enrichment. Instead activities might be viewed as a means to an end- a means to reap others' approval" (Lynch, 1996, p. 108). Putting forth time and energy into a task, for overachievers, is in the service of maintaining an image of competence, not intrinsic interest.

Overachievers' extrinsic motivational orientation also distinguishes them from people high in achievement motivation. Murray (1938) suggested that the need for achievement was a fundamental human motivation. However, he also posited that there
are different types of needs. Murray made a distinction between activity needs and effect needs. Activity needs lead an individual to engage in a certain activity for its own sake. Activity needs involve both process activities and modal needs. Process activities are organismic capabilities, such as vision or hearing that occur because they have “sheer function pleasure” (Hall & Lindzey, 1978, p. 220). Modal needs involve doing something with a certain degree of excellence or quality. Here an activity is sought and enjoyed for its own sake but is rewarding only when a certain degree of mastery is accomplished. In stark contrast are effect needs, needs designed to bring about some sought-after effect or desired goal. The activity is not pursued for its own sake, but for a desired end result that is extrinsic to the activity.

Using Murray's distinction, both overachievers and high achievers may have a need for achievement. However, the need for achievement may be of different types for these individuals. For high achievers, the need for achievement may be more of an intrinsic need; a modal need such that demonstrating mastery to themselves lies at the root of their need for achievement. Overachievers' need for achievement, on the other hand, may be better classified as an effect need. Overachievers' goal in performance situations may not be mastery of a task or enjoyment, but rather centers on the opinions of others about the overachiever's level of competence.

1.3.6 Behavioral consequences of overachievement

Several studies have also demonstrated that overachievers display a unique pattern of behaviors when compared to their non-overachiever counterparts. For
instance, recent work found that scores on the Overachievement Scale tended to correlate with individuals' self-report of the amount of time spent studying, with those having higher overachievement scores reporting studying more. Additionally, the overachiever's level of studying is predictive of objective overachievement. Overachievers who report studying more also tend to have higher college GPAs than would have been predicted by their SAT scores (Poehlmann & Oleson, 1995). As suggested earlier, then, the effort expenditure of the overachiever may also lead that individual to be an objective overachiever.

To review so far: Individuals are often concerned with presenting a particular image to others. In particular, often people want to appear competent. Two self-promotion self-presentation strategies were suggested that individuals can use to create an image of competence: self-handicapping and overachievement. Furthermore, these drastically different behavior patterns (effort withdrawal in the case of the self-handicapper and heroic effort expenditure in the case of the overachiever) were proposed to be inspired by the same force: self-doubt about one's competence. Of interest, then, is given a self-doubt about competence, what determines whether a person will choose self-handicapping or overachievement as a means of self-promotion? Before positing an answer, we must consider the importance of the subjective construal of reality.

1.4 The importance of the subjective construction of reality

In identifying the four most important lessons of social psychology, Zimbardo (1994) felt compelled to include the idea of the subjective construction of reality. To
quote Zimbardo (1994), “To understand how the situation matters, we need to discover how the behavioral setting is perceived and interpreted by those people in it and what meanings they attribute to its various components” (p. 181). Thus, the subjective reality, how a particular person views a situation, is a more important determinant of one’s feelings and behavior than objective reality itself.

As a general example of the importance of individuals’ subjective construal of the situation, consider an acrophobic, a person with a severe fear of heights. The acrophobe may experience sheer terror when riding an elevator to the second floor of an office building. Objectively, one story is not a great height, but from the acrophobe’s subjective point of view, that one story seems like a mile. The acrophobe's subjective reality, his or her perception that he or she is at a great height and is surely in great danger, causes heart rate to surge, palms to sweat, and terror that makes such elevator trips unlikely in the future. The objective reality, that the building is only one story, is irrelevant to the acrophobe's subjective experience of the elevator ride.

The previous example was concerned with the subjective reality of a physical stimulus, the height of the building. The importance of subjective reality is equally applicable to social stimuli. Social psychological research has clearly demonstrated the importance of subjective reality in determining people's thoughts, feelings, and behavior.

For instance, in Milgram’s (1974) classic studies on obedience, participants assigned the role of “teacher” in a learning experiment were willing to administer high levels of shock (up to 450 volts) to another participant following the instructions of the experimenter. The teachers obeyed the “authority,” the experimenter. The teachers
construed the experimenter as an authority figure to be obeyed, when objectively the
experimenter had no real authority. The experimenter could not punish the participants if
they did not comply nor did he have any other recourse to exert authority. The teachers'
construal of the experimenter's authority was the determinant of their actions—shocking
the learner—and not the objective reality that the experimenter was not truly an authority
figure. In sum, the perception of reality, not reality itself, is often the critical force in
inducing an individuals' reaction to any given event or behavior in a situation.

1.5 The subjective reality of self-handicappers and overachievers

It has been proposed that self-handicappers and overachievers are so
overwhelmed with self-doubt about their capabilities, to the point that they may even be
considered to have a “competence complex” (Jones & Berglas, 1978, p. 204). These
individuals feel they must maintain the image that they are competent or they will lose
others' approval. This is the subjective reality of the individual high in self-doubt.

Interestingly, this subjective reality might have no basis in objective reality. The
overachiever, for instance, might not have any reason to doubt his or her competence.
Having succeeded in the past might indicate to some people (those not experiencing self-
doubt) that they are indeed competent. Likewise, there may be no objective basis for the
belief that others' approval is contingent on being competent. Parents and friends may in
actuality unconditionally approve of the individual experiencing the “competence
complex.”
Regardless of the objective reality, the subjective reality of overachievers and self-handicappers, mainly that they have no confidence in their capabilities and that maintaining the illusion of competence is critical to receive the esteem of others, is what drives their behavior. Trying to understand these self-promoting patterns of behavior from a logical, objective standpoint misses the importance in psychology of the subjective construction of reality. The subjective construction of reality will again be important in understanding what may cause a person high in self-doubt to choose either to self-handicap or to overachieve.

1.6 Demonstrating competence through ability or outcome

Both self-handicappers and overachievers share a precarious competence image. They doubt their competence, and, as a result are motivated to continually demonstrate competence. Yet, they choose to demonstrate this competence in drastically different ways. The self-handicapper withdraws effort as a means to prevent attributions to low ability in the case of failure. The overachiever exerts Herculean effort as an attempt to secure a successful outcome. What determines which strategy the person with a shaky sense of competence chooses?

It is proposed that the choice of strategy may result from differing conceptions of how competence is judged. Specifically, it is proposed that self-handicappers might believe competence to be judged more on perceived ability than on actual performance outcomes. Overachievers on the other hand might believe that competence is judged more on the basis of performance outcomes than on natural ability.
According to Jones and Pittman (1982), an actor is "self-promoting" when he seeks the attribution of competence, whether with reference to his general ability level (intelligence, athletic ability) or to a specific skill (typing excellence, flute-playing ability" (p. 241). Thus, one can be competent by demonstrating natural ability or by demonstrating an overall outcome. For instance, the person who is easily able to do her taxes because of a natural aptitude for mathematical computations is judged competent because of her natural ability. But, the person who correctly completes her tax forms after many hours of reading instructions and redoing calculations is also judged competent, this time for demonstrating a specific outcome (i.e. the ability to complete her taxes).

Elsewhere, Jones (1989) acknowledges that "in the American psyche there is something special about the appeal of the natural talent" and that "most of us would rather be a little gifted than a lot dogged" (p. 481). Yet, he allows for the possibility that competence can also be demonstrated on the basis of outcomes. He writes, "I will readily concede that there still are contexts in which we may wish to frame our strenuous effort or persistence or, more generally, our strength of character. It is undoubtedly true that as we get along in life, our performances themselves are more clearly linked to our identities- more and more we are what we have accomplished rather than what we are capable of accomplishing. When a person achieves a certain status or level of accomplishment, no one (including the person involved) cares that much anymore about the particular ingredients that made his or her success possible" (p. 480-1). Thus, competence can be judged according to one's level of natural ability or competence can be judged according to one's level of accomplishment (i.e. outcomes).
Harlow and Cantor (1995) echo this sentiment stating “Although withdrawal from a task may be one potential consequence of self-doubt, task outcomes may be so important that such withdrawal is neither desirable or feasible” (p. 173). Though a withdrawal of effort may be one way to cope with self-doubt by protecting the image of ability, some situations may require the exertion of effort when outcomes are important.

Although in everyday usage the term “competent” might describe a person who has ability, an examination of the dictionary definition of competence further suggests its dual nature- both the possession of ability and the achievement outcomes. The Random House College Dictionary (1984) defines competent as “having suitable or sufficient skill, knowledge, experience etc, for some purpose; properly qualified.” One can be competent by having sufficient skill, which may be due to natural ability, or be competent by having past experiences (outcomes) that suggest he or she is properly qualified.

According to the analysis presented here, the individual experiencing self-doubt about his or her ability and focused on the idea that natural ability is an indicator of competence might choose self-handicapping as the mechanism to appear competent. Withdrawing effort provides the ideal situation to appear able; with failure, ability attributions are discounted, while with success ability attributions are enhanced. The individual experiencing self-doubt about his or her ability and focused on the idea that performance outcome is an indicator of competence might choose overachievement as the mechanism to appear competent. Exerting extra effort increases the likelihood of the desired successful outcome.
The subjective reality of the person experiencing self-doubt about his or her competence is critical in determining his or her behavior. Believing that competence is based on having natural ability may lead to a withdrawal of effort, while believing that competence is based on outcome may lead to a heroic expenditure of effort. As Jones and Pittman (1982) conclude, “It is desirable to be seen as competent, but it is even more desirable to be seen as competent for the most admired causal reasons—whatever they may be in a particular culture or situational context” (p. 245). Moreover, what the most admired causal reasons are in a situation (whether they are having natural talent or achieving a successful outcome) lies in the subjective construction of reality of the person in that situation.

1.7 Assessing ability independent of outcome

It has been suggested that a person can be judged competent by appearing to have natural ability or by achieving successful outcomes. Unfortunately, ability may be impossible to ascertain independent of performance. For instance, a person’s intelligence (his or her natural ability) is ascertained by his or her performance on an intelligence test.

Other than performance, it is often difficult to assess a person’s ability level. A person may claim to have high ability in an area without demonstrating this ability through performance. This claim of ability, though, is not a surefire way to appear competent. For instance, a person might claim to be a world class soccer player but never actually play soccer. This person’s claimed high ability level might be suspect without
concrete evidence of this ability as seen through the demonstration of excellent soccer skills.

The distinction between focusing purely on demonstrating ability and focusing purely on outcomes may be somewhat artificial as the two may often co-occur. However, it is argued here that the concept of ability and the concept of outcome are at some level familiar to most people. Experimental manipulations or chronic individual differences may lead an individual to strive more for the appearance of ability or for the appearance of being able to achieve good outcomes.

This emphasis on either ability or outcome may be tied to effort. Specifically, one can achieve the same successful outcome two ways-easily and without any effort expenditure or only after intense effort expenditure. Following Heideran (1958) logic, achieving the successful outcome with low effort expenditure should result in a higher judgment of ability than a successful outcome accomplished only with high effort. For individuals focused on the idea that ability is important, exerting little effort serves the purpose of securing an attribution to high ability in the case of success (and in the case of an unsuccessful outcome protects the person from the judgement of lack of ability). Regardless of whether the performance is a success or failure, exerting little effort allows others to judge one as having ability.

The individual focused on outcomes might not be as concerned with the implications of effort expenditure for ability judgments. His or her focus is on the end result-whether that end result comes through ability, effort, or some other factor is unimportant. Effort may even be evaluated favorably in helping achieve a successful
outcome. In fact, the person focused on outcomes may be unconcerned about whether his or her ability is judged high or low, instead centering on the idea that a person’s competence is based simply on accomplishment.

Although it may not be possible to completely separate ability from outcome (since ability is often ascertained by performance), it is still possible for individuals to emphasize the relative importance of ability judgments or to emphasize the relative importance of outcomes when approaching a task.

1.8 The current research

The goal of the current research was to explore the roles that uncertain feelings of competence and beliefs about the evaluation of competence play in self-handicapping and overachievement behavior. Specifically, it was expected that individuals who were experiencing self-doubt would feel a need to engage in self-presentation to maintain an image of competency. It was expected that those feeling uncertain about their competence and who believed ability was the key to appearing competent would engage in self-handicapping behavior by withdrawing effort. It was further expected that those with a shaky sense of competence but who believed that achieving positive outcomes indicated competence would engage in overachievement behavior by exerting Herculean amounts of effort.

Two studies were conducted to explore the roles of self-doubt about competence and beliefs about the judgments of competence in inducing self-handicapping and overachievement. Study 1 manipulated self-doubt and then also focused participants on
either the importance of ability or the importance of outcomes. Effort was then measured as an index of self-handicapping and overachievement behavior. Study 2 provided an extended replication of the first study.
CHAPTER 2

STUDY 1: SELF-DOUBT AND FOCUS: THE INGREDIENTS FOR SELF-HANDICAPPING AND OVERACHIEVEMENT

2.1 Introduction

Phenotypically, the self-handicapper and the overachiever look quite different. For instance, the self-handicapper is likely to withdraw effort, whereas the overachiever is likely to expend extra effort. The overachiever avoids failure, seemingly at all costs; the self-handicapper flirts with disaster, enhancing the probability of failure by the very act of self-handicapping. Yet, genotypically, the same motivational force may inspire the two types of behavior: self-doubt. Thus, self-handicappers and overachievers may differ only in the focus of their self-doubt and in the strategy used to deal with it. Self-handicappers may be more concerned about evaluations of their ability or talent, whereas overachievers may be more concerned about the outcome or performance itself. When judgments of one’s self-worth will be based on the result of some achievement-related event, overachievers and self-handicappers seem to make different choices about which aspect of the self to protect. (Oleson, Poehlmann, Yost, Lynch, & Arkin, 1998).

As suggested by the authors of the above quote, one commonality between self-handicappers and overachievers is self-doubt about their competence. Yet this self-doubt behaviorally manifests itself differently depending on the person’s frame of reference.
Specifically, self-handicappers are proposed to focus more on the importance of demonstrating ability to appear competent, while overachievers are proposed to focus more on the importance of achieving a successful outcome to demonstrate competence. The goal of this study was to empirically test the notion that feelings of self-doubt coupled with a focus on ability produces self-handicapping behavior, while feelings of self-doubt coupled with a focus on outcomes produces overachievement behavior. Before describing how this was tested, it is important to distinguish between a focus on ability or outcome and a similar construct—namely entity vs. incremental theories of intelligence (Dweck & Leggett, 1988).

2.1.1 Entity and incremental theories of intelligence

Carol Dweck and her colleagues (Dweck & Leggett, 1988, Dweck, Chiu, Hong, 1995) have proposed that people hold implicit theories about attributes and that these implicit theories shape their behavior. On the one hand, people can conceptualize traits as fixed, what Dweck terms holding an “entity theory.” On the other hand, people might conceptualize traits as malleable or changeable, thus holding an “incremental theory” of intelligence. In regards to intelligence, then, an entity theorist would believe that intelligence is fixed, while an incremental theorist would believe that intelligence can be increased with effort.

Dweck and Leggett (1988) have further found that a person’s theory of intelligence—whether incremental or entity—is able to predict his or her goal orientation. Specifically, they argue that entity theorists tend to adopt performance goals, “in which
individuals are concerned with gaining favorable judgments of their competence” (Dweck & Leggett, 1988, p. 257.) Incremental theorists, on the other hand, tend to adopt learning goals, in which they are interested in increasing competence through learning.

Further, Elliott and Dweck (1988) find that these goal orientations lead to predictable patterns of behavior. Specifically, those who hold performance goals often display a “helpless” pattern in the face of failure. They avoid challenges and will often give up. Those who hold learning goals, though, respond to failure by seeking further challenges and continue on a task to learn new skills.

It might be tempting to try to map a focus on outcomes or a focus on ability on to the different goal orientations. However, the relationship is not that simple. In fact, it is likely that many individuals high in self-doubt, including self-handicappers and overachievers, are entity theorists. Some correlational evidence supports this assertion. Dweck and colleagues developed a three item questionnaire to assess implicit theories. All the items are worded so that agreement endorses an entity theory of intelligence (e.g. “Your intelligence is something about you that you cannot change very much.”) First, Rhodewalt (1994) found that individuals who score high in self-handicapping tend to be entity theorists. Next, more recent data suggests that as scores on the self-doubt subscale of the Overachievment Scale increase so does the tendency to endorse an entity theory, \( r(1548) = .278, p < .001 \), while scores on the concern for performance subscale of the Overachievement Scale are not significantly related to the implicit theories (Leonardelli, 1997). As feelings of self-doubt increase, so do beliefs that intelligence is less malleable.
Thus, individuals who doubt their competence seem to hold an entity theory of intelligence and are most likely have performance goals. Given this subjective reality, it is easy to see why an entity theorist might turn to self-handicapping. If he or she believes that ability is fixed, one failure might be sufficient to indicate a lack of ability. Thus, for the self-handicapper it might be better to withdraw effort on a task to prevent a clear attribution to a lack of ability in the case of failure. Darley (1995) suggests that these individuals are “negative instance signifiers” (p. 291) taking one instance of failure as indication of low ability.

But how can overachievers also be entity theorists? Darley (1995) suggests that “it might be possible to discover a group of individuals who were entity theorists about intelligence... and who felt that a few instances of highly intelligent behavior justified the attribution of high intelligence” (p. 291). Just as one failure might indicate a lack of competence to the self-handicapper, a successful outcome might indicate competence to the overachiever. In essence, these individuals might be positive instance signifiers.

In a response to Darley, Dweck, Chiu, and Hong (1995), state “In summary, the entity theorist may often lead individuals to shy away from effort and challenge, to question their intelligence in the face of difficulty, and to focus on validating and protecting their sense of ability at the sacrifice of learning. However, we agree that an entity theory of intelligence can sometimes be a spur to achievement, if individuals are either certain of their high ability or are led to prove their ability through high-effort accomplishments” (p. 325). Thus, both self-handicappers and overachievers might be entity theorists. Self-handicappers might be the individuals described in the first part of.
the quote above-those that are focused on protecting their sense of ability.

Overachievers might be the individuals in the second part of the quote (though supposedly not the ones who are certain about their ability)-those that are focused on outcomes as a way to demonstrate competence.

2.1.2 Striving to appear competent vs. striving to avoid appearing incompetent

Self-handicappers and overachievers both share a concern about appearing competent. However, this motivation to appear competent can take two forms: one can strive to appear competent or one can strive to avoid appearing competent. Are self-handicappers and overachievers striving to appear competent? Or are they striving to avoid appearing incompetent?

Tice (1991) provides a partial answer for self-handicapping. She found that individuals high in self-esteem self-handicapped by practicing less in the success-meaningful condition, thus trying to augment ability attributions for a successful performance. Individuals low in self-esteem, on the other hand, self-handicapped when failure was meaningful, thus trying to discount ability attributions for failure. Individuals high in self-esteem self-handicapped to appear more competent while those individuals low in self-esteem self-handicapped to avoid appearing incompetent. It appears then that self-handicapping might be used both to appear competent and to avoid appearing incompetent. The participants in Tice's (1991) study, though, were not chronic self-handicappers. Individuals who are chronic self-handicappers also tend to have lower self-esteem. Scores on the self-handicapping scale are negatively correlated with self-
esteem scores, \( r(109) = -.48, p < .01 \) (Lynch, 1996). Thus, for the chronic self-handicapper trying to avoid appearing incompetent may be the primary motivation to adopt a self-handicapping strategy.

Overachievers, though, may be both trying to appear competent and to avoid appearing incompetent. Overachievers exert effort to achieve a successful outcome to appear competent. But this drive to achieve a successful outcome may stem from a fear of appearing incompetent.

Recent work by Elliot and Church (1998) provides further insight into the approach or avoidance motivation underlying self-handicapping and overachievement. They suggest that there are three achievement goals a person might adopt: 1) mastery goal, focused on the development of skills and task mastery, 2) a performance approach goal directed “toward attaining favorable judgements of competence,” and 3) performance-avoidance “goals focused on avoiding unfavorable judgement of competence” (p. 218). As was suggested previously, both self-handicappers and overachievers most likely adopt performance goals and as a result probably adopt one of the two latter goals [See section on Entity and incremental theories of intelligence]. It is proposed here that self-handicappers adopt performance-avoidance goals, while overachievers adopt performance-approach goals.

Elliot and Church (1998) found that performance-avoidance goals were rooted in fear of failure and low competence expectations. For these individuals, expectations of success are low and they are concerned with avoiding the negative implications of failure. This may well be the phenomenology of the self-handicapper. In addition,
performance-avoidance goals were linked to lower grades. This may not be surprising if these individuals are self-handicappers and are handicapping their own performance, for example, through effort withdrawal.

Performance-approach goals, though, were rooted in achievement motivation, fear of failure, and high competence expectancies. These individuals are interested in achieving positive outcomes due to their achievement motivation. But fear of failing also prompts approach behavior. As Elliot and Church (1998) state, “the generalized desire to avoid failure at the genotypic level may prompt the adoption of a regulatory form focused on the attainment of positive outcomes (approach in order to avoid failure)” (p. 220). Thus, performance-approach goals can be driven by a desire to appear competent and well as a desire to avoid appearing incompetent. By exerting extra effort, the overachiever may not only be trying to appear competent but also trying to avoid appearing incompetent.

Research is currently in progress to assess the proposed links between self-handicapping and performance-avoidance goals and between overachievement and performance-approach goals.

2.1.3 Focus on ability or outcome

It is proposed that a shaky sense of self-confidence and a focus on ability leads to self-handicapping, while a shaky sense of self-confidence and a focus on outcomes leads to overachievement. Before describing the study conducted here it is informative to look at other studies that suggest the veracity of this hypothesis.
2.1.3.1 Individual difference measures

Previous researchers have designed individual difference measures to identify individuals likely to demonstrate self-handicapping and overachievement behavior. Specifically, Strube (1986) developed a ten-item Self-Handicapping Scale to identify individuals with a propensity to self-handicap. Likewise, Oleson, Poehlmann, Yost, Lynch, and Arkin (1998) developed the Overachievement Scale to identify individuals likely to exhibit overachievement behavior. The Overachievement Scale is comprised of two subscales: 1) a scale measuring Self-Doubt, and 2) a scale measuring Concern for Performance.

Obviously the two subscales of the Overachievement scale conceptualize the factors proposed to underlie overachievement behavior: self-doubt and a focus on outcomes. For instance, items on the concern for performance scale assess a need for a successful outcomes, (e.g. “It is important that I succeed in all that I do.”). When coupled with reported feelings of self-doubt, individuals focused on outcomes-the overachievers-under some circumstances seem to report exerting more effort than non-overachievers (Yost & Lichstein, 1995; Poehlmann & Oleson, 1995). Specifically, it appears that when a task is important and there is a high subjective probability of success, overachievers seem willing to exert extra effort.

The Self-Handicapping Scale has also been able to predict self-handicapping behavior. For instance, Rhodewalt, Saltzman, & Wittmer, (1984) found that self-handicappers practiced less than non self-handicappers for an upcoming performance.
What is particularly interesting here is that the Self-doubt subscale of the Overachievement Scale and the Self-Handicapping Scale are strongly correlated, $r(748) = .56, p < .0001$. Furthermore, the Self-Handicapping Scale is negatively correlated with the Concern for Performance subscale of the Overachievement Scale, $r(748) = -.22, p < .01$ (Oleson, Poehlmann, Yost, Lynch, & Arkin, 1998). Thus, both self-handicappers and overachievers, as classified by scales designed to identify them, share feelings of self-doubt about their ability. However, only the overachievers report a concern for performance. These correlations are consistent with the hypotheses advanced here: a combination of self-doubt and a focus on outcomes provide the impetus for overachievement. Self-doubt also seems to be an important component of self-handicapping. Unfortunately, though there is no evidence that the Self-Handicapping Scale measures a concern with ability. Instead, it seems to assess reported use of behaviors like lack of effort or illness that can interfere with performance. Still, these correlations are informative.

2.1.3.2 Motivational Orientation

Evidence that overachievers are those who experience self-doubt and are focused on outcomes also comes from a study examining the motivational orientations of overachievers. Lynch (1996) had participants complete both the Overachievement Scale and the Work Preference Inventory (Amabile, Hill, Hennessey, & Tighe, 1994). The Work Preference Inventory (WPI) is a scale designed to assess individual differences in intrinsic and extrinsic motivational orientations that are stable across time and situations. Of interest here is the WPI's assessment of extrinsic motivation. The W PI assesses
overall levels of extrinsic motivation as well as examines possible differences between various components of extrinsic motivation. For instance, extrinsic motivation can include orientations toward money or rewards, pleasing other people, or competition. The WPI attempts to distinguish between the different components of extrinsic motivation. Specifically, the scale conceptualizes two different forms of extrinsic motivation which the authors represent as two subscales: "outward" and "compensation." The outward items are interpersonally oriented, indicating a motivation to receive approval from others (e.g., "I am strongly motivated by the recognition that I can earn from other people"). The compensation subscale taps an extrinsic motivation that is oriented toward more concrete rewards, such as grades or money (e.g. "I seldom think about grades (REVERSE scored)").

Results indicated that overachievers, those who reported being high in self-doubt and having a high concern for performance, reported being more extrinsically motivated overall than non-overachievers. Furthermore, this was particularly true on the outward subscale. Overachievers reported craving interpersonal attention from others. This is consistent with the view that overachievers are driven by their doubt to focus on outcomes as a means to appear competent to others. Overachievers did not differ from non-overachievers on the compensation subscale indicating that what was critical to them was not attaining concrete rewards, but instead it was critical to publicly appear competent.
An additional study conducted by Myerson (1998) again suggests that overachievers focus on outcomes while self-handicappers focus on ability. In this study, participants were given scenarios describing an individual and were asked to predict how they would feel toward the individual described. The study involved a 2 (effort: high vs. low) x 2 (ability: high vs. low) x 2 (outcome: success vs. failure) experimental design. Eight scenarios were presented that consisted of all possible combinations of the ability, effort, and outcome information. For instance, in one of the eight scenarios, participants were told that the individual: a) did not study for the test- LOW EFFORT, b) is very bright- HIGH ABILITY, and c) did well on the test- SUCCESSFUL OUTCOME. Participants were then asked to give an overall rating of the individual. In addition, Myerson (1998) collected participants' scores on both the Self-Handicapping Scale and the Overachievement Scale.

Results revealed that when evaluating others, overachievers, (i.e. those high in self-doubt and high in concern for performance) were particularly sensitive to outcome information. When a person succeeded, overachievers rated him or her much more favorably than did non-overachievers. When the person failed, the overachievers rated him or her much more harshly than did non-overachievers. Additionally, when evaluating others, self-handicappers seemed to focus more on ability. Specifically, high self-handicappers evaluated low ability students more poorly than did low self-handicappers. Thus, when evaluating others overachievers were concerned with outcomes, while self-handicappers were concerned with ability.
Research in social cognition suggests that “people for whom a particular personality dimension is an easily and accessible construct are more likely to remember and describe others in those terms (Higgins & King, 1981)” (Fiske & Taylor, 1991, p. 264). Although no direct evidence is available, it might be the case that for overachievers, outcomes are chronically accessible, while for self-handicappers, ability is chronically accessible. At minimum, these attributes might be of overwhelming concern to these individuals. As Myerson (1998) suggests “both overachievers and self-handicappers evaluate others on the basis of what they deem most important in their own lives.” This is again consistent with the notion that while both high in self-doubt, overachievers are focused on outcomes, while self-handicappers are focused on ability.

2.1.3.4 Underachievers and overachievers

Yet more evidence for the importance of focus as a moderator between self-handicapping and overachievement behavior comes from two dissertation studies reported by Jones (1989). Riggs (1982) and Preston (1983) set out to assess the protection of a competence image by overachievers and underachievers. It is important to note that in this study overachievers and underachievers were defined somewhat differently than the previous studies that have been discussed. Participants were classified on the basis of whether their grade point average was better (overachiever) or worse (underachiever) than would be predicted from a standard aptitude score. Thus, these under-and overachievers were measured objectively rather than subjectively. However, as mentioned previously often subjective overachievers (as measured by the
Overachievement Scale) are often objective overachievers. Likewise, objective underachievers are precisely those people who might withdraw effort.

Riggs (1982) and Preston (1983) presented participants with a test that was supposedly a highly reliable indicator of intelligence. Participants were further instructed that by squeezing a hand dynamometer they could control the length of time each problem was presented on the computer and that the longer the problem was displayed the better chance they had of getting it correct. By partialling out physical strength, the experimenters were able to obtain a measure of effort exerted when solving the problems.

Results revealed that when overachievers were told that effort was relevant to performance, they tended to exert more effort. As Jones (1989) summarizes, “What could be more reasonable? But it is reasonable only if we assume that doing well is more important than certain other things—for example, protecting one's competence” (p. 485). Recall earlier that there is more than one way to protect one's competence. Achieving a successful outcome might be one way to demonstrate competence—a way that overachievers prefer [see section on Demonstrating competence through ability or outcome].

When underachievers thought that the task was sensitive to effort, they withdrew effort. According to Jones, “this makes sense only if we assume that, for them, performance is important only to the extent that it is diagnostic of their ability or their competence. If effort is more relevant to success on a task, and effort is withdrawn, a poor performance can only reflect insufficient effort” (p. 485).
In concluding, Jones remarks. "The underachievers appear to be playing attributional games to protect their sense of self-competence. Overachievers seem to care less about underlying attributions and merely want to do whatever it takes to perform well on the assigned task" (p. 485). Thus, underachievers seem to withdraw effort to protect the image that they have ability. Overachievers seem to exert effort to ensure that they perform well on the task (i.e. get the desired outcome). These results are again consistent with the hypotheses forwarded here: overachievers are those who are wracked with feelings of self-doubt and are outcome focused, self-handicappers are those who are wracked with feelings of self-doubt and are ability focused.

2.1.3.5 Manipulating certainty and focus

The previous studies have largely relied on individual difference measures of self-handicapping and overachievement. However, just as many individual differences can be measured, individual differences can also be manipulated. For instance, people chronically differ in their level of self-esteem and this difference can be measured using an individual difference measure (e.g. Rosenberg Self-Esteem Scale, Rosenberg, 1965). Levels of self-esteem can also be manipulated. For instance, receiving failure feedback after a performance can cause a temporary drop in self-esteem. Thus it should be possible to manipulate feelings of self-doubt and to manipulate focus (either on outcome or ability) and create differences in behavior.

Although not its intent, a study by Karen Kovacs (1990) that manipulated uncertainty and reward vs. cost orientation provides further evidence that self-doubt and a
focus on outcomes might lead to overachievement but self-doubt and a focus on ability can lead to self-handicapping. Specifically, participants in the study completed a practice test on the Verbal Reasoning Association Test, a test described as measuring integrative orientation.

During this first practice session, subject's frame of reference was manipulated to either induce a cost orientation or a reward orientation. Presumably, cost-oriented individuals are pessimistic and have a heightened awareness to the cost of losing. On the other hand, reward-oriented individuals are optimistic and focused on succeeding (Canavan- Gumpert, 1977). In Kovacs' (1990) study orientation was manipulated in two ways. First, computer generated feedback helped induce orientation (on either costs or rewards). In the reward orientation condition, participants were instructed to “Do your best to get the right answers.” In addition, on three of the twenty-five practice problems participants received feedback and were told, “Right! Keep up the good work!” In the cost orientation condition, participants were instructed to “Do their best to avoid mistakes”. Then, on three of the practice problems, they were told, “Wrong! Please be more careful to avoid errors.” Second, after completing the first practice test, participants were asked to imagine and then explain the causes of a hypothetical failure (in the cost orientation condition) or the causes of a hypothetical success (in the reward orientation condition). These two manipulations were intended to focus participants in the reward condition on the benefits that came with success, while focusing participants in the cost condition on the costs associated with failure.
This study also manipulated participants' level of certainty. In a unique manipulation following the orientation induction, the experimenter explained to participants that the computer would provide a "surgency profile" which would indicate the participant's style of approaching the problems. It was explained that everyone's surgency profile fits a profile in the Interpretation Manual. Further, it was explained that the closer the participants' surgency profile matched a profile the more confident the experimenter could be about the interpretation and accuracy of the results; however, the closer the score matched had nothing to do with how well or poorly the participants did on the test. The computer then presented a supposed surgency profile. In the certainty condition, the experimenter found a profile in the Interpretation Manual that matched the profile of the participant and told the participant "Your pattern is so close, we will get a really accurate analysis of your final results." In the uncertainty condition, the experimenter feigned an inability to find a profile in the Interpretation Manual that matched the participants. The experimenter went on to comment "That's strange. I've never seen that before" and continued to express confusion for several minutes. Finally, the experimenter concluded "I really can't tell you what this means or what your surgency scales are." This latter condition was intended to create a sense of uncertainty in some participants (those in the uncertainty condition).

The main dependent measure in this study was effort indexed as the number of practice problems participants chose to do on a second practice test and the amount of time that they spent practicing.
The results revealed that participants who were in the uncertain/cost orientation condition evidenced self-handicapping. They did the fewest number of practice problems and spent less time practicing than participants in all the other conditions. Furthermore, participants in the uncertain/reward orientation condition provided some evidence of overachievement. These participants did the most practice problems and spent the most time practicing, although these differences were not statistically significant. Part of the reason this latter effect might not be as strong is that the manipulation checks indicated that the reward orientation seemed to undermine some of the effectiveness of the uncertainty manipulation. Participants in the certain/reward orientation and in the uncertain/reward orientation condition were equally certain about their integrative orientation ability and they were both more certain than those in the uncertain/cost condition.

This study, then provides some suggestion that individuals who are uncertain and cost oriented, withdraw effort, while those who are uncertain and are focused on rewards, exert extra effort. Although suggestive, it is unclear whether cost-orientation is the same thing as a focus on having ability. It certainly makes sense that for those who are feeling uncertain, an obvious cost could be losing the perception of ability. Likewise, it is unclear whether a focus on rewards is the same thing as a focus on outcome. Being reward-oriented might not necessarily map on to being focused on outcomes. Furthermore, the manipulation of uncertainty is unusual. It is unclear what participants are uncertain about. Specifically, it is unclear whether or not suggesting to participants that their surgency profile does not match one in the Interpretation Manual leads them to doubt their ability.
It could be the case, that participants are uncertain about the validity of the test or how well they fit the norm.

2.1.3.6 The current study

In sum, although the study by Kovacs (1990) is definitely provocative, it is not conclusive as to the hypotheses presented here; that doubt coupled with an ability focus drives self-handicapping, and the doubt coupled with an outcome focus drives overachievement. The goal of the current study was to empirically examine the effect of self-doubt and focus (either on outcomes or ability) on effort expenditure. Specifically, rather than using individual difference measures, both self-doubt and focus were manipulated directly and their effects observed. It was expected that participants who were feeling doubtful and were focused on outcomes would exert the most effort on a task, indicating overachievement. It was further expected that those participants who were feeling doubtful and were focused on ability would exert the least effort on a task, indicating self-handicapping. Finally, it was expected that participants who were not experiencing self-doubt would exert a moderate amount of effort on a task regardless of their focus, indicating neither self-handicapping or overachievement.

2.2 Method

2.2.1 Overview

This experiment was designed to situationally induce self-handicapping, and overachievement behavior. Effort was used as an index of these behaviors with self-handicapping reflected in a withdrawal of effort and overachievement reflected in
excessive effort. Participants took a supposed practice test for the Verbal Reasoning Association Test (VRAT). Then their level of self-doubt and focus (either on outcome or ability) was manipulated. Participants then took a supposed second practice test and their effort on this test was measured. Process measures also were collected both before and after the second practice test.

2.2.2 Participants

Participants were 58 (33 male and 25 female) introductory psychology students at the Ohio State University who participated either alone or in groups of two and received course credit for their participation. Subjects were randomly assigned to the experimental conditions. One subject was eliminated because she did not receive the manipulations. The entire procedure took between 35 and 50 minutes.

2.2.3 Procedure

Participants arrived at the lab either individually or in pairs. They were greeted by a female experimenter and led into a room with a computer. If there were two participants, the experimenter gave both participants the initial instructions together. Following these initial instructions, however, the participants were in their own private cubicles and received the remainder of the instructions individually.

The experimenter then introduced herself and explained to the participants that the experiment would involve taking the Verbal Reasoning Association Test or VRAT, which is a test of integrative orientation. They were further told that they would do two practice tests and then would actually take the VRAT. It was further explained that the
reason they were taking the test was that it was designed by the Educational Testing Service and that every ten years norms needed to be collected in the population and Ohio State was chosen to help in the norm collection. The experimenter also explained that the Educational Testing Service had sent the computer program, questionnaires, and an instruction manual. (See Appendix B for the exact script.)

The experimenter then began to read from a script supposedly prepared by the Educational Testing Service. The script was in a binder with the title “Verbal Reasoning Association Test (VRAT) Administration Manual” and was designed to appear as the official manual supplied by the Educational Testing Service. The verbatim text of this script can be found in Appendix C.

This script began by explaining to participants that the VRAT was a test designed to measure integrative orientation. Integrative orientation was described as “a capacity associated with creative problem solving and your ability to process and integrate verbal information independent of your overall intellectual capacity.” Furthermore, integrative orientation was described as being a valuable ability as it was able to predict differences in people’s functioning such as their ability to adapt to new situations and learn from new information. To prevent participants from inferring their level of integrative orientation based on their past performance, it was emphasized that integrative orientation was not measured by standard intelligence tests and that it was unrelated to past academic performance and SAT or ACT scores. In sum, the instructions were designed to make the participants feel that integrative orientation as measured by the VRAT was a desirable quality and that it was unrelated to their past academic performance or intelligence.
The script then explained that since the test was on the computer, the participant would be able to receive a score on the VRAT and thus determine how high or low their level of integrative orientation was at the end of the session. Thus, the participants expected their performance to be evaluated.

The value of practice was then explained to the subject. They were instructed that they were going to have two practice tests, each of which offered practice at different aspects of integrative orientation. The final test was described as a ten-minute timed test that combined skills from both practice tests. In addition, the instructions added “just as athletes perform better after warming up, you should do better on this test if you practice and 'warm up' with the practice tests.” In sum, participants were led to believe that practice could improve their performance.

The experimenter then turned to the computer. The screen displayed:

VERBAL REASONING ASSOCIATION TEST
Administration Program
Version 3.0
(Strike any key to continue)

The experimenter hit any key and the computer asked the experimenter to enter a subject number, the subject’s age, and the subject’s gender. Then a function menu appeared on the computer screen. Specifically, the screen displayed:

<table>
<thead>
<tr>
<th>Code</th>
<th>Test Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Practice Test 1</td>
</tr>
<tr>
<td>2</td>
<td>Practice Test 2</td>
</tr>
<tr>
<td>3</td>
<td>Test Form- Individual</td>
</tr>
<tr>
<td>4</td>
<td>Test Form- Group</td>
</tr>
<tr>
<td>5</td>
<td>Score Analysis</td>
</tr>
<tr>
<td>0</td>
<td>End Program</td>
</tr>
</tbody>
</table>

50
The experimenter then continued to read from the administration manual explaining again that the computer program has two practice tests, the test itself, of which the participants were taking the individual and not the group form, and the score analysis program which computed their results on the test. Again, the function menu was designed to make the computer program seem realistic.

Next, the experimenter explained that the participants would first be doing Practice Test 1. This test was described as consisting of 20 analogy problems. The computer would provide instructions for the test and for how the subject was to register his or her answer.

Finally, the experimenter informed the subject that the computer program was designed to periodically give them feedback on their performance. It was emphasized that periodic meant that the computer would spot check their answers and they could expect that out of the 20 questions, they would receive feedback 3 or 4 times. Furthermore, they were told that when they do not get feedback, it did not mean that they got the problem right or wrong, it simply meant that they were not getting feedback on that problem.

The participants were then asked if they had any questions. They were then instructed to start Practice Test I and when they had completed this test to please get the experimenter. At this point, if there were two participants, the other participant was escorted to his or her own private room with a computer, and the subject number, age, and gender were entered. The participants were then run individually for the remainder of the experiment. However, if both participants were at the same point in the procedure,
the experimenter then gave the instructions to both participants in the hall between the two rooms. All participants then completed the practice tests and measures individually without knowledge of how long the other person practiced or took to complete a measure.

At this point the participants were left alone to complete the test. The computer began by explaining the analogy problems and giving an example with an explanation of the correct answer. Participants were then asked if they understood the procedure. If they answered yes, the program advanced to the first problem of the practice test. If they answered no, the computer offered another example and explanation and then automatically advanced to the practice test. The complete computer program is presented in Appendix D.

Practice Test 1 consisted of 20 analogy problems. Each problem presented two capitalized words that were related to each other in some way. This key word pair was followed by five word pairs from which the participant was to select the two words that were related in the same way as the original two words. For instance, the participant might see:

**ELM: TREE**

1) dollar : dime  
2) currency : dime  
3) map : leaves  
4) oak : maple  
5) dollar : money

The correct answer for this analogy would be 5 (dollar : money). The analogies used in the study can be found in Appendix E.
The program was written so that participants received feedback on three of the twenty questions. Specifically, participants were informed they were correct on two of the twenty trials. The computer would display the message “CORRECT” on the second and eighth item that the participant answered correctly. The participants were informed they were incorrect on one trial. The computer displayed the message “INCORRECT” after the first analogy that was answered incorrectly.

Furthermore, in an attempt to ensure that all participants performed equally well on the test, the computer was designed to continually calculate the subject's percentage of correct answers and to adjust the difficulty of the items presented so that all participants received approximately the same score (13 to 15 out of 20). For instance, if a subject got two easy analogies correct, the computer might then present an analogy of medium difficulty. If the subject incorrectly answered the medium difficulty analogy, the computer would then return to presenting easy analogies. In sum, after practice test 1 it was hoped that all participants received approximately the same score and would feel equally competent at the analogy problems. This was accomplished by giving those who were better at the analogy problems, more difficult problems and those who were not as adept at the analogy problems easier problems.

When participants completed all twenty analogy problems on Practice Test 1, the computer displayed a message “Please get experimenter. Press any key to continue.” The experimenter then informed the participant that before going to the second practice test, they would be taking a short break during which they would be doing two brief things for other graduate students. These were the self-doubt and focus manipulations
that are described below. They were presented in counter-balanced order across participants.

2.2.3.1 Self-doubt manipulation

This manipulation was intended to manipulate levels of self-doubt. There were two conditions: presence of self-doubt and absence of self-doubt.

Participants were informed that this part of the experiment was for another graduate student and he had prepared a brief script that the experimenter then read. It explained that the student was interested in determining the effectiveness of different memory strategies. The subject was told that they would be given a list of words to memorize and were told that the strategy to which they had been assigned was to try to memorize the words by relating them to themselves. They were further told that they would be asked to recall the words later in the experiment. They were then given a list of words to memorize for four minutes. (See Appendix F for the complete script.)

There were two lists of words: self-doubt present and self-doubt absent. Both are presented in Appendix G. Each list consisted of 14 words. Five of the words were the same for each list (artistic, aroused, different, humble, and hungry). The remaining nine words for each list were intended to manipulate self-doubt. In the doubt-present condition, the words were: bewildered, doubtful, insecure, perplexed, puzzled, indecisive, unclear, unconfident, and unsure; while in the no-doubt condition the words were: average, innocent, outspoken, unlucky, quiet, thrifty, talkative, solemn, and blunt. The words in the doubt present condition were chosen using a thesaurus to find words related
to feelings of doubt and a lack of confidence while those words in the doubt absent condition were chosen because they were unrelated to feelings of doubt. Thus, participants in the doubt present condition memorized words related to self-doubt by relating them to themselves while participants in the doubt-absent condition memorized more neutral words. This was intended to manipulate participants' feelings of self-doubt.

The instructions used in this manipulation are similar to those used in testing the self-reference effect (Rogers, Kuiper, & Kirker, 1977). Specifically, the self-reference effect refers to the tendency for people to remember information better when they relate it to themselves rather than using other memory techniques (e.g. thinking how it describes another person). The goal of this manipulation was not to assess the usefulness of different memory techniques. As such, no comparison condition was included. Furthermore, the primary reason for instructing participants to relate the words to themselves was to induce uncertainty about the self, not uncertainty in general.

2.2.3.2 Focus manipulation

The second task the participants completed was also presented as a task for another graduate student. This task was intended to manipulate the participants' focus, either focusing them on the importance of ability or alternatively focusing them on the importance of outcomes.

Again the supposed other graduate student provided a script that the experimenter read. The script explained that the student had done some research looking at success with scholarships. Specifically, she explained that academic scholarships often are given
according to two criteria; either overall outcome such as GPA or ability which might be measured by IQ or SAT scores.

Those participants in the ability focus condition were then told that the research has shown that scholarships should be given on the basis of ability. It further explained that those given scholarships based on ability, such as IQ or SAT scores, did better than those getting them based on outcomes such as GPA.

Participants in the outcome focus condition were told the opposite. They were informed that research has shown that scholarships should be given on the basis of outcomes. In other words, they were told, that those given scholarships based on their past outcomes like GPA did better than those getting scholarships based on ability.

The instructions continued in both the ability focus and outcome focus condition to explain that the researcher wanted the participants to explain why the research results turned out as they did. Thus, those in the ability focus condition were asked to explain why ability was a better predictor of success, while those in the outcome focus condition were asked to explain why outcomes was a better predictor of success. Participants were further reminded that although they might disagree with what the research suggested, the data had shown it to be true and thus they were supposed to generate reasons why it might be true.

Participants were then given a piece of paper reiterating the instructions and reemphasizing the importance of ability in the ability focus condition and outcomes in the outcome focus condition. They were then given 5 minutes to write explanations as to why
the supposed research results had turned out the way they had. This procedure, specifically explaining the relationship between either outcome or ability and success with scholarships, was inspired by past research on the belief perseverance effect (Anderson, Lepper, & Ross, 1980). This research largely indicates that the generation of causal explanations for a relationship can lead subjects to strongly believe in the relationship (sometimes even in the case when the basis for their beliefs is later totally refuted.) Because a strong manipulation of focus was desired in this study to overcome any preexisting individual differences in focus, this procedure seemed fitting. The complete script can be found in Appendix H and the materials the participants were given are in Appendix I.

2.2.3.3 Interim questionnaire

After subjects had completed both the doubt and focus manipulation, the experimenter explained to the participants that they would also be filling out a brief questionnaire about their experience with the VRAT so far before taking the practice test. The participants were told that this questionnaire had been provided by the Educational Testing Service and was used to assess people's reactions to the practice test.

The complete interim questionnaire is in Appendix J. This questionnaire asked participants to indicate by circling a number 1 through 20 what they thought their score was on Practice Test I. Further, they were asked to indicate on nine-point Likert-type scales how pleased they were with their performance, how gratifying success would be, and how distressing failure would be, how satisfied they were with their performance,
and how high they thought their level of Integrative Orientation was. These measures all were designed to show that after the first practice test, all the participants felt that they had done equally well on the first practice test and that they thought doing well on the VRAT was important. However, given that the self-doubt manipulation preceded this interim questionnaire, it is possible that differences might exist on these measures between those in the doubt and no-doubt condition.

Finally, the interim questionnaire contained two items designed to assess the effectiveness of the self-doubt manipulation. The first item asked participants to rate how confident they were that they would perform well or poorly on the final VRAT. The response options ranged from -11 "completely certain that I will do poorly" through 0 "completely uncertain" to +11 "completely certain that I will do well." Presumably, a response near 0 indicates doubt in one's ability. The second item asked participants to indicate how doubtful they were about their integrative ability on a scale ranging from "1- not at all doubtful" to "9-entirely doubtful."

2.2.3.4 Practice Test 2: The main dependent measure

After completing the interim questionnaire, the participants were told they would now be taking the second practice test. The experimenter returned to reading from the VRAT Administration Manual in giving the instructions.

These instructions before the second practice test served a dual purpose. First, they reminded participants of the importance of practice in doing well on the VRAT. Participants were instructed that on this second practice test they would be allowed to
practice as much or as little as they liked. However, they were reminded that the more they practiced, the better their VRAT score would be. In addition, the instructions went on to say that just as athletes warm up before a big meet or game, they could warm up as much or as little as they like but they would probably perform better on the final test if they were warmed up.

Second, the instructions re-emphasized that the skills developed in the second practice test were related to but still different than those on the first practice test. Specifically, participants were told that although the second practice test again involved analogies, the rules underlying these analogies were different and the analogies were in a different form. In addition, the participants were reminded that the final test combined skills from both the first and second practice test.

The participants were also told that they would not be receiving any feedback on this practice test. Finally, the participants were told that the computer would give them instructions on how to stop practicing when they were ready for the final test. The verbatim instructions are in Appendix C.

On the computer, the experimenter returned to function menu and started Practice Test II for the participants and then left the room. Subjects were again given instructions on how to solve the analogies by the computer. The analogies on the second practice test were presented in a different form than those on the first practice test. On this test, the participants were given a word pair plus the first word in the related word pair. Their task was then to pick a single word out of five response options to complete the analogy. For example, the participant might see
ELM: TREE
DOLLAR:

1) dime
2) quarter
3) leaves
4) maple
5) money

Subjects were allowed to practice as much or as little as they liked. After each practice problem, the computer would print “Do another practice problem? [Y/N]?”. Participants were required to enter either “Y” for yes or “N” for no. If they answered yes, they were given another practice problem. If they answered no, the message “Please get the experimenter” appeared on the screen.

The computer program again continually calculated the percentage of items that the participants answered correctly and presented more difficult analogies to those who were better at the analogies and easier problems to those who were not as skilled at solving them. However, unlike the first practice test and in accordance with what the participants had been told to expect, no feedback was given during the second practice test.

As the participants practiced, the computer counted the number of practice problems the participants did and timed (to the hundredth of second) how long the participants spent practicing overall. These two measures served as the main dependent measure reflecting the participants’ effort.
2.2.3.5 Final questionnaire

When the participants had finished practicing on the second practice test, the experimenter told them that before taking the final test they were going to try to recall the words that they had memorized earlier. Each participant was then given a sheet with 18 blanks and asked to recall as many words as he or she could. (See Appendix K).

When the participants had recalled all the words that they could, the experimenter explained that they would be filling out one more questionnaire about the VRAT before taking the final test. This final questionnaire can be found in Appendix L. This final questionnaire contained several different questions including manipulation checks and ancillary measures. Unless otherwise indicated, all of these items were answered on nine-point Likert-type scales.

First, participants were asked to indicate by writing a number how many practice problems they thought they had attempted and to indicate the number of practice problems they believed most people attempted. As will be explained in the results, these measures were used to create measures of claimed self-handicapping. Next, as a manipulation check, participants were asked to indicate how important practice was to performance on the VRAT. It was hoped that all participants would believe that practice was important to success on the VRAT. The next four items on the final questionnaire assessed to what extent participants thought that ability, effort, luck, and difficulty of the test would contribute to their VRAT score. Participants were then asked to indicate how anxious they were feeling. As another manipulation check, participants were asked to
indicate how much integrative orientation was related to intellectual ability. In addition, they were asked how important it was to be high in integrative orientation.

Finally, two items served as manipulation checks for the focus manipulations. First, participants were prompted “Past research has suggested that scholarships should be given on the basis of...” and were asked to circle either “outcomes (such as GPA)” or “ability (such as IQ).” In addition, a more conceptual question was asked to assess the participants’ understanding of the focus manipulation. Specifically, participants were asked to rate how good a candidate a person would be for a scholarship. For instance, a person was described who has high ability as measured by IQ tests but does not put forth effort, and consequently has a low GPA. The participants were then asked to rate his suitability as a candidate for a scholarship.

When the participants had completed this final questionnaire, they were informed that there would be no final test and that the experiment was complete. They were then thoroughly debriefed which included giving them an explanation of all manipulations. They were then thanked and dismissed. The complete debrief is in Appendix M.

2.2.4 Pilot test

Twenty-six introductory psychology students participated in a pilot test of this experiment. The procedure was similar to that described above with the exception of five things. These five things were problems that were corrected for in the final study. First, the computer program for the pilot test did not have enough easy and medium difficulty analogy problems. If the participants missed several of the easy analogy problems and did
several practice problems, the program would run out of analogies and freeze up. To solve this problem, more analogies were added to the final version of the computer program.

Second, on the first practice test of the pilot test, participants received feedback on four of the twenty problems. On all four of these problems, they were given success feedback. The intention of the feedback was to make the participants feel like they were doing fairly well and could potentially succeed. This was done to prevent all of the participants in the self-doubt condition from self-handicapping. However, receiving success feedback four times seemed to leave all subjects believing they were exceptionally good at integrative orientation and seemed to overwhelm any effect the self-doubt manipulation might have had. Thus, on the final version of the computer program the feedback on the first practice test was modified so that participants received feedback on three of the twenty problems, succeeding twice and failing once.

Third, while completing the focus manipulation many participants were not clearly understanding that outcomes (in the outcome focus condition) and ability (in the ability focus condition) were the best predictor of success with scholarships. To remedy this, emphasis was added to the explanation sheet. Specifically, the section explaining what was the better predictor of success, either outcome or ability, was underlined.

Fourth, although the experimenter explained that the computer would give instructions for the second practice test, there were no such instructions in the computer program. After a participant pointed that out, the instructions for practice test two were added to the computer program in its final version.
Finally, while training a research assistant, it was suggested that the script be put in a binder to make it look more official. This good suggestion was adopted in the final procedure of the experiment.

With only twenty-six participants in the pilot test many for which the computer program quit running, these data were not analyzed. The pilot test served more as a test of the believability of the procedure and the reliability of the computer program.

2.3 Results

2.3.1 Analysis strategy

To determine the effects of the self-doubt and focus (either outcome or ability) manipulations on the dependent measures, 2 (self-doubt: present vs. absent) X 2 (focus: outcome vs. ability) analyses of variance (ANOVA) were conducted unless otherwise indicated.\(^5\)

Data from one subject were eliminated because she did not understand that she could stop practicing during practice test 2.\(^6\) This left 56 subjects in the analyses unless an item was not completed.\(^7\)

2.3.2 Manipulation checks

There were two independent variables in this experiment, self-doubt and focus (either on outcome or ability), and manipulation checks were included for each.
2.3.2.1 Self-doubt manipulation

Participants were asked two questions to assess the effectiveness of the self-doubt manipulation. First, on the first interim questionnaire (completed before subjects took the second practice test), participants were asked how confident they were that they would perform well or poorly on the VRAT and indicated their response on a 23-point scale ranging from “completely certain that I will do poorly” (-11) to “completely certain that I will do well” (+11) with 0 labeled as “completely uncertain.” Analyses revealed only an unanticipated main effect of focus, F(1, 52) = 4.852, p = .032. Specifically, subjects in the outcome condition (M = 4.59) reported feeling more confident that they would do well than those participants in the ability condition (M = 2.33). There was neither a significant main effect for the self-doubt manipulation nor a significant interaction between self-doubt and focus.

The second item assessing the effectiveness of the self-doubt manipulation asked subjects to indicate on a 9-point Likert-type scale ranging from “not at all doubtful” (1) to “entirely doubtful” (9) how doubtful they were about their integrative orientation ability. The analysis revealed no significant main effects or interactions.

In sum, the manipulation checks fail to indicate that subjects in the self-doubt present condition felt more doubtful than those in the self-doubt absent condition. However, although the manipulation check fails to indicate an effect of the self-doubt manipulation other measures discussed below suggest that it was effective. Why these manipulation checks may have been ineffective is suggested in the discussion section.
2.3.2.2 Focus manipulation

The focus manipulation was intended to concentrate subjects on the idea that either ability is most predictive of success (ability focus) or that outcomes are more predictive of success. Three items were intended to assess the effectiveness of this manipulation.

First, looking at the essays that participants wrote explaining why ability or outcome was a good predictor of success revealed that four of the participants did not seem to be able to explain the condition they were in. Specifically, even though instructed to explain why ability was a more important predictor of success even if they did not personally believe this to be true, three participants' essays argued that outcome or effort was more important. Similarly, one subject who was instructed to explain why outcomes were better predictors of success wrote an essay that indicated he or she did not believe that outcomes were important.

Second, on the final questionnaire (completed after participants had taken the second practice test), participants were prompted “Past research has suggested that scholarships should be given on the basis of...” and were asked to circle either “outcomes (such as GPA)” or “ability (such as IQ).” It was found that 9 out of the 56 participants (16%) incorrectly identified the focus manipulation condition they were in. Specifically, seven participants in the ability focus condition incorrectly identified that outcomes were more important in determining success while two participants in the outcome condition incorrectly identified ability as being a more important predictor of success. Given that this manipulation check came at the very end of the experiment (approximately twenty
minutes) after the manipulation, it is not entirely unexpected that several participants
answered this item incorrectly.

Finally, participants were asked two related questions that tapped their
understanding of the focus manipulation at a more conceptual level. Participants were
given a sample profile of two students and were instructed on the basis of past research to
assess how good a candidate each would be for a scholarship. They indicated their
response on a scale ranging from “very poor candidate” (1) to “very good candidate (9).
The first student was described in the following way: “This person has high ability as
measured by tests of intelligence. This person does not put forth much effort. This
person has a low GPA.” For this student it was presumed that participants in the ability
condition would rate the student higher than those in the outcome condition. Analyses
revealed only the expected main effect of focus, $F(1, 51) = 19.833, p = .000$. Participants
in the ability condition rated this student with high ability and poor outcomes higher
($M = 5.23$) than those in the outcome condition ($M = 2.90$).

Similarly a second student was described who “has low ability as measured by
tests of intelligence. This person puts forth lots of effort. This person has a high GPA.”
Thus, this student had low ability but high outcomes and it was expected that those in the
outcome condition would rate this person as a better candidate for a scholarship than
those in the ability condition. Analyses revealed a main effect of focus, $F(1, 51) = 13.25,$
$p = .001$, such that those subjects in the outcome condition viewed this student as a more
capable candidate ($M = 7.62$) than those in the ability condition ($M = 5.96$). There also
was a marginally significant two-way interaction between focus and doubt,
$F(1, 51) = 3.949, p = .052$. The means for this interaction are presented in Table 1. The interaction suggests that the focus manipulation was more potent for those subjects in the self-doubt present condition. When rating the qualifications of a student described as having low ability but good outcomes, within the outcome condition those experiencing self-doubt rated the candidate more highly than those experiencing no self-doubt; while in the ability focus condition those experiencing self-doubt rated the student lower than those not experiencing self-doubt.

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<thead>
<tr>
<th>Self-doubt</th>
<th>Outcome</th>
<th>Ability</th>
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<tbody>
<tr>
<td></td>
<td>Focus Condition</td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td><strong>M</strong></td>
<td><strong>SD</strong></td>
</tr>
<tr>
<td></td>
<td>8.14</td>
<td>.95</td>
</tr>
<tr>
<td>Absent</td>
<td>7.13</td>
<td>1.68</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 1: Mean rating for the suitability of a student with low ability and good outcomes for a scholarship as a function of self-doubt and focus (High scores indicates a better candidate).
To review, it appears as if the focus manipulation had mixed success. A few participants had trouble writing an essay explaining why outcome or ability was a better predictor of success and in identifying what past research suggested should be the basis for deciding scholarships in accord with their focus condition. This seemed to be especially true for subjects in the ability condition, suggesting that naturally people might be more likely to believe that outcomes and effort are better predictors of success than ability. However, on two items that assessed the suitability of students for scholarships the focus manipulation seemed to succeed. Those in the outcome condition rated a student with high outcomes and low ability as a better scholarship candidate than those in the focus condition. Likewise those in the ability condition rated a student with high ability and poor outcomes as better scholarship candidate than those in the outcome condition. Thus, when considering the participants as a whole the focus manipulation seems to have been successful.\textsuperscript{8}

2.3.3 Equivalence of groups

2.3.3.1 Experience with the first practice test

Several measures were included to ensure that the groups did not differ in ways not predicted by the experimental hypotheses and to ensure that the focus and self-doubt manipulation did not produce any undesired side effects. First, recall that the computer program was designed so that all participants received roughly the same score. Analyses revealed no significant main effects or interactions. Participants, regardless of condition, received roughly the same score on the first practice test ($M = 12.96$, $SD = 1.58$).
Furthermore, participants in all the conditions spent roughly the same amount of time doing the first practice test ($M = 314.85$ seconds, $SD = 105.85$ seconds). Thus, on the first practice test all subjects received the same score and spent approximately the same amount of time answering the twenty questions.

Participants responded to several questions on the first interim questionnaire designed to assess the phenomenological experience of performance on the first practice test. As a reminder, this first interim questionnaire was completed after the first practice test as well as after the self-doubt and focus manipulation. First, subjects were asked to indicate by circling a number one through twenty what score they thought they achieved on the first test. Analyses revealed no significant main effects or interactions. Subjects believed they answered approximately 13 of the twenty questions correctly ($M = 13.18$, $SD = 3.16$). Interestingly, this is approximately how many questions participants did actually answer correctly suggesting that they have an intuitive grasp of their performance.

Next, participants answered an item asking "How pleased were you when you got a correct answer on the VRAT?" anchored on a 9-point scale (1 = not at all to 9 = entirely). Again, analyses revealed no significant effects.

Third, participants were asked "How satisfied were you with your performance on the first practice test?" and responded on a 9-point scale ranging from "not at all satisfied" (1) to "entirely satisfied" (9). Analyses revealed a significant main effect of doubt, $F(1, 51) = 6.403$, $p = .014$, such that participants in the self-doubt present
condition reported that they were more satisfied with their performance ($M = 6.22$) than those in the self-doubt absent condition ($M = 5.28$).

Finally, participants were asked to rate how high their level of integrative orientation was on a scale ranging from "very low" (1) to "very high" (9). Analyses revealed no significant effects. Overall students reported that their level of integrative orientation was moderately high ($M = 5.85$, $SD = 1.34$).

To review, on the first practice test participants in all conditions spent the same amount of time practicing and received roughly the same score. Phenomenologically, all participants reported they felt they had scored equally well on the first practice test, were equally pleased when they answered a question correctly, and reported that they felt their level of integrative orientation was the same. On only one item did the groups differ. Those experiencing self-doubt reported that they were more satisfied with their performance on the first practice test than those not experiencing self-doubt. Given that the self-doubt manipulation occurred before participants completed this question, this result may not be entirely surprising. It may be the case that participants in the self-doubt present condition were in a sense lowering expectations for their future performance. By claiming they were satisfied with a lower score, those participants experiencing self-doubt may be lowering the expectations for how they should perform on the final VRAT.

2.3.3.2 Understanding of integrative orientation

On the final questionnaire, several items were included to assess participants' understanding of integrative orientation. First, participants were asked to respond to two
items anchored on 9-point scales (1 = not at all; 9 = entirely). The first item asked participants how important practice was to their performance on the VRAT. All participants were told in the instructions that practice could improve performance and it was hoped that there would be no differences among the groups in how important they reported practice to be. Analyses revealed there were no significant differences among the groups. Overall, subjects thought that practice was moderately related to their performance on the VRAT (M = 5.13, SD = 1.89). Second, participants were asked to indicate how much integrative ability was related to intellectual ability. They were told in the introduction that there was no relation between integrative ability and intellectual ability. Analyses again revealed that there were no significant differences among the groups in how much they thought the two abilities (integrative orientation and intellectual ability) were related. On average, participants rated integrative ability as being moderately related to intellectual ability (M = 5.63, SD = 1.37). Ideally, this number would have been lower. Participants had completed two practice tests with the VRAT, whose items were taken from the Scholastic Aptitude Test (SAT) which is a test that students are familiar with as measuring intellectual ability, thus it is not surprising that they rated the two as being related.

Four items (two on the first interim questionnaire and two on the second interim questionnaire) also were included that assessed how important participants felt it was to do well on the VRAT. Recall that they were told in the introduction that integrative ability was important and was able to predict many differences in people's functioning.
Thus, it was hoped that all subjects would think that having integrative ability was important but that there would be no differences between groups on these measures.

Participants responded to two items on the first interim questionnaire both anchored on 9-point scales (1 = not at all, 9 = entirely). The first question asked participants to rate how gratifying success would be on the final VRAT. Analyses on this item revealed no significant main effects but did reveal an unexpected marginal two-way interaction between focus and self-doubt, $F(1, 52) = 3.747, p = .058$. The means for this interaction are presented in Table 2. It appears as if those participants in the ability focus/self-doubt present condition thought success would be less gratifying than all the other conditions. This may reflect a defensive maneuver on the part of individuals experiencing self-doubt and focused on ability. Believing ability is important, but fearing they lack such ability, these individuals might report that success is not gratifying as a way to reduce the importance of the task. Succeeding at something that is unimportant is not particularly gratifying. However, this pattern of data is marginal and should be interpreted with caution.
Table 2: Means for how gratifying success would be on the final VRAT as a function of self-doubt and focus (High scores indicate more gratification)

<table>
<thead>
<tr>
<th>Focus Condition</th>
<th>Outcome</th>
<th>Ability</th>
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<tbody>
<tr>
<td>Self-doubt</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Present</td>
<td>6.93a</td>
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</tr>
<tr>
<td>Absent</td>
<td>6.60ab</td>
<td>1.40</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

A similar item asked participants how distressing failure would be on the final VRAT. Analyses again revealed no significant main effects but did reveal an unexpected marginally significant interaction between self-doubt and focus, F(1, 52) = 3.463, p = .068. The mean distress ratings are presented in Table 3. It appears as if those participants in the ability focus/self-doubt absent condition and the outcome focus/self-doubt present condition reported they would find failure more distressing than those in the ability focus/self-doubt present condition and the outcome focus/self-doubt absent condition. Given that this result is marginal it should be interpreted cautiously.
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<th>Self-doubt</th>
<th>Outcome</th>
<th>Ability</th>
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<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Present</td>
<td>4.36a</td>
<td>1.87</td>
</tr>
<tr>
<td>Absent</td>
<td>3.60a</td>
<td>1.84</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

Table 3: Means for how distressing failure would be on the final VRAT as a function of self-doubt and focus (High scores indicate more distress)

Two other items on the final questionnaire also assessed how important participants believed the VRAT was. Participants were asked how anxious they felt during the experiment and responded on a 9-point scale ranging from “not at all” (1) to “entirely” (9). Analyses revealed no significant main effects or interactions. Second, using the same response scale, participants were asked to indicate how important it was to be high in Integrative Orientation. Analyses revealed only a marginal main effect of self-doubt, F(1, 51) = 3.68, p = .061. Participants experiencing self-doubt thought it was less important to be high in integrative orientation (M = 6.00) than those not experiencing self-doubt (M = 5.19). This main effect of self-doubt is not necessarily surprising. One mechanism available to those experiencing self-doubt in an area is to reduce that area's importance. For instance, if a person is doubtful they will do well on the final VRAT, one
way to reduce anxiety is to claim the VRAT is not important. If they then do perform poorly, there may be little or no impact on their sense of self-worth because the VRAT was not important.

2.3.4 Primary dependent measures: Self-handicapping and overachievement

The primary dependent measures in this study were designed to measure effort. Specifically, the number of problems participants attempted on the second practice test and the amount of time participants spent practicing on practice test were used to index effort. Self-handicapping was operationalized as a reduction in effort (doing fewer practice problems and spending less time practicing) while overachievement was operationalized as an increase in effort (doing more practice problems and spending more time practicing). More precisely, participants in the self-doubt present/outcome focus condition were predicted to overachieve and exert more effort than any other group while those participants in the self-doubt present/ability focus condition were predicted to self-handicap by exerting less effort than participants in any other group.

2.3.4.1 Number of problems attempted on practice test 2

A 2 (self-doubt: present vs. absent) X 2 (focus: outcome vs. ability) analysis of variance (ANOVA) was conducted on the number of practice problems participants attempted. Analyses revealed a significant main effect of the focus manipulation, \( F(1, 52) = 5.059, p = .029 \), such that participants focused on outcomes (\( M = 15.76 \)) attempted significantly more problems than those focused on ability (\( M = 9.93 \)).
This main effect was qualified by a significant two-way interaction between self-doubt and focus, $F(1, 52) = 4.745, p = .034$. The mean number of practice problems attempted on practice test 2 as a function of self-doubt and focus are presented in Table 4. As predicted, participants in the self-doubt present/outcome focus condition attempted the most practice problems ($M = 20.50$) and those participants in the self-doubt present/ability focus condition attempted the fewest practice problems ($M = 8.62$). Those in the self-doubt absent conditions did a moderate amount of practice problems regardless of their focus ($M = 11.14$ in the ability focus condition, $M = 11.33$ in the outcome focus condition).

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<tr>
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<tbody>
<tr>
<td>Self-doubt</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Present</td>
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<tr>
<td>Absent</td>
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<td>8.33</td>
</tr>
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By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 4: Mean number of practice problems attempted on practice test 2 as a function of self-doubt and focus (Study 1)
The previous analyses were conducted with the participants who failed the manipulation check (people whose essays did not support their assigned focus condition and those who incorrectly identified on what basis scholarships should be awarded). An additional Analysis of Variance was conducted excluding all these people for whom the focus manipulation did not seem to work. Results again revealed a significant main effect of focus, $F(1, 38) = 5.424, p = .025$, such that those in the outcome condition did more problems than those in the ability condition. In addition, there was a marginal two-way interaction between self-doubt and focus, $F(1, 38) = 3.821, p = .057$. The means are presented in Table 5. Again the pattern of results supports the hypothesis. Those experiencing self-doubt in the outcome condition did the most problems while those experiencing self-doubt in the ability condition did the fewest practice problems. Those not experiencing self-doubt did a moderate amount of problems.
Focus Condition

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<th>Self-doubt</th>
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<td>8.29</td>
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By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

Table 5: Mean number of practice problems attempted on practice test 2 as a function of self-doubt and focus by those participants for whom the manipulation clearly seemed to have worked (N = 42)

2.3.4.2 Time spent practicing

The computer program also kept track of how much time participants spent practicing on the second practice test. However, two participants did not stop the computer at the end of the second practice test. After a participant completed a practice problem the computer asked the participant if they wanted to do another practice problem. If the participant responded "yes" the computer continued timing and gave the participant another practice problem; if they responded "no" the computer stopped timing. These two participants did not answer the question "no" before coming to get the experimenter, as a result the time spent practicing is inaccurate for these participants and consequently they were excluded from the analyses of this item.
Analyses of the time spent practicing revealed a marginally significant main effect of focus, $F(1, 50) = 3.445, p = .069$, such that participants in the ability condition spent less time practicing ($M = 119.09$) than did those participants in the outcome focus condition ($M = 173.94$). However, this main effect was qualified by a significant two-way interaction between self-doubt and focus, $F(1, 50) = 7.456, p = .009$. The mean times spent practicing (in seconds) on practice test 2 as a function of self-doubt and focus are presented in Table 6. Not surprisingly, the pattern of results mirrors those for the number of practice problems attempted. Participants not experiencing self-doubt practiced a moderate amount of time regardless of their focus condition ($Ms = 141.40$ and $114.69$ sec. for outcome and ability focus respectively). Participants in the self-doubt present condition were, however, influenced by the focus condition, spending more time practicing when focused on outcomes ($M = 233.19$ sec.) and spending less time practicing when focused on ability ($M = 93.07$ sec.).
2.3.4.3 Gender differences

Since past research (e.g. Berglas & Jones, 1978) has found gender differences in the tendency to engage in self-handicapping such that men are more apt to acquire a self-handicap (such as withdrawing effort) than are women, two separate 2 (self-doubt: present vs. absent) X 2 (focus: outcome vs. ability) X 2 (gender: male vs. female) analyses of variance (ANOVA) were conducted on the main dependent measures: the number of practice problems participants attempted and the time they spent practicing. These analyses revealed no significant gender effects on the number of problems participants attempted. There was a significant main effect of gender on the time that participants spent practicing, $F(1, 46) = 4.437, p = .041$ such that men spent less time practicing ($M = 122.12$) than women ($M = 184.49$) overall. There were no other
significant interactions with gender on the time that participants spent practicing. The mean number of practice problems attempted and time spent practicing as a function of gender, self-doubt condition, and focus can be found in Appendix R.

2.3.5 Derived measures of self-handicapping and overachievement

2.3.5.1 Claimed self-handicapping and overachievement

In addition to behaviorally acquiring a self handicap by exerting less effort or behaviorally overachieving by exerting extra effort, it is possible that participants might also claim they self-handicapped or overachieved. To assess this possibility participants were asked on the second interim questionnaire to estimate the number of practice problems they had attempted on the second practice test. Analyses of this estimate revealed a marginally significant main effect of focus, $F(1, 51) = 3.527, p= .066$, such that participants in the outcome focus condition ($M = 15.24$) claimed doing more practice problems than those in the in the ability focus condition ($M = 10.42$).

2.3.5.2 Derived measures

The first derived measure looked at the correspondence between the number of problems participants actually practiced (as measured by the computer) and the number of problems participants claimed to have practiced. Specifically, the actual number of problems participants attempted was subtracted from the number of problems they claimed to have attempted. Thus, a positive number would indicate that the person claimed doing more problems than they actually did while a negative result would indicate the person claimed doing fewer problems than they did. The analyses revealed
no significant main effects or interactions. Overall, participants accurately claimed to do as many problems as they actually did, \( M = .073 \).

An additional item on the final questionnaire asked participants how many practice problems they thought most people attempted. This item was designed to assess what participants thought was a normal amount of practice. Using this measure, two additional measures were derived. First, the number of practice problems participants thought others completed was subtracted from the actual number of practice problems participants attempted. Thus, a positive result would indicate that the person did more practice problems than they claim that others do while a negative result would indicate that the participant claimed that others did more practice problems than they actually did. Analyses revealed a significant main effect of focus, \( F(1, 50) = 5.523, p = .023 \), such that those in the ability focus condition reported that others would do more practice problems than they did \( (M = -1.16) \) while those in the outcome focus condition reported that others would do fewer problems than they did \( (M = 2.48) \). This main effect was qualified by a marginally significant self-doubt by focus interaction, \( F(1, 50) = 3.532, p = .066 \). The means are presented in Table 7. As can be seen in Table 7, those experiencing self-doubt in the outcome condition did more problems than they claimed others did while those experiencing self-doubt in the ability focus condition did fewer problems than they claimed that others did. Those in the self-doubt absent conditions (both outcome and ability focus) did about as many problems as they claimed that others did.
<table>
<thead>
<tr>
<th>Focus Condition</th>
<th>Outcome</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-doubt</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Present</td>
<td>4.36a</td>
<td>7.28</td>
</tr>
<tr>
<td>Absent</td>
<td>.733ab</td>
<td>6.47</td>
</tr>
</tbody>
</table>

Scores indicate the mean differences in number of practice problems that subjects actually attempted versus the number they claimed that most people attempt. By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

Table 7: Mean differences in number of practice problems that subjects actually attempted versus the number they claimed most people attempt.

Second, the number of practice problems participants claimed others completed was subtracted from the number of practice problems they had claimed to have done. Thus, a positive number would indicate that the participant claimed having done more practice problems than most people and a negative number would indicate a participant believing others practice more than he or she claimed to have practiced. Analyses revealed no significant main effects or interactions.

2.3.6 Ancillary dependent measures: Attributions

The final questionnaire also contained items to assess participants' reactions to the experimental manipulations. Specifically, four items were included that assessed
participants' reactions to their upcoming performance. On 9-point scales ranging from “it is not important” (1) to “it is very important” (9), participants were asked to rate to what extent they thought ability, effort, luck, and the difficulty of the test would affect their performance on the VRAT. Analyses revealed no significant main effects or interactions for any of these attribution measures. There was however a marginally significant main effect of focus on the effort measure, $F(1, 52) = 3.198, p = .080$, such that those in the ability focus condition thought that effort was less beneficial ($M = 6.18$) than those in the outcome focus condition ($M = 7.07$) as would be consistent with the focus manipulation.

2.4 Discussion

2.4.1 General Summary

Overall this study supported the hypotheses that focus (either on outcome or ability) and self-doubt about one's competence are the precursors of self-handicapping and overachievement behavior. Specifically, individuals in the self-doubt present/outcome condition did the most practice problems and also spent the most time practicing. In contrast, although not significant, individuals in the self-doubt present/ability condition did the fewest practice problems and spent the least time practicing. Individuals in the self-doubt absent conditions did a moderate amount of practice problems and spent an intermediate amount of time practicing regardless of their focus condition.

For those experiencing self-doubt, appearing competent was important. As such, these individuals were attuned to factors in the situation that might indicate how
competence is be judged. Individuals in the outcome focus condition were led to believe that outcomes were important. Led to believe that outcomes were important in appearing competent, these individuals overachieved—they exerted extra effort to guarantee a successful outcome. Individuals in the ability focus condition, though, were led to believe that natural ability was important. Led to believe that ability determined competence, these individuals self-handicapped although not significantly-withdrawing effort to protect the perception they had ability. Individuals who were not experiencing self-doubt (i.e. those in the self-doubt absent condition) presumably were not excessively concerned about appearing competent. They exerted a moderate amount of effort regardless of their focus conditions. For these individuals who were not experiencing self-doubt, situational factors that indicate how competence will be judged were not important. These individuals might have had a more certain sense of their competence and could rely more on internal factors to regulate their effort.

In addition to the promising pattern of results on the main dependent measure in this study there are several other interesting results. For instance, it was found that those in the self-doubt present/outcome condition actually completed more practice problems than they claimed others did. Those in the self-doubt present/ability condition did fewer practice problems than they claimed that others did. In contrast those in both of the self-doubt absent conditions did about as many problems as they claim that others did.

What is interesting though is that this pattern does not hold when looking at the number of problems participants claim to do compared to how many they claim others do. The overachievers (self-doubt present/outcome focus condition) actually did more
problems than they claimed others did but they did not claim to do more problems than
others. It is possible that overachievers want to keep their extra effort expenditure
private. The self-handicappers (self-doubt present/ability focus condition) actually did
fewer problems than they claimed others did but did not actually claim doing fewer
problems. These participants then seemed to be keeping their effort withdrawal private
when it may have been to their self-presentational advantage to make it public.
However, this result was only marginally significant and may need to be interpreted
cautiously. An in-depth discussion of the public versus private nature of self-
handicapping is reserved until later (see The public vs. private nature of self-
handicapping and overachievement).

2.4.2 Self-doubt manipulation checks

Two manipulation checks were included to assess the effectiveness of the self-
doubt manipulation. Neither item revealed a difference between the different doubt
conditions. In fact, the only effect to emerge was that participants in the outcome focus
condition were more confident about their integrative orientation ability than those in the
ability focus condition. Unlike those in the ability focus condition, those in the outcome
focus condition might have reason to feel more confident. If the final outcome is what is
important, effort might be able to make up for a perceived lack of ability. Those in the
ability focus condition do not have such a luxury.

Although ideally the manipulation checks would have indicated that those in the
self-doubt present condition indeed felt more doubtful than those in the self-doubt absent
condition, the failed manipulation checks are not that concerning for several reasons. First, although the manipulation checks failed the self-doubt manipulation still seem to have an effect on participants in a predictable, consistent way. Those in the self-doubt present condition reported that they were more satisfied with their performance on the first practice test than those in the self-doubt absent condition. These same individuals also report that it is less important to be high in integrative orientation than their non-doubtful counterparts. Both of these can be construed as ways to cope with self-doubt. By claiming that they are satisfied with their performance on the first test, participants experiencing self-doubt might be lowering their expectations for future performances. If they have already done well, it is not necessary that they do well again. Furthermore, by claiming that integrative orientation is not important, those experiencing self-doubt might be trying to cope with their self-doubt. By reducing the reported importance of the task, a future failure might not have as great an impact (Lynch, 1996). What is interesting though is that these defensive maneuvers occur for all participants in the self-doubt present condition. Thus, those in the self-doubt present/outcome focus condition were reporting that the integrative orientation is not important and that they were satisfied with their performance on the first test, yet they still do an inordinate number of practice problems. Thus, the doubt manipulation does seem to instill in participants a concern about appearing competent that manifests itself as an attempt to reduce the importance of the evaluative situation.

Further evidence for the effectiveness of the doubt manipulation comes from the main dependent measures. The focus manipulations obviously affected participants
differently depending on their self-doubt condition. It seems highly implausible that the self-doubt manipulation truly had no effect on participants. Other researchers (e.g. Pelham & Neter, 1994) have also found that on occasion the manipulation checks will fail while the manipulations still had their intended effect on the dependent variables. Often there are plausible reasons why the manipulation checks do not work. For instance, there are several reasons people might not want to admit feeling overly confident or extremely doubtful about their integrative orientation ability. It might be socially undesirable to admit that one is overly confident. One might be seen as arrogant. Or by admitting one is extremely confident, the impact of failure might be magnified. Likewise, it might also be socially undesirable to admit that one is completely uncertain about his or her ability. In fact, most participants reported that they were only moderately certain they would do well on the test \( M = 3.56 \) and that they were moderately doubtful about their integrative orientation ability \( M = 4.30 \). Both of these are near midpoints of the scale.

Moreover, participants completed the manipulation checks assessing their certainty in their ability before they had received any concrete feedback on their performance. Participants might use past performance information to gauge their confidence in their ability, not free-floating feelings of self-doubt. Having no performance information all participants may simply have chosen to answer near the midpoint of the scale. Thus although, participants in the self-doubt present condition might have been experiencing feelings of self-doubt, they might not use these feelings to judge their confidence in their integrative orientation ability.
The self-doubt manipulation was basically a priming manipulation in which the memorization task was intended to bring to mind or "prime" feelings of self-doubt. The prime, the feelings of self-doubt, would then supposedly influence behavior and the interpretation of new information. In a typical priming study, for instance, Bargh, Chen and Burrows (1996) had participants complete a word search. In the prime condition, participants searched for words related to the elderly (e.g. Florida, wrinkle, bingo) while in the no prime condition they searched for neutral words (e.g. thirsty). The researchers found that the participants in the prime condition walked slower to the elevator at the conclusion of the experiment than those in the no-prime condition. The prime directly affected their behavior. In this study and much of the research on priming, no manipulation checks were included. The belief is that if the prime affected judgments or behavior, it must have worked.

In fact, there is some suggestion that primes work best when participants are unaware of them. Primes have been shown to influence judgments even when they are outside of conscious awareness (Bargh & Pietromonaco, 1982; Devine, 1989). For primes to be effective, participants should not consciously recognize their influence. If participants recognized that it was the words that were creating their feelings of self-doubt, they would attribute any feelings of doubt to the memorization task and not to their own doubts about their ability. Then there should be no reason for the feelings of self-doubt to affect their behavior on the practice test.

Further, as Nisbett and Wilson (1977) suggest, people do not always have access to their own cognitive processes. Feelings of self-doubt from the doubt manipulation
might have influenced participants' behavior without them being aware of this influence. Being unaware of the influence of their feelings of self-doubt, participants might not have been inclined to report these feelings on the manipulation checks.

In sum, although the manipulation checks did not work there are several lines of evidence to suggest that this is not problematic. Most importantly, the manipulation seemed to predictably influence participants' behavior on the main dependent measure.

2.4.3 Focus manipulation checks

The focus manipulations seemed to be have been more effective than the doubt manipulations. Most participants were able to write the assigned essay, advocating the importance of outcomes in the outcome focus condition and advocating the importance of ability in the ability focus condition. Most participants were also correctly able to identify what should be the basis for scholarships, either outcome or ability. Further, participants were able to apply their focus to real-life scenarios. When judging a student who was described as having high ability and poor outcomes, those in the ability condition rated the student more favorably than did those in the outcome condition. Likewise, when judging a student who was described as having low ability and good outcomes, those in the outcome condition viewed the student more favorably than those in the ability condition. Finally, when asked to assess which factors would affect their performance on the upcoming VRAT, participants in the outcome condition felt that effort would be more beneficial than those in the ability focus condition.
However, the focus manipulation check did reveal a few problems. A few participants were unable to write an essay in line with their condition or misidentified the condition they were in. This seemed to be especially true for those participants in the ability focus condition. This suggests that some people might have their own implicit theories of what is important in evaluating others and that many people endorse the importance of outcomes. For some individuals who believe in the importance of outcomes (possibly the chronic overachiever) it might be extremely difficult to endorse an ability focus. However, the pattern of results obtained included the participants for whom the focus manipulation might not have been entirely effective. When these individuals are excluded from the analyses, the same pattern of results emerges on the main dependent measures and if anything provides stronger support for the hypothesis.

There is one other finding on the focus manipulation checks that needs to be addressed. On the measure assessing the suitability for a scholarship of a candidate who has low ability and high outcomes, the focus manipulation seemed to be stronger for those experiencing self-doubt. Specifically, within the outcome condition, those experiencing self-doubt rated the candidate more favorably than those not experiencing self-doubt; while in the ability focus condition, those experiencing high self-doubt rated the student lower than those not experiencing self-doubt. As was argued previously, it might be the case that individuals experiencing self-doubt who are themselves concerned about their level of competence are more attuned to factors in the situation that indicate how competence will be judged. As such, the focus manipulation may be more powerful for them. Those not experiencing self-doubt might not be as concerned about how
competence should be judged and instead rely on their implicit theories, in this case, rating the participants who has good outcomes fairly well even when they are in the ability focus condition.

Unlike past research on self-handicapping, no gender differences were found in the tendency to self-handicap. In addition, this study found no differences in attributions made by self-handicappers and overachievers and those attributions made by other participants despite the fact previous research has often found differences in attributional style (e.g. Lynch, 1996; Rhodewalt 1994). A discussion of possible reasons for this lack of gender differences and attributional differences will be saved until after Study 2.

To summarize, this study provided support for the hypothesis that self-doubt and a focus on outcomes were the essential precursors of overachievement behavior, while self-doubt and a focus on ability were the essential precursors for self-handicapping. Study 2 is a conceptual replication and expansion of this study designed to increase confidence in these results and to further explore the importance of focus on either outcome or ability.
CHAPTER 3

STUDY 2: AN EXTENDED REPLICATION

3.1 Introduction

The goal of this dissertation is to explore the subjective phenomenology underlying self-handicapping and overachievement. Specifically, focus (on either outcomes or ability) and uncertainty about one's competence are proposed to underlie both patterns of behavior. Individuals experiencing self-doubt about their capabilities are overly concerned with appearing competent. As such, they are very aware of how competence might be judged. It was further suggested that competence could be judged on two bases: the presence of ability or on the presence of outcomes. Those individuals who believe that competence is demonstrated by outcomes might be driven to exert extra effort on a task to guarantee success. Those individuals who believe competence is demonstrated by ability might be driven to withdraw effort on a task to protect an ability image in the face of failure. The former individuals can be labeled overachievers and the latter individuals labeled self-handicappers.

Individuals who are not experiencing self-doubt are not overly concerned with appearing competent. Thus, they are probably not as concerned about how their
competence will be assessed. Thus, how competence will be assessed is not particularly relevant to these individuals and might not drive their behavior.

Study 1 provided support for these ideas. Both self-doubt and focus (on either outcome or ability) were manipulated. When given the opportunity to practice, those experiencing self-doubt who were focused on outcomes practiced the most-demonstrating overachievement. In contrast, those experiencing self-doubt who were focused on ability practiced the least-demonstrating self-handicapping. Those participants not experiencing self-doubt were unaffected by the focus manipulation and instead practiced a moderate amount.

These results are promising but a replication would be welcome. The current study was designed to provide this replication and to extend the previous study by including an additional focus condition. In addition to the ability and focus conditions used in the previous study, a neutral focus condition was added in this study. It could be that self-doubt alone leads to self-handicapping and that adding an outcome focus creates overachievement. Or, it could be that self-doubt alone leads to overachievement and only by adding an ability focus condition does self-handicapping emerge. Put another way, the previous study fails to demonstrate that both self-doubt and an outcome focus are critical in driving overachievement and that both self-doubt and an ability focus are critical in driving self-handicapping behavior. A neutral focus condition was added to resolve this issue.

The neutral focus condition in this study focused participants on the importance of sociability, an attribute presumably unrelated to ability and outcomes. It was predicted
that the participants in the neutral condition who were not experiencing self-doubt would exert a moderate amount of effort. Not experiencing self-doubt, they should not be overly concerned with demonstrating competence and should feel free to practice as much as they like. Thus it is predicted that these participants in the self-doubt absent condition would do a moderate amount of practice problems.

There were three possible predictions for the participants experiencing self-doubt in the neutral condition. First, participants experiencing self-doubt in the neutral condition might withdraw effort and act like self-handicappers. This might suggest that the default focus for participants high in self-doubt is on ability.

Second, participants experiencing self-doubt in the neutral condition might exert extra effort and mimic overachievers. This might suggest that the default focus for participants high in self-doubt is on outcomes.

Third, participants experiencing self-doubt in the neutral condition might exert a moderate amount of effort-equivalent to those in the no doubt conditions. This third possibility is by far the most interesting and would provide the most support for the hypotheses advanced here. This would suggest that there is something unique about the combination of self-doubt and an orientation toward outcomes that creates overachievement and that there is something special about the combination of self-doubt and an orientation toward ability that creates self-handicapping. It is not merely feelings of self-doubt alone that create these phenomena. Instead, feelings of self-doubt coupled with a particular frame of reference as to what is important in demonstrating competence leads to two contrary patterns of behavior.
Including a neutral focus condition in this study allowed a test of these predictions. As in study 1, both self-doubt and focus (in this case, on either ability, outcomes, or neutral) were manipulated. In this study, a different method was used to manipulate focus. Rather than writing an explanation for why outcome or ability would be most important in predicting success with scholarships, participants read supposed newspaper articles espousing the importance of ability, a desire to succeed, and sociability in employer's hiring decisions. In addition to using an alternate manipulation of focus this study also included an individual difference measure of self-doubt (the Doubt In Ability Level Scale of the Overachievement Scale (Oleson, Poehlmann, Yost, Lynch, & Arkin, 1998)) to assess any influence that chronic individual differences in doubt might contribute to the pattern of results.

3.2 Method

3.2.1 Overview

This experiment was designed to replicate and expand Study 1 by situationally inducing self-handicapping and overachievement behavior. Effort was used as an index of these behaviors with self-handicapping reflected in a withdrawal of effort and overachievement reflected in excessive effort. Participants took a supposed practice test for the Verbal Reasoning Association Test (VRAT). Then their level of self-doubt and focus was manipulated. Participants then took a supposed second practice test and their effort on this test was measured. Process measures also were collected both before and after the second practice test.
The procedure is basically the same as study 1 with four exceptions. First, an additional focus condition was added. As in study 1, participants were focused on either the importance of ability or on the importance of outcome. In addition, a third neutral focus condition (focusing participants away from the importance of effort or ability) was added. Specifically, participants in this neutral focus condition were led to center on the idea that sociability was important.

Second, focus was manipulated differently in this study. Recall that in study 1 focus was manipulated by having participants write a brief explanation why they thought ability or outcome was critical in determining success with scholarships. In this study, focus was manipulated by having participants read a newspaper article extolling the virtues of natural talent, a desire to succeed, or sociability and answering questions about the article's content.

Third, as in study 1 participants memorized a list of words to manipulate their level of self-doubt. The word lists (self-doubt present and self-doubt absent) were slightly different (see below) in this study than the previous study.

Fourth, an individual difference measure of self-doubt was included at the end of the study.

3.2.2 Participants

Participants were 99 (42 male and 57 female) undergraduate students at the Ohio State University. Thirty-four students were introductory psychology students who received course credit for their participation. Sixty students were from an introductory
marketing class and participated in exchange for extra credit in their class. Finally, five students were paid $5.00 for their participation. Subjects were randomly assigned to the experimental conditions. Two additional subjects were eliminated because they did not receive the manipulations. The entire procedure took between 40 and 50 minutes.

3.2.3 Procedure

The procedure was identical to that of Study 1 except for the noted changes. Participants arrived at the lab either individually or in pairs and were given the instructions and explanation of the VRAT. Participants then completed the first practice test. Then during a supposed break, they completed two other tasks, one for another graduate student and one ostensibly for the Ohio State University Research Foundation. These were the self-doubt and focus manipulations that are described below. They were presented in counter-balanced order across participants.

3.2.3.1 Self-doubt manipulation

As in Study 1, this manipulation was intended to affect participants' levels of self-doubt. There were two conditions: self-doubt present and self-doubt absent. Participants were again given a list of words to memorize by relating the words to themselves. There were two lists of words: self-doubt present and self-doubt absent. Both are presented in Appendix N. Inadvertently, these word lists were slightly different than those used in the first study. Each list consisted of 14 words. Five of the words were the same for each list (aggressive, aroused, different, humble, and wonderful). The remaining nine words for each list were intended to manipulate self-doubt. In the self-doubt condition present,
these words were: confused, doubtful, insecure, perplexed, puzzled, uncertain, unclear, unconfident, and unsure; while in the self-doubt absent condition the words were: confess, double, inside, perpetual, published, unicorn, unclean, uncomfortable, and unspoken. The words in the self-doubt present condition were chosen using a thesaurus to find words related to feelings of doubt and a lack of confidence. Those words in the self-doubt absent condition were chosen because they were unrelated to feelings of doubt and they also visually resembled those words in the doubt condition. For instance, the word “double” on the self-doubt absent word list resembles the word “doubtful” on the self-doubt present word list. Thus, participants in the self-doubt present condition memorized words related to self-doubt by relating them to themselves while participants in the self-doubt absent condition memorized more neutral words. This was intended to manipulate participants' feelings of self-doubt.

3.2.3.2 Focus manipulation

Mimicking a procedure used by Carol Dweck and her colleagues (Dweck, Tenney, & Dinces, cited in Dweck & Leggett, 1988; Chiu, Hong, & Dweck, 1997; Bergen, 1991), participant's focus was manipulated by having participants read a brief article espousing the importance of different attributes. As in study I, one condition was designed to focus participants on the idea that ability was important and one condition was designed to focus participants on the idea that outcomes (i.e. success) were important. In addition, a third condition was added in the study that was designed to create a neutral focus (one that was unrelated to ability or outcome) in participants.
Specifically, participants in the neutral condition were led to believe that sociability was important.

To focus participants on the importance of either ability, sociability, or outcomes, participants were told that they would be completing a brief task for the Ohio State University Research Foundation. Participants were given a packet supposedly from the Ohio State University Research Foundation. The first page of the packet explained that recently several potential teachers in Massachusetts have been unable to pass a basic test of reading comprehension in which people had to read a brief passage and then summarize the basic meaning of the article and answer questions about its content. The article went on to explain that the Ohio State University Research Foundation was studying how Ohio State students performed on these reading comprehension tests and that the psychology department was assisting in the data collection. The instructions then informed participants that they would be reading a brief newspaper article from the USA Today and answering questions about it to assess their level of reading comprehension. These instructions can be found in Appendix O.

The second page of the packet contained one of three fictitious newspaper articles corresponding to the different focus conditions. The articles were created to look like real newspaper articles from the USA Today using a two-column format and pie chart. All three articles were similar in that they described a study conducted by Dr. Bob Teasdale, head of the Human Initiative Project at American University. Furthermore, all three articles contained a similar pie chart and quotes from three individuals from different domains: Tubby Smith, the head basketball coach at the University of
Kentucky; Richard Morgan, the Vice President of Arthur Anderson Corporation, and Victor Growney, head of Admissions at the University of Notre Dame. However, the content of the articles differed by condition.

In the ability focus condition, the newspaper article's headline read "Talent over Toil: Employers Seek Those Who With Natural Talent." The article went on to suggest that after interviewing over 1000 people in hiring positions including CEOs of Fortune 500 companies, heads of admissions at major universities, human resource personnel at smaller companies, and coaches at both the amateur and professional level, Dr. Teasdale's study concluded that 72% of employers favored employees with natural talent rather than those who work hard. This was then presented graphically in a pie chart. The article then went on to include interviews with three individuals who reasserted the importance of natural talent. For instance, Tubby Smith is quoted as saying, "When it comes time to decide which players to recruit, I look for the ones that have natural ball-playing ability. When encouraged to work hard, this player will outperform the player who works hard but lacks natural talent any day."

The structure of the outcome focus condition newspaper article paralleled that of the ability focus except the emphasis was on the importance of a desire to succeed and hard work. In the outcome focus condition, the newspaper headline read, "Toil over Talent: Employers Seek Those Focused on Success." The article presents the study by Bob Teasdale as concluding that 72% of employers favored employees with a desire to succeed and again this was represented in a pie chart. Finally, the subsequent quotes indicated the importance of a desire to succeed and hard work. In this condition, for
example, Tubby Smith is quoted as saying, "When it comes time to decide which players to recruit, I look for the ones that want to win and put forth the extra effort to do so. The player wanting to win and willing to work hard will outperform the player who has natural talent but refuses to exert himself any day."

Finally, the same basic newspaper article was modified for the neutral condition in which participants were to focus on an attribute unrelated to outcome or ability. Specifically, participants were led to focus on the importance of sociability. In the neutral focus condition, the newspaper headline read "Sociability over Shyness: Employers Seek Those Who are Friendly." In this condition, Bob Teasdale and his research team conclude that 72% of employers are looking for sociable people as potential employees. Again, the interviews with Tubby Smith, Victor Growney, and Richard Morgan support this conclusion. Tubby Smith, in this article, is quoted as saying, "When it comes time to decide which players to recruit, I look for the ones that will be able to work well with other team members. The player who is outgoing and friendly will outperform the player who does not interact well with others any day." The three newspaper articles (ability focus condition, outcome focus condition, and neutral focus condition) can be found in Appendix O.

The final page of the packet participants received contained several questions about the newspaper article participants read. These questions were included to be consistent with the cover story that the purpose of reading the article was to assess reading comprehension. In addition, including the questions ensured that participants read the article. Participants were asked four questions (see Appendix O). First, they were
asked to summarize in their own words the main point of the newspaper article that they had read. Second, participants were asked to indicate by circling one of three options (natural ability, sociability, or a focus on success and hard work) what employers were looking for in potential employees. Then they were to list one reason why employers would prefer employees with this characteristic. Third, students were asked to choose which one of four statements was true. These statements were factually based items from the article. Fourth, participants were asked to write an alternative headline for the newspaper article. Again, these items were only included to be consistent with the cover story and were not analyzed in anyway.

Following the procedure of study 1, after completing both manipulations, participants competed Interim Questionnaire 1 (see Appendix J), were given instructions regarding practice test 2, and then were given the opportunity to practice as much or as little as they liked on the second practice test.

3.2.3.3 Final Questionnaires

When the participants had finished practicing on the second practice test, the experimenter explained that the participants would be filling out three more brief questionnaires before taking the final test. Participants then were given three questionnaires. The first questionnaire was the same final questionnaire (see Appendix L) given to participants in Study 1 with one exception. The two questions assessing success with scholarships (item #12 and #13) were dropped as they would not make sense in the context of the new focus manipulations.
Second, participants were given a sheet with 18 blanks and asked to recall as many of the words they had memorized earlier as they could (See Appendix K).

Third, participants were given a questionnaire entitled Self-Questionnaire. This questionnaire contained 8-items that comprise the Doubt in Ability Level subscale of the Overachievement Scale (Oleson, Poehlman, Yost, Lynch, & Arkin, 1998). These eight items are designed to assess respondent’s feelings of self-doubt. Respondents were instructed to indicate how much they agreed with each statement using a 6-point scale (1 = Disagree very much, 2 = Disagree pretty much, 3 = Disagree a little, 4 = Agree a little, 5 = Agree pretty much, 6 = Agree very much.)

In addition, there were two items following the scale as a manipulation check for the focus condition. Participants were told “Earlier in the experiment you read a newspaper article. According to the article what were employers primarily looking for in their employees?” and were instructed to circle one of three options: 1) natural ability, 2) sociability, or 3) focus on success and hard work. This served to ensure that participants could correctly identify which focus condition they were in. All but one participant was able to do this correctly. Next, participants were asked to indicate how much they agreed with the views presented in the newspaper article on a 9-point scale ranging from 1 = not at all to 9 = very much. This item was included to assess whether there were participants for whom the focus manipulation did not work. The Self-Questionnaire can be found in Appendix P.

When the participants had completed all three tasks (final questionnaire about the VRAT, the recall task, and the self-questionnaire), they were informed that there would
be no final test and that the experiment was complete. They were then thoroughly
debriefed which included giving them an explanation of all manipulations. They were
then thanked and dismissed. The complete debrief for this study is in Appendix Q.

3.3 Results

3.3.1 Analysis strategy

To determine the effects of the self-doubt and focus (either outcome, neutral, or
ability) manipulations on the dependent measures, 2 (self-doubt: present vs. absent) X 3
(focus: outcome vs. neutral vs. ability) analyses of variance (ANOVA) were conducted
unless otherwise indicated.

Data from four subjects were eliminated because they did not understand that they
could stop practicing during practice test 2. In addition, four subjects were excluded from
the analyses because they were in a huge rush. They all asked how long the experiment
would take because they had scheduled the experiment at the top of the hour knowing
they had class in thirty minutes. Given that the main dependent measure is an index of
effort, these subjects who expressed concern with the time were excluded. This left 91
subjects in the analyses unless an item was not completed.

3.3.2 Manipulation checks

There were two manipulations in this experiment, self-doubt and focus (either on
outcome, ability or sociability), and manipulation checks were included for each.
3.3.2.1 Self-doubt manipulation

Participants were asked two questions to assess the effectiveness of the self-doubt manipulation. First, on the first interim questionnaire (completed before subjects took the second practice test), participants were asked how confident they were that they would perform well or poorly on the VRAT and indicated their response on a 23-point scale ranging from “completely certain that I will do poorly” (-11) to “completely certain that I will do well” (+11) with 0 labeled as “completely uncertain.” Analyses revealed a marginally significant main effect of self-doubt, $F(1, 85) = 3.752, p = .056$. Surprisingly, subjects in the self-doubt absent condition ($M = 3.62$) reported feeling less confident that they would do well than those participants in the self-doubt present condition ($M = 4.80$). There was no significant effect for the focus manipulation. However, there was a significant two-way interaction between self-doubt and focus, $F(2, 85) = 4.118, p = .020$. The means are presented in Table 8.
Table 8: Means for the how certain participants are they will do on the VRAT as a function of self-doubt and focus (High scores indicates more certainty that they will do well)

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

The second item assessing the effectiveness of the self-doubt manipulation asked subjects to indicate on a 9-point Likert-type scale ranging from “not at all doubtful” (1) to “entirely doubtful” (9) how doubtful they were about their integrative orientation ability. The analysis revealed no significant main effects but there was a significant two-way interaction between self-doubt and focus, F(2, 85) = 4.126, p = .019. The means are presented in Table 9.
Table 9: Means for how doubtful participants are about their integrative orientation ability as a function of self-doubt and focus (High scores indicates more feelings of doubt)

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

In sum, the manipulation checks fail to indicate that overall subjects in the self-doubt present condition felt more doubtful than those in the self-doubt absent condition. However, the interactions suggest that the self-doubt manipulation affected people differently based on their focus condition. Participants in the self-doubt present/ability focus condition, and the self-doubt absent/neutral condition generally reported feeling the least certain that they would do well. Participants in the self-doubt present/ability focus condition and the self-doubt absent/outcome focus condition reported feeling the most doubtful about their integrative orientation ability. Thus, only for those participants in the self-doubt present/ability focus condition did the doubt manipulation seem to be entirely effective
3.3.2.2 Focus manipulation

The focus manipulation was intended to focus subjects on the idea that either ability is most predictive of success (ability focus), that outcomes are more predictive of success (outcome focus), or that sociability is more predictive of success (neutral focus).

To assess the success of the focus manipulation, as the last part of the experiment, participants were asked to recall, based on the newspaper article they had read earlier, what employers were primarily looking for in employees, either natural ability, sociability, or a focus on success and hard work. Eighty-eight out of the 89 (98.9%) participants who responded to the item correctly identified their focus condition. The one participant who did not was in the outcome condition but incorrectly said that he had read that sociability was important.

The participants were also asked to rate how much they agreed with the views presented in the newspaper article on a 9-point Likert scale anchored by 1 = not at all to 9 = very much. Analyses revealed a marginally significant main effect of focus condition, $F(2, 83) = 2.478$, $p = .090$, such that participants agreed more strongly with an article heralding the importance of a desire to succeed and hard work (outcome condition) ($M = 7.59$) than they did an article heralding the importance of sociability (neutral condition) ($M = 7.13$). They agreed least with an article touting the importance of natural talent (ability condition) ($M = 6.72$). These findings are consistent with those of the first study in which it was more difficult to get participants to endorse ability as a better predictor of success than outcomes suggesting that people might naturally be more likely to believe that outcomes are more important than natural ability. Still, 92.2% of the
participants indicated that they agreed with the newspaper article with a score of 5 or above. Thus, most participants were above the midpoint of the scale. Only seven participants expressed disagreement with the views in the newspaper article they had read, one person answering a “3” and six participants answering a “4”. In sum, it appears that most participants expressed agreement with the views presented in the newspaper article that they had read.

3.3.3 Equivalence of groups

3.3.3.1 Experience with the first practice test

Several measures were included to ensure that the groups did not differ in ways not predicted by the experimental hypotheses and to ensure that the focus and self-doubt manipulation did not produce any undesired side effects. First, recall that the computer program was designed to ensure that all participants received roughly the same score. Analyses revealed no significant main effects or interactions. Participants, regardless of condition, answered received roughly the same score on the first practice test ($M = 12.47$, $SD = 2.77$). Furthermore, participants in all the conditions spent roughly the same amount of time doing the first practice test ($M = 401.15$ seconds, $SD = 144.54$ seconds). Thus, on the first practice test all subjects received the same score and spent approximately the same amount of time answering the twenty questions.

Participants responded to several questions on the first interim questionnaire designed to assess the phenomenological experience of performance on the fist practice test. As a reminder, this first interim questionnaire was completed after the first practice
test as well as after the self-doubt and focus manipulation. First, subjects were asked to indicate by circling a number one through twenty what score they think they achieved on the first test. Analyses revealed no significant main effects or interactions. Subjects believed they answered approximately 13 of the twenty questions correctly ($M = 13.19$, $SD = 2.82$). Interestingly, this is approximately how many questions participants did actually answer correctly suggesting that they have an intuitive grasp of their performance.

Next, participants answered an item asking “How pleased were you when you got a correct answer on the VRAT?” anchored on a 9-point scale (1 = not at all to 9 = entirely). Again, analyses revealed no significant main effects nor interactions. Participants were fairly pleased ($M = 7.12$, $SD = 1.48$) when they got a correct answer.

Third, participants were asked “How satisfied were you with your performance on the first practice test?” and responded on a 9-point scale ranging from “not at all satisfied” (1) to “entirely satisfied” (9). Analyses revealed no significant main effects or interactions. All participants were moderately satisfied with their performance ($M = 5.83$, $SD = 1.36$).

Finally, participants were asked to rate how high their level of integrative orientation was on a scale ranging from “very low” (1) to “very high” (9). Analyses revealed no significant main effects. However, there was a marginally significant two-way interaction between self-doubt and focus, $F(2, 85) = 2.707$, $p = .073$. The means are presented in Table 10.
Focus Condition

<table>
<thead>
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<th>Neutral</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
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<td>n</td>
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By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 10: Means for what participants felt their level of integration orientation was as a function of self-doubt and focus (High scores indicate higher level of integrative orientation)

To review, on the first practice test participants in all conditions spent the same amount of time practicing and received roughly the same score. Phenomenologically, all participants reported they felt they had scored equally well on the first practice test, were equally pleased when they answered a question correctly, and reported that they were equally satisfied with their performance on the first practice test. On only one item did the groups differ. Those in the self-doubt absent/neutral focus condition and the self-doubt present/ability focus condition reported that their level of integrative orientation was lower than that of the participants in the other conditions. Again those in self-doubt present/ability focus condition are faced with a situation where they are told that ability is important but may feel they lack such ability because of the doubt manipulation. This
may lead them to deflate their ratings of their level of integrative orientation. It is unclear why those in the self-doubt absent/neutral focus condition would also feel that their level of integrative orientation is low. Interestingly, the participants in the self-doubt absent/outcome focus condition rated their level of integrative orientation the highest. These people are presumably experiencing no doubt and believe that hard work can improve performance, thus it is no surprise that they might view themselves as having a high level of integrative orientation. Keeping in mind that this interaction is only marginally significant, these results should be considered cautiously.

3.3.3.2 Understanding of integrative orientation

On the final questionnaire, several items were included to assess participants' understanding of integrative orientation. First, participants were asked to respond to two items anchored on 9-point scales (1 = not at all; 9 = entirely). The first item asked participants how important practice was to their performance on the VRAT. All participants were told in the instructions that practice could improve performance and it was hoped that there would be no differences among the groups in how important they reported practice to be. Analyses revealed there were no significant differences among the groups. Overall, subjects thought that practice was moderately related to their performance on the VRAT (M = 5.93, SD = 1.81). Second, participants were asked to indicate how much integrative ability was related to intellectual ability. They were told in the introduction that there was no relation between integrative ability and intellectual ability. Analyses again revealed that there were no significant differences among the groups in how much they thought the two abilities (integrative orientation and intellectual
ability) were related. On average, participants rated integrative ability as being moderately related to intellectual ability ($M = 5.53$, $SD = 1.90$).

Four items (two on the first interim questionnaire and two on the second interim questionnaire) were also included that assessed how important participants felt it was to do well on the VRAT. Recall that they were told in the introduction that integrative ability was important and was able to predict many differences in people's functioning. Thus, it was hoped that all subjects would think that having integrative ability was important but that there would be no differences between groups on these measures.

Participants responded to two items on the first interim questionnaire both anchored on 9-point scales (1 = not at all, 9 = entirely). The first question asked participants to rate how gratifying success would be on the final VRAT. Analyses on this item revealed only a significant main effect of doubt, $F(1, 85) = 5.405$, $p = .022$, such that participants experiencing self-doubt reported that success would be more gratifying ($M = 7.23$) than those not experiencing self-doubt ($M = 6.47$). Participants experiencing self-doubt are those who are presumably concerned with appearing competent. As such, success might be particularly gratifying.

A similar item asked participants how distressing failure would be on the final VRAT. Analyses again revealed no significant main effects and participants generally reported that failure would be moderately distressing ($M = 4.49$, $SD = 2.00$).

Two other items on the final questionnaire also assessed how important participants believed the VRAT was. Participants were asked how anxious they felt
during the experiment and responded on a 9-point scale ranging from “not at all” (1) to “entirely” (9). Analyses revealed only a marginally significant main effect of focus, $F(2, 85) = 2.65, p = .077$, such that participants in the neutral condition reported that they were more anxious ($M = 4.63$) than those in the outcome condition ($M = 4.03$) who were also more anxious than those in the ability condition ($M = 3.31$). Since this result is only marginally significant it should be interpreted cautiously. In general, though, participants were not very anxious during the experiment.

Second, using the same response scale, participants were asked to indicate how important it was to be high in integrative orientation. Analyses revealed neither significant main effects nor a significant interaction. Respondent generally felt that it was fairly important to be high in integrative orientation ($M = 6.20, SD = 1.76$).

3.3.4 Primary dependent measures: Self-handicapping and overachievement

The primary dependent measures in this study were designed to measure effort. Specifically, the number of problems participants attempted on the second practice test and the amount of time participants spent practicing on practice test were used to index effort. Self-handicapping was operationalized as a reduction in effort (doing fewer practice problems and spending less time practicing) while overachievement was operationalized as an increase in effort (doing more practice problems and spending more time practicing). More precisely, participants in the self-doubt/outcome focus condition were predicted to overachieve and exert more effort than any other group while those
participants in the self-doubt/ability focus condition were predicted to self-handicap by exerting less effort than participants in any other group.

3.3.4.1 Number of problems attempted on practice test 2

A 2 (self-doubt: present vs. absent) X 3 (focus: outcome vs. neutral vs. ability) analyses of variance (ANOVA) was conducted on the number of practice problems participants attempted. Analyses revealed no significant main effects nor a significant interaction. The mean number of practice problems attempted on practice test 2 is presented in Table 11.

A planned contrast was also conducted to test the specific pattern of means predicted by the hypothesis. That is, it was expected that participants in the self-doubt present/ability focus condition would practice less (given a weight of -2) than would those in the self-doubt absent/outcome focus, self-doubt absent/ability focus, self-doubt absent/neutral focus and the self-doubt present/neutral focus conditions (each given a weight of 0) and that those participants in the self-doubt present/outcome focus condition would practice the most (given a weight of +2). The planned contrast was also not significant, $T(1, 84) = 1.151, p = .253$. 

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Focus Condition

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<td>Absent</td>
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By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

Table 11: Mean number of practice problems attempted on practice test 2 as a function of self-doubt and focus (Study 2)

3.3.4.2 Time spent practicing

The computer program also kept track of how much time participants spent practicing on the second practice test. However, three participants did not stop the computer at the end of the second practice test. After a participant completes a practice problem the computer asked the participant if they wanted to do another practice problem. If the participant responded "yes" the computer continued timing and gave the participant another practice problem; if they responded "no" the computer stopped timing. These two participants did not answer the question "no" before coming to get the experimenter, as a result the time spent practicing is inaccurate for these participants and consequently they were excluded from the analyses of this item.
Analyses of the time spent practicing revealed neither significant main effects nor a significant interaction. The mean times spent practicing (in seconds) on practice test 2 as a function of self-doubt and focus are presented in Table 12.  

Again a planned contrast also was conducted to test the specific pattern of means predicted by the hypothesis. That is, it was expected that participants in the self-doubt present/ability focus condition would practice less (given a weight of -2) than would those in the self-doubt absent/outcome focus, self-doubt absent/ability focus, self-doubt absent/neutral focus and the self-doubt present/neutral focus conditions (each given a weight of 0) and that those participants in the self-doubt present/outcome focus condition would practice the most (given a weight of +2). The planned contrast was marginally significant, $T(1, 81) = 1.586, p = .117$, providing some weak support for the hypothesis.

<table>
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<th>Focus Condition</th>
<th>Ability</th>
<th>Neutral</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
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<td>Self-doubt</td>
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<td>n</td>
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<tr>
<td>Present</td>
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<td>83.57</td>
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</tr>
<tr>
<td>Absent</td>
<td>181.95a</td>
<td>177.71</td>
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</tr>
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</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 12: Mean time spent practicing on practice test 2 as a function of self-doubt and focus (Study 2)
Despite the lack of significance, the pattern of results is as expected (see Table 11 and Table 12). Those in the self-doubt present/ability focus condition do the fewest number of practice problems and spend less time practicing, indicating self-handicapping. Those in the self-doubt present/outcome focus condition do the most practice problems (although also equal to those in the self-doubt absent/ability focus condition) and spend the most time practicing.

3.3.4.3 Gender differences

Since past research (e.g. Berglas & Jones, 1978) has found gender differences in the tendency to engage in self-handicapping such that men are more apt to acquire a self-handicap (such as withdrawing effort) than are women, two separate 2 (self-doubt: present vs. absent) X 3 (focus: outcome vs. neutral vs. ability) X 2 (gender: male vs. female) analyses of variance (ANOVA) were conducted on the main dependent measures: the number of practice problems participants attempted and the time they spent practicing. These analyses revealed no significant gender effects on the number of problems participants attempted or on the time spent practicing. The mean number of practice problems attempted and time spent practicing as a function of gender, self-doubt condition, and focus can be found in Appendix R.

3.3.5 Derived measures of self-handicapping and overachievement

3.3.5.1 Claimed self-handicapping and overachievement

In addition to behaviorally acquiring a self handicap by exerting less effort or behaviorally overachieving by exerting extra effort, it is possible that participants might
also claim they self-handicapped or overachieved. To assess this possibility participants were asked on the second interim questionnaire to estimate the number of practice problems they had attempted on the second practice test. Analyses of this estimate revealed no significant main effects or interaction.

3.3.6 Derived measures

The first derived measure looked at the correspondence between the number of problems participants actually practiced (as measured by the computer) and the number of problems participants claimed to have practiced. Specifically, the actual number of problems participants attempted was subtracted from the number of problems they claimed to have attempted. Thus, a positive number would indicate that the person claimed doing more problems than they actually did while a negative result would indicate the person claimed doing less problems than they did. The analyses revealed no significant main effects or interactions. Furthermore, the grand mean on this item was -.94 suggesting that for most people the number of problems they claimed to do was very close to the actual number of problems they attempted.

An additional item on the final questionnaire asked participants how many practice problems they thought most people attempted. This item was designed to assess what participants thought was a normal amount of practice. Using this measure, two additional measures were derived. First, the number of practice problems participants thought others completed was subtracted from the actual number of practice problems participants attempted. Thus, a positive result would indicate that the person did more
practice problems than they claim that others do while a negative result would indicate that the participant claimed that others did more practice problems than they actually did. Analyses revealed no significant effects.

Second, the number of practice problems participants claimed others completed was subtracted from the number of practice problems they had claimed to have done. Thus, a positive number would indicate that the participant claimed having done more practice problems than most people and a negative number would indicate a participant believing others practice more than he or she claimed to have practiced. Analyses revealed no significant main effects or interactions.

3.3.7 Ancillary dependent measures: Attributions

The final questionnaire also contained items to assess participants' reactions to the experimental manipulations. Specifically, four items were included that assessed participants' reactions to their upcoming performance. On 9-point scales ranging from “it is not important” (1) to “it is very important” (9), participants were asked to rate to what extent they thought ability, effort, luck, and the difficulty of the test would affect their performance on the VRAT. Analyses revealed no significant main effects or interactions for ability, effort, or difficulty.

Although there were no significant main effects on the item assessing attributions to luck, there was a significant two-way interaction between self-doubt and focus, \( F(2, 85) = 5.286, p = .007 \). The means are presented in Table 13. Those participants not experiencing self-doubt and who were focused on the importance of ability were less
likely to attribute their performance to luck than were participants in all the other conditions.

<table>
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<th>Focus Condition</th>
<th>Outcome</th>
<th>Neutral</th>
<th>Ability</th>
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</thead>
<tbody>
<tr>
<td>Self-doubt</td>
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<td>SD</td>
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</tr>
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<tr>
<td>Absent</td>
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By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 13: Attributions to luck as a function of self-doubt and focus

3.3.8 Doubt In Ability Subscale

Analyses also were conducted using scores on the Doubt In Ability subscale in lieu of the self-doubt manipulation condition. As an initial step in analyses, scores on the Doubt In Ability subscale were computed. A median split was then taken on the scores. Those scoring above the median ($Md = 24.00$) were classified as high in self-doubt while those scoring below the median were classified as low in self-doubt.
To determine the effects of scores on the self-doubt scale and the focus (either outcome, neutral, or ability) manipulation on the main dependent measures, 2 (self-doubt score: high vs. low) X 3 (focus: outcome vs. neutral vs. ability) analyses of variance (ANOVA) on the manipulation checks and main dependent measures.

3.3.8.1 Self-doubt manipulation checks

Participants were asked two questions to assess the effectiveness of the self-doubt manipulation. First, on the first interim questionnaire (completed before subjects took the second practice test), participants were asked how confident they were that they would perform well or poorly on the VRAT and indicated their response on a 23-point scale ranging from “completely certain that I will do poorly” (-11) to “completely certain that I will do well” (+11) with 0 labeled as “completely uncertain.” Analyses revealed a marginally significant main effect of scores on the self-doubt scale, $F(1, 83) = 3.714$, $p = .057$. Subjects low in self-doubt ($M = 4.91$) reported feeling more confident that they would do well than those participants high in self ($M = 3.57$). There were no other significant effects.

The second item assessing the effectiveness of the self-doubt manipulation asked subjects to indicate on a 9-point Likert-type scale ranging from “not at all doubtful” (1) to “entirely doubtful” (9) how doubtful they were about their integrative orientation ability. The analysis revealed a significant main effect of scores on the self-doubt scale, $F(1, 83) = 5.80$, $p = .021$, such that those high in self-doubt reported feeling more doubtful ($M = 4.87$) than those low in self-doubt ($M = 4.16$). There were no other significant
effects. In sum, it appears that although the self-doubt manipulation might not have been entirely effective in creating differences in doubt on the manipulation checks, the individual difference measure of self-doubt (Doubt in Ability Scale) did predictably result in reported differences in feelings of self-doubt.

Recall that the self-doubt scale was given at the conclusion of the experiment, after the self-doubt manipulation (i.e. memorizing the words). Thus it is possible that any differences in doubt scores on the individual difference measure could have been due to the doubt manipulation. To test this possibility, an independent samples t-test was done on the scores on the Doubt in Ability Scale as a function of the doubt manipulation condition. This analysis revealed that participants in the self-doubt absent condition and the self-doubt present condition did not significantly differ in their responses on the Doubt in Ability scale, \( t(87) = 1.271, p = .207 \).

3.3.8.2 Primary dependent measure: Self-handicapping and overachievement

To further investigate the role that scores on the individual difference measure of self-doubt might play, 2 (self-doubt score: high vs. low) X 3 (focus: outcome vs. neutral vs. ability) analyses of variance (ANOVA) were conducted on the primary dependent measures.\(^{12}\)

3.3.8.2.1 Number of problems attempted on practice test 2

Analyses on the number of practice problems participants attempted. Analyses again revealed no significant main effects nor a significant interaction. The mean number of practice problems attempted as a function of self-doubt and focus are presented in
Table 14. Although not significant, it appears that participants high in self-doubt in the ability condition are doing the fewest practice problems. This is consistent with the previous study suggesting that those experiencing self-doubt either chronically (as measured by the scale) or situationally (as manipulated) and are focused on ability seem to withdraw effort which may be evidence of self-handicapping.

<table>
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By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 14: Mean number of practice problems attempted on practice test 2 as a function of scores on the Doubt in Ability Scale and focus

3.3.8.2.2 Time spent practicing

Analyses of the time spent practicing again revealed no significant main effects nor a significant interaction. The mean times spent practicing (in seconds) on practice test 2 as a function of self-doubt and focus are presented in Table 15. Again, although these
results are not significant, they suggest that the participants chronically high in self doubt and who are focused on ability disengage from the task by spending less time practicing.

<table>
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By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 15: Mean time spent practicing on practice test 2 as a function of scores on the Doubt In Ability Scale and focus

Although not significant, individuals chronically high in self-doubt and focused on ability withdrew effort. Interestingly, it seems as it those chronically high in self-doubt and focused on outcomes, also withdrew effort. Among those participants in the outcome focus condition, those high in self-doubt did fewer problems and spent less time practicing than did those low in self-doubt. It seems as if individuals who chronically experience self-doubt withdrew effort regardless of their focus. This might suggest a non-parallelism between chronic measures of self-doubt and situational inducements of

A person who chooses to exert extra effort on a task runs the risk of failing despite the effort and, as a result, looking incompetent. Thus, overachievement is a risky strategy to use. Those chronically high in self-doubt might be more hesitant to choose to overachieve than those temporarily feeling doubtful. Instead, these individuals chronically high in self-doubt might opt for the safer strategy of withdrawing effort unless given a compelling reason to do otherwise. It might be the case that individuals chronically high in self-doubt only develop an outcome focus for tasks they view as extremely important and on which they view success as likely. (See section on Oscillating between self-handicapping and overachievement) Those experiencing temporary self-doubt, though, might be more willing to accept the risks associated with effort expenditure and, as a consequence, will more easily turn to overachievement.

3.3.8.3 Additional analyses

Two additional analyses were conducted on the main dependent measure- the number of practice problems. Specifically, two separate 2 (self doubt manipulation: present vs. absent) X 3 (focus: ability vs. neutral vs. outcome) ANOVAS were conducted one for those subjects scoring above the median on the Doubt in Ability Scale and one for those scoring below the median on the Doubt in Ability Scale.

For those high in self-doubt (i.e. those scoring above the median on the Doubt in Ability Scale), the analyses on the number of practice problems attempted on practice test
2 revealed no significant effects. The planned contrasts were also not significant, $T(1, 37) = .1.192, p = .241$. The means are presented in Table 16.

<table>
<thead>
<tr>
<th>Focus Condition</th>
<th>Outcome</th>
<th>Neutral</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-doubt</td>
<td>M</td>
<td>SD</td>
<td>n</td>
</tr>
<tr>
<td>Present</td>
<td>14.33a</td>
<td>6.03</td>
<td>3</td>
</tr>
<tr>
<td>Absent</td>
<td>12.00a</td>
<td>6.87</td>
<td>9</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 16: Mean number of practice problems attempted on practice test 2 by those scoring above the median on the Doubt in Ability Scale as a function of the doubt manipulation and focus ($N = 44$)

For those low in self-doubt (i.e. those scoring below the median on the Doubt in Ability Scale), the analyses on the number of practice problems attempted on practice test 2 revealed no significant effects. The planned contrasts were also not significant, $T(1, 40) = .905, p = .371$. The means are presented in Table 17.
As can be seen by comparing Tables 16 and 17, the expected pattern of results is much stronger for those participants chronically high in self-doubt. Those participants who are chronically high in self-doubt, and are in the self-doubt present/ability focus condition did the fewest number of practice problems, on average only doing seven problems. Those participants who are chronically high in self-doubt, and are in the self-doubt present/outcome focus condition did the most practice problems, doing about 14 problems. The other participants (those in the self-doubt present/neutral focus condition, the self-doubt absent/ability focus condition, the self-doubt absent/neutral focus condition, and the self-doubt absent/outcome focus condition) all did a moderate (between 10 and 13) number of problems.
Those who were not chronically high in self-doubt (Table 17) did not show quite as strong a pattern of overachievement and self-handicapping. Those in the self-doubt present/outcome focus condition did 17 problems but so did those in the self-doubt absent/ability focus condition. Those in the self-doubt present/ability focus condition did about twelve problems the same as those in the self-doubt absent/neutral focus and self-doubt absent/outcome focus conditions.

3.3.9 Analyses combining Study 1 and Study 2

Given that the results on Study 2 provided directional support for the hypothesis, the data from Study 1 and Study 2 were combined. Specifically, 2 (self-doubt: present vs. absent) X 2 (focus: outcome vs. ability) ANOVAs were conducted on the main dependent measures. Participants in the neutral focus conditions of Study 2 were not included in these analyses.

3.3.9.1 Number of practice problems

Analysis of the number of practice problems participants attempted on the second practice test revealed only a significant two-way interaction between self-doubt and focus, $F(1, 113) = 6.931, p = .010$. The mean number of practice problems attempted by participants in Study 1 and Study 2 combined as a function of self-doubt and focus are presented in Table 18.
Focus Condition

<table>
<thead>
<tr>
<th>Self-doubt</th>
<th>Outcome</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Present</td>
<td>17.57a</td>
<td>13.06</td>
</tr>
<tr>
<td>Absent</td>
<td>11.37b</td>
<td>8.15</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 18: Mean number of practice problems attempted on practice test 2 by participants in Study 1 and Study 2 as a function of the doubt manipulation and focus ($N = 117$)

3.3.9.2 Time spent practicing

Analysis of the time spent practicing on the second practice test revealed only a significant two-way interaction between self-doubt and focus, $F(1, 109) = 4.155$, $p = .008$. The mean time spent practicing by participants in Study 1 and Study 2 combined as a function of self-doubt and focus are presented in Table 19.
Focus Condition

<table>
<thead>
<tr>
<th>Self-doubt</th>
<th>Outcome</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Present</td>
<td>223.14a</td>
<td>174.27</td>
</tr>
<tr>
<td>Absent</td>
<td>124.70b</td>
<td>100.91</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

Table 19: Mean time spent practicing on practice test 2 by participants in Study 1 and Study 2 as a function of the doubt manipulation and focus (N = 113)

The combined results of Study 1 and Study 2 provide further support for the hypothesis. Those experiencing self-doubt who were focused on outcomes exerted extra effort, while those experiencing self-doubt who were focused on ability withdrew effort. Although not significantly different from the self-doubt present/ability focus condition, those not experiencing self-doubt seemed unaffected by focus, instead consistently exerting a moderate amount of effort.

3.3.10 Meta-analyses of Study 1 and Study 2

Since the manipulations of focus were different in Study 1 and Study 2, combining the two studies neglects any differences in effect size between the two studies. To remedy this problem meta-analyses were conducted on the interaction between self-doubt and
focus from Study 1 and Study 2. Again, the neutral focus condition in Study 2 was excluded from the analyses.

3.3.10.1 Number of practice problems

Analyses of the effect size of the interaction between self-doubt and focus on the number of practice problems attempted revealed that the effect sizes of Study 1 (Fisher’s $z = .298$) and Study 2 (Fisher’s $z = .196$) were not significantly different from each other, $X^2(1) = .29$, $p > .50$. Further, combining the $p$-values of the interaction between self-doubt and focus for the number of practice problems attempted on Study 1 and Study 2 reveals that, taken together, these two studies show a significant interaction between self-doubt and focus, $Z = 2.54$, $p = .006$.

3.3.10.2 Time spent practicing

Analyses of the effect size of the interaction between self-doubt and focus on the time spent practicing revealed that the effect sizes of Study 1 (Fisher’s $z = .377$) and Study 2 (Fisher’s $z = .237$) were not significantly different from each other, $X^2(1) = .52$, $p > .25$. Further, combining the $p$-values of the interaction between self-doubt and focus for the time spent practicing on Study 1 and Study 2 reveals that taken together these two studies show a significant interaction between self-doubt and focus, $Z = 3.09$, $p = .001$. 

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3.4 Discussion

3.4.1 General summary

Overall this study provided some weak support for the hypotheses advanced here. Participants experiencing self-doubt and who were focused on ability did the fewest problems and spent the least amount of time practicing. Participants experiencing self-doubt and who were focused on outcomes did the most practice problems and spent the most time practicing. Participants not experiencing self-doubt regardless of focus seemed to do a moderate amount of problems and spent a moderate amount of time practicing (although those in the self-doubt absent/ability focus condition did quite a few problems). Finally, participants not experiencing self-doubt and who were focused on sociability also did a moderate amount of problems and spent a moderate amount of time practicing. This would suggest that the presence of self-doubt alone is not enough to elicit self-handicapping and overachievement. In line with the hypotheses outlined here, the combination of doubt and a focus on outcomes create overachievement. The combination of doubt and a focus on ability create self-handicapping. However, these results were only directional, not statistically significant so they must be taken as tentative.

It should be noted that Study 2 was conducted during the summer quarter at Ohio State. These summer participants might not have been as involved in the experiment as those in Study 1 who participated during the Fall quarter. In addition, twenty-three of the participants were English as a Second Language students. Although analyses revealed no differences between these students and native English speakers, these participants also
might not have been invested in doing well on the VRAT. These two factors (summer students and non-native speakers) may explain why the results of Study 2 were directional but nonsignificant.

To further explore theoretical reasons why these results may not have reached statistical significance it is informative to look at the effectiveness of the manipulations.

3.4.2 Self-Doubt manipulation

The manipulation of self-doubt seemed only to be effective for those participants in the self-doubt present/ability focus condition. These individuals reported feeling uncertain about how they would do on the VRAT and also reported feeling doubtful about their integrative orientation ability. They were the only individuals who consistently reported feeling uncertain on the manipulation checks. Participants in the self-doubt present/ability focus condition are those that one might expect to feel the most unsure about their ability. They are memorizing words related to doubt, hoping to increase feelings of self-doubt about one's ability, and then are told that ability is the most important attribute to others. This may leave these participants feeling that they lack something important - ability - thus resulting in intense feelings of self-doubt. Participants in the self-doubt present/outcome focus condition and the self-doubt present/neutral focus conditions obviously were supposed to feel doubt. It is possible that participants in the self-doubt present/outcome focus condition and self-doubt present/neutral focus condition were not experiencing high levels of self-doubt because their focus provided a solution to the self-doubt. Specifically, although participants in these two conditions may have been
feeling doubtful about their ability, reading an article suggesting that a focus on success and hard work is critical, participants in the self-doubt present/outcome focus condition may have come to believe that hard work can compensate for a lack of ability that they fear they might have. As will be discussed below, the outcome focus manipulation in this study also may have not been as focused as strongly on outcomes as would have been desired. Likewise, those in the self-doubt present/neutral focus condition, although feeling unsure about their ability might believe that sociability can compensate for any perceived deficits in ability leaving them feeling more confident about their integrative orientation ability or that it is not particularly important to be high in integrative orientation. Thus, the self-doubt manipulation may only have been effective for participants in the self-doubt present/ability focus condition.

Further evidence for the ineffectiveness of the self-doubt manipulation comes from examining participants’ scores on the Doubt in Ability Level subscale of the Overachievement Scale (Oleson, Poehlmann, Yost, Lynch, & Arkin, 1998). Recall that this scale was completed after the doubt manipulation. Thus, it is possible that the manipulation could affect participant’s responses to the scale. This did not seem to be the case, however, suggesting that the individual difference measure of self-doubt might assess more chronic feelings of self-doubt.

Recall also that the self-doubt manipulation did not seem to result in reported feelings of doubt on the manipulation checks except for those in the ability focus condition. However, when scores on the individual difference measure are used there are differences between individuals high and low in self-doubt regardless of their focus.
condition. Those scoring high on the self-doubt scale report feeling less certain they will do well and are more doubtful about their integrative orientation ability than are those scoring low on the self-doubt scale.

These results may be consistent with those of the first study in which the manipulation checks failed to detect a difference of the doubt manipulation but the manipulation still seemed to affect the dependent measures. It might be the case that the manipulation checks are not suited to detecting temporary feelings of self-doubt as created by the manipulation but instead are more suited to assessing chronic differences in self-doubt. Using random assignment, there should be an equal number of high and low self-doubt participants in all the conditions which would result in no reported differences between the groups. The differences in this study may have been due to a failure of random assignment resulting in more people chronically high in self-doubt in the self-doubt present/ability focus condition. However, all of this is purely speculation.

To examine the effects of chronic feelings of self-doubt, scores on the self-doubt scale were substituted in the place of the doubt manipulation analyses. These results parallel those of the doubt manipulation for the self-handicapping effect. Those scoring high on the self-doubt scale and in the ability condition withdrew effort (in the number of practice problems they completed and the time they spent practicing), although, not significantly, when compared to the participants in all the other conditions. Evidence for overachievement is much weaker and as discussed below might be due to problems with the outcome focus manipulation (see Focus manipulation checks).
Perhaps the most interesting results are those that separately examine the effects of the doubt manipulation and the focus manipulation on those scoring high and low on the self-doubt scale. Looking at only those participants scoring high in self-doubt on the self-doubt scale, the predicted pattern of results emerges although again not significantly. Those in the self-doubt present/ability focus condition practice the least, on average only completing seven problems. Those in the self-doubt present/outcome focus condition practice the most, completing on average about fourteen practice problems. Those in the self-doubt present/neutral focus condition and the those in the self-doubt absent conditions (regardless of focus condition) practiced a moderate amount, on average doing between ten and thirteen practice problems. The pattern of results was still present for those individuals scoring low on the self-doubt subscale but was much weaker.

It is possible that manipulations of self-doubt are more effective for individuals who are already chronically high in self-doubt. In essence, chronic and temporary sources of activation of feelings of self-doubt might combine to make the manipulation of feelings of self-doubt particularly potent for those already high in self-doubt. There are two lines of evidence that suggest this might be true. First, a recent study by Lyubomirsky & Nolen-Hoeksema (1995), found that when dysphorics were induced to ruminate about themselves they provided more negative interpretations of events and more pessimistic views of the future than those dysphorics who were distracted or than nondysphorics. Drawing, from research by Scheier and Carver (1977) on self-awareness that suggests that self-focusing manipulations can heighten whatever negative affect
participants are experiencing, the authors go on to suggest, "rumination, defined as focusing on one's current feelings state and its implications, can maintain or enhance other negative moods other than depression" (Lyubomirsky & Nolen-Hoeksema, 1995, p. 187). Participants scoring high on the self-doubt scale presumably are already experiencing feelings of self-doubt, which is a negative state. Memorizing words relating to self-doubt by referencing the words to themselves is essentially ruminating about that self-doubt. Consistent with what Lyubomirsky and Nolen-Hoeksema (1995) suggest this should further heighten those feelings of self-doubt. Thus, the self-doubt manipulation might be particularly effective for those already high in self-doubt which is consistent with the results showing that the hypothesized pattern of effort expenditure is stronger for those high in self-doubt.

Additional research by Hermann and Leonardelli (1998) using an ease of retrieval paradigm further support the assertion that manipulating self-doubt might be easier for those who are already chronically experiencing doubt. In the initial demonstration of the ease of retrieval paradigm developed by Schwarz and his colleagues (Schwarz, Bless, Strack, Klump, Rittenauer-Schatka, & Simons, 1991), participants are asked to recall either six instances of times they acted assertively or twelve times they acted assertively. Ironically, those asked to recall fewer times they acted assertively reported feelings more assertive than those who recalled many more times they had acted assertively. According to Schwarz, participants are relying on the ease with which the instance come to mind, not the total number of instances, to determine their level of assertiveness. Recalling a few instances of assertive behavior is relatively easy and accordingly people conclude
they must be fairly assertive. Recalling numerous instances of assertive behavior, though, is more difficult and accordingly people report they must not be very assertive.

Hermann and Leonardelli (1998) tried to extend this procedure to manipulate feelings of self-doubt. Participants were asked to recall either three times they were feeling confident or eight times they were feeling confident. It was expected that people would find recalling eight instances of feeling confident difficult and would report feeling less confident. Likewise, those recalling only three instances were expected to feel the task was relatively easy and would report feeling more confident. However, the predicted pattern of results only emerged for participants high in self-doubt as measured by the self-doubt scale. Those chronically low in self-doubt reported that recalling three and eight instances of feeling confident was equally easy and as a result reported feeling relatively confident regardless of how many instances they had recalled. One possibility is that by increasing the number of instances of confidence participants had to recall those low in self-doubt might also exhibit the ease of retrieval effect. It is left up to future research to test this possibility.

Another explanation comes from work by Vaughn and Schwarz (1998). They report that the ease of retrieval paradigm often only works for those individuals who are schematic on the trait or knowledgeable about the area in question. For instance, if a person is schematic on assertiveness, difficulty in recalling instances when he or she acted assertively could be interpreted two ways. This person may conclude that the difficulty arises from a lack of practice of thinking about himself or herself in terms of assertiveness. Alternately, he or she might conclude that the difficulty arises from an
actual lack of assertiveness. A person schematic on assertiveness can only interpret the difficulty in recalling a large number of assertive behaviors as diagnostic of a lack of assertiveness. It might be the case that individual chronically high in self-doubt are more attuned to feelings of confidence. For them, the ease or difficulty of recalling instances of confidence are diagnostic. Individuals not chronically concerned with self-doubt might not be so attuned to their sense of certainty and thus for them the manipulation is ineffective. The difficulty they experience recalling several instance of feeling confident might be attributed to a lack of expertise (i.e. the person rarely thinks about his or her world in terms of confidence) or to the actual infrequency of feeling confident. Whatever the case might be, the work by Hermann and Leonardelli (1998) again suggests that doubt manipulation might be more effective for individuals already concerned with their competence.

3.4.3 Focus manipulation

The focus manipulation in this study was successful in that all but one participant was able to correctly identify the focus condition to which they had been assigned (i.e. they were able to correctly identify employers were looking for employees with natural talent (ability focus), employees with a desire to succeed and a focus on hard work (outcome condition) or employees that were sociable (neutral focus condition)). Further, all participants expressed agreement with the views presented in the articles they read. However, as with Study 1, participants found the idea that employers were focused on sociability or on an employee's desire to succeed more agreeable than the idea that
employers focused on natural ability. Again, this suggests people might have a natural inclination to place more weight on the importance of outcomes rather than ability.\textsuperscript{14}

Despite these promising results on the manipulation checks, there is still reason to suspect that the manipulations may not have been as powerful as those in the previous study. Recall that in Study 1 participants generated causal explanations for why ability or outcomes were important in predicting success. In Study 2, participants merely read a newspaper article touting the importance of ability, outcomes, or sociability. There are several lines of evidence to suggest that the self-generated arguments in the first study might be more persuasive than those arguments that were not self-generated in the latter study.

First, the procedure in study 1 of generating causal explanations for a relationship was borrowed from research on belief perseverance (Anderson, Lepper, & Ross, 1980). This research finds that the generation of causal explanations is important in maintaining belief perseverance. When participants do not generate causal explanations for a relationship, their beliefs do not persist nearly as much in the face of refuting evidence. Thus, generating causal explanations as was done by the participants in study 1 can create strong, enduring beliefs. The participants in study 2 did not generate these causal explanations.

Also relevant here is research from the attitude literature. Much research has shown that active generation of persuasive arguments (e.g. through role playing) often results in more persuasion and attitudes that also tend to persist (e.g. Janis & King, 1954; Watts, 1967). There are two main explanations for the power of self-generated
arguments. First, when generating arguments in favor of one side of an argument (e.g. outcomes are more important than ability in predicting scholarship success), a person engages in biased scanning of the arguments (Janis, 1959). In essence the person thinks of all the arguments that support the issue and suppresses those that do not. When merely reading an article about an issue, a person might not be so inclined to examine the issue in a biased way. So while the participants in Study 1 in the ability focus condition, may have only considered arguments in favor of ability, consistent with biased scanning, those in study 2 may have felt more free to counterargue the contents of the article since they were not generating arguments.

The second explanation for the persuasiveness of active generation of arguments is perhaps even more relevant. Greenwald and Albert (1968) showed, for instance, that people judge arguments they generated about an issue to be of higher quality than those that others generated. Brock and Perloff (1980) have termed this an “ownness bias” in which people tend to value things that are related to themselves. In addition, the participants were also more likely to remember the arguments that they generated than those that were generated by someone else. In sum, people find arguments they generate themselves to be very persuasive and memorable. Participants in study 1 had the benefit of generating their own arguments while those in Study 2 did not.

In sum, although the focus manipulation in Study 2 appeared effective on the manipulation checks there is reason to suspect that the manipulation of focus in this study might not have been as powerful as the self-generated focus manipulation of Study 1.
As alluded to earlier, it is also plausible that the outcome manipulation in Study 2 was less effective than in Study 1. In study 1, participants in the outcome condition were specifically told to write why concrete outcomes such as past GPA were good predictors of success. Though intended to converge on the same construct—outcomes—the outcome focus condition in study 2 may have not done this. Participants in this study read a newspaper article explaining the importance of having a desire to succeed and a willingness to work hard. Instead of specifying the importance of demonstrable outcomes, this article instead might have focused participants on the importance of having a certain attitude. Participants might have been more worried about appearing driven to succeed (i.e., possessing a certain attitude) rather than actually demonstrating this success (i.e., outcomes). As it is easier to adopt a particular attitude than it is to demonstrate outcomes, this may undermined some of the effectiveness of the self-doubt manipulation for participants in this condition. Although they might have been concerned about appearing competent, the focus manipulation may have indicated that the way to do this is to have a good work ethic. Although this is speculative, it might account for the fact that the overachievement effect was less reliable than the self-handicapping effect in this study.

3.4.4 Attributions

Participants in both Study 1 and Study 2 were asked four items assessing the extent to which they thought their performance on the VRAT would be a function of their ability, their effort, the difficulty of the task or luck (Weiner, 1974). The only significant finding to emerge was in Study 2. Participants in the self-doubt absent/ability focus
condition said their performance would not be due to luck while those in the self-doubt present/ability focus condition reported that their performance would be due to luck. Thus, those experiencing self-doubt and who were focused on ability self-handicapped and attributed any performance on the VRAT to luck. It is possible to speculate that had the self-doubt manipulation worked more effectively for those in the self-doubt present/outcome focus condition these individuals might also have attributed any performance to luck or, alternately, to hard work.

Past research has found similar attributions to luck among individuals high in self-doubt. For instance, Lynch (1996) found that regardless of their performance, individuals high in self-doubt preferred attributions to luck more than their low-self doubt counterparts. Elsewhere, Rhodewalt (1990) found that self-handicappers (individuals who are also high in self-doubt) tended to attribute both positive and negative events more to external factors (luck or difficulty of the test) rather than internal factors (ability or effort).

These attributions to luck by individuals high in self-doubt are consistent with the conceptualization of self-handicapping and the attributional model of overachievement. Self-handicappers are posited to have a high level of self-doubt about their ability and make the cause of performance ambiguous by withdrawing effort. Overachievers, who are also have a high level of self-doubt in their ability, render ambiguous the cause of their success outcomes through effort expenditure. Thus, both strategies make attributions to ability difficult. By definition, these individuals are high in self-doubt.
They may not understand why they succeeded or failed and often their performance may feel as if they were due to luck.

Although the current studies did not provide participants with feedback on their performance, examining more precisely the attributions that individuals high in self-doubt, both overachievers and self-handicappers, make for differing performance outcomes is still a fruitful area for future research. The types of attributions that individuals use to explain their performance can have important consequences for their self-esteem. For instance, ability attributions are internal and stable. Attributing a success to ability can elicit feelings of competence that may ease anxiety on future tests. Making attributions to a lack of ability as the cause of failure may breed a sense of hopelessness and feelings that success is unattainable. Effort attributions, on the other hand, are unstable. Attributing success to effort may be adaptive, as effort is controllable, indicating that a success can be repeated with effort. Attributing a failure to lack of effort suggests that the next time, with more effort, failure can be turned into success.

Attributing a performance, whether it be success or failure, to luck or the ease or difficulty of the test may be particularly maladaptive. Luck and the ease of the test are uncontrollable. Making such attributions may breed a sense of helplessness and feelings that one has no control over his or her outcomes. However, in the face of failure, luck and difficult task attributions are preferred over attributions to lack of ability. Both allow a person to maintain self-esteem (Anderson & Weiner, 1992).

Aside from overall mental health, the attributional processes of individuals high in self-doubt were also particularly interesting since modifying these attributional processes
may provide a route to breaking their cycles of behavior, whether it be self-handicapping or overachievement. Both patterns of behavior are not particularly adaptive. By withdrawing effort, the self-handicapper is flirting with disaster by making failure more likely. The self-handicapper might be the classic underachiever, not reaching his or her full potential. Overachievement, though it may result in successful outcomes, also has a downside. Overachievers report strong negative emotions in the face of failure and a striking lack of positive affect in response to their successes (Poehlmann, 1994). They report a dislike of hard work, yet they may often feel compelled to work hard to succeed. In addition, overachievers and self-handicappers might be overly concerned with what others think of them and with pleasing others rather than pleasing themselves (e.g. Lynch, 1996). In sum, self-handicappers and overachievers may not be particularly happy.

One way to break the pattern of self-handicapping or overachievement behavior might be to change the attributions that these individuals make for their performance. Changing the attributions a person makes for his or her behavior can produce a subsequent change in his or her behavior. Attributing a failure to luck is obviously more adaptive than attributing a failure to lack of ability. Attributing the failure to a lack of ability may cause the person to set low expectations for success and decrease his or her self-esteem, resulting in little effort and possibly avoidance of the task (Elliot & Dweck, 1988). However, substituting an attribution to lack of effort for an attribution to luck for failure might be useful. Attributing a failure to lack of effort gives individuals some feelings of control over their outcomes rather than leaving them feeling as if their life is controlled by chance.
Likewise, individuals who are high in self-doubt may be able to make more adaptive attributions for success. In learning to attribute a successful outcome to ability, rather than luck, individuals high in self-doubt may not feel driven to withdraw effort in the case of self-handicapping or to exert heroic effort in the case of overachievement, may be able to enjoy their success, and may even be able to come to rely less on the assessments of others as indicators of their self-worth.

3.4.5 Gender differences

Much previous research has shown that males are more likely to self-handicap than their female counterparts (Berglas & Jones, 1978, Harris & Snyder, 1986) especially when the handicap is behavioral (e.g. withdrawing effort) rather than simply claimed (Hirt, Deppe, & Gordon, 1991). In the two studies reported here there was no difference between males and females in their tendency to self-handicap. There are several possible explanations as to why the traditional pattern of sex-differences in self-handicapping did not emerge. Many researchers, including Jones and Berglas (1978) who were the first to discover the gender differences in self-handicapping suggested that these differences might be a function of the task. Specifically, many studies that show males to self-handicap more evaluate participants on an intellectual task. It has been suggested that women may feel that they are already at a disadvantage on these intelligence tests because of their gender. With a preexisting handicap in place, they then have no need to acquire a further handicap (Sheppard & Arkin, 1989a). However, in this study, the task was explicitly described as being unrelated to intelligence and past school performance. Further, for participants integrative orientation was a new ability and presumably females
would be unable to assume they were at a disadvantage. With no preexisting handicap, females in this study may have chosen to self-handicap.

Elsewhere it has been suggested that differences in attributional styles might underlie the gender differences in self-handicapping. Sheppard and Arkin (1989b) suggest that males might be more inclined than females to make ability attributions for their performance. This tendency by males might make them more likely to self-handicap to protect themselves from ability attributions in failure situations. These researchers found that males did handicap more than females and that they were also more likely to make ability attributions. Both studies presented here found no gender differences among participants in their attributions to either ability, effort, luck, or the difficulty of the task nor in their tendency to self-handicap. Although it is unclear whether or not attributional patterns cause self-handicapping, these studies suggest that the two phenomena might be linked.

Finally although there is a trend in the literature for males to self-handicap more than females, there are exceptions. There are studies that find no gender differences in self-handicapping (e.g. Sheppard & Arkin, 1989a).

3.4.6 Limitations of study 2

To summarize, although this study provided directional support for the proposed hypotheses the results were not statistically significant. Those experiencing self-doubt and focused on ability did the fewest problems, evidence of self-handicapping. Those experiencing self-doubt and focused on outcomes did the most problems evidence of
overachievement, though this effect was not as reliable. Those experiencing self-doubt with a neutral focus and those experiencing no self-doubt, regardless of an outcome, ability, or neutral focus, did a moderate amount of problems. These patterns mirror those of Study 1 in the ability and outcome conditions but are not significant, an obvious weakness of the study. Thus some qualifications are necessary.

First, as described above, the self-doubt manipulation may not have been effective for all participants. In particular, the doubt manipulation may have only been effective in creating feelings of doubt for those in ability focus condition. It is possible that the focus conditions used in this study undermined the effectiveness of the doubt manipulation in the neutral and outcome focus conditions. Specifically, individuals in these conditions may have experienced doubt about their ability but when told that sociability or having a desire to succeed was important may have reduced this concern. Instead of emphasizing appearing competent by demonstrating outcomes, the focus condition may have focused participants on appearing sociable or as having a strong work ethic. It is easier to adopt an attitude than to show outcomes. This may have negated any feelings of self-doubt these participants may have experienced. Future research would do well to examine under what circumstances changing the evaluative criteria in a situation (for instance, from a focus on competence to sociability) can decrease feelings of self-doubt.

In addition, the focus manipulation in this study might not have been as potent as the previous study. Generating one's own arguments seems to be a particularly potent manipulation of focus compared to reading arguments generated by others. Again this might point to the importance of the subjective importance of reality in the life of the
individual high in self-doubt. If a person high in self-doubt believes that his or her competence will be judged according to outcomes, regardless of the objective reality or even what others tell him or her to be true, this self-generated belief will drive his or her behavior.

Finally, this study suggested that priming manipulations of self-doubt may be particularly effective for those individuals chronically high in self-doubt. Future research would do well to further explore this possibility.

Despite these limitations, Study 2 provides additional support for the notion that feelings of uncertainty about one's competence and a frame of reference (on either outcomes or ability) are the basic ingredients driving self-handicapping and overachievement behavior.

3.4.7 Combining Study 1 and Study 2

Study 1 provided clear support for the hypotheses presented here. Those participants experiencing self-doubt and who were focused on the importance of ability practiced the least although this was not significant. Those participants experiencing self-doubt and who were focused on the importance of outcomes practiced the most. Those participants not experiencing self-doubt practiced a moderate amount regardless of the relative importance of ability or outcomes. Study 2 again provided support for the hypothesis that feelings of self-doubt and a cognitive focus (on either ability or outcome) are the critical ingredients of self-handicapping and overachievement. In this study the pattern of results were in the predicted direction although they were nonsignificant.
Combining Study 1 and Study 2, both by combining the data and through metanalytic techniques, provides even further support for the combination of feelings of self-doubt and a frame of reference in creating two different patterns of behavior: excessive effort expenditure (overachievement) and effort withdrawal (self-handicapping). Feelings of self-doubt coupled with a focus on the importance of outcomes led to overachievement; feelings of self-doubt coupled with a focus on the importance of ability led to self-handicapping.
CHAPTER 4

SUMMARY AND IMPLICATIONS

4.1 Summary

Contemporary western society places an extremely high value on competence and as a result people are interested in appearing competent. According to Jones and Berglas (1978) the people who might be the most concerned with their competency image are those that experience self-doubt about their own competence. These individuals may have an overinvestment in the question of self-worth and derive any feelings of self-worth from appearing competent.

Jones and Berglas (1978) suggested two strategies that individuals experiencing uncertainty about their competence might adopt to create an image of competence: self-handicapping and overachievement. The self-handicapper creates an impediment to performance, such as withdrawing effort, to discount ability attributions in the case of failure while also augmenting ability attributions for success. The overachiever exerts heroic effort on a task to guarantee a successful outcome on a task. These opposing behavior patterns (effort withdrawal in the case of the self-handicapper and heroic effort...
expenditure in the case of the overachiever) were proposed to be inspired by the same force: self-doubt about one's competence.

It was proposed here that there are at least two ways to appear competent. One can appear competent by demonstrating natural ability; one can also appear competent by achieving a successful outcome. Self-handicapping might be the strategy to adopt in the former case, while overachievement would be advantageous in the latter.

Individuals who are experiencing self-doubt can turn to either overachievement or self-handicapping to maintain an image of competence. It is suggested here that these self-doubting individuals might choose which self-protective strategy to use based on how they believe competence will be judged. Uncertain individuals who believe that competence is judged by demonstrating ability might self-handicap; those who believe that competence is judged by demonstrating successful outcomes might overachieve.

The research reported here showed that the combination of feelings of self-doubt about one's ability and a belief that demonstrating natural talent is important leads to self-handicapping behavior. Further, the combination of feelings of self-doubt about one's ability and a belief that competence is adjudged according to outcomes leads to overachievement behavior. Individuals experiencing self-doubt are overly concerned with appearing competent and are attuned to cues in the situation suggesting how competence will be judged. Moreover, it is the combination of self-doubt and focus (on outcome or ability) that is critical. Individuals not experiencing self-doubt and who were not likely concerned about appearing competent did not moderate their behavior as a function of how competence would be judged. They were insensitive to cues in the situation.
suggesting outcomes or ability were important. Additionally, the second study presented here provided further evidence that both self-doubt and a concern for how to appear competent lead to self-handicapping and overachievement. Individuals experiencing feelings of self-doubt who were focused on the importance of a neutral attribute (sociability) did not self-handicap or overachieve. Regulating effort on a task was unnecessary for these individuals since they were led to believe that competence may be judged according to sociability.

The purpose of the present work was to demonstrate the necessary precipitating conditions for self-handicapping and overachievement behavior. It was posited that individuals who are uncertain about their ability and believe that competence is indicated by natural ability would self-handicap. It was further posited that individuals who are uncertain about their ability and believe that competence is indicated by outcomes would overachieve. The results clearly supported this notion. These studies add to the literature on feelings of self-doubt by suggesting that how an individual chooses to deal with these feelings may depend on how he or she believes that his or her competence will be judged.

4.2 General limitations

Although these two studies provide support for the notion that feelings of self-doubt and a cognitive focus determine self-handicapping and overachievement behavior there are at least three limitations of this pair of studies.

First, participants in the self-doubt present condition of both studies memorized words related to self-doubt (e.g. unsure, confused). It is possible that memorizing these
words may have elicited a negative mood in addition to or in lieu of feelings of self-doubt. There is no data in this study to speak to whether the self-doubt manipulation used specifically affected feelings of self-doubt or instead just aroused general feelings of negativity. It is plausible, then, that the results of these studies are driven by negativity and not self-doubt. Future research would do well to assess this possibility. One simple solution might be to include a measure of mood in future studies. If participants in the self-doubt present and self-doubt absent conditions report equally positive moods, this rules out the possibility that the self-doubt manipulation affected mood. Another possibility to assess the unique importance of feelings of self-doubt rather than negativity in a future study might be to, in addition to the self-doubt present word list, to include a list of negative words that are unrelated to self-doubt. If the hypotheses forwarded here are correct, only those participants in the self-doubt present condition and not those in the negative word list condition would regulate their effort as a result of the focus manipulation.

Second, it is possible that rather than manipulating a focus on outcomes or a focus on ability the focus manipulation simply caused participants in the different conditions to value effort differently. Specifically, it might be the case that participants in the outcome focus condition simply valued effort more than those participants in the ability focus condition. Put another way, in the outcome condition participants might have believed that effort was valued while those in the ability focus condition might have believed that effort was not valued. To win others’ approval, those in the outcome focus condition might have exerted extra effort while those in the ability focus condition, feeling that
effort was not valued, did not. The attribution measures collected suggest this might be the case. In Study 1, participants in the outcome focus condition were more likely, though, not significantly, to attribute their performance to effort than were those in the ability focus condition. Similarly, Study 2 found that those participants not experiencing self-doubt and focused on ability were unlikely to endorse effort as the cause of their performance.

Although plausible there is at least one reason to suggest that the differential evaluation of effort might not be a satisfactory explanation of these results. All of the participants were told that effort could improve performance on the test. Further, when rating how important practice was to their performance, there was no difference between those focused on ability and those focused on outcome. All participants reported that practice was moderately important. Still it is plausible that the focus manipulation actually affected the valuation of effort, not a focus on ability or outcomes. Future research would do well to test this possibility. For instance, rather than using a focus manipulation that emphasizes ability or outcomes, the value placed on effort could be directly manipulated and its effects assessed.

Third, although participants experiencing self-doubt and focused on ability seemed to withdraw effort though this was not significant. It is tempting to interpret this withdrawal as a strategic maneuver on the part of its use to maintain an image of competence. When a failure occurs, ability attributions are discounted while when success occurs ability attributions are augmented. However, it might also be the case that these individuals are simply withdrawing psychologically. It is not that they are
concerned about appearing competent, instead they are just not invested psychologically in the task (i.e. they do not care). This is a criticism that can be leveled against nearly any study investigating self-handicapping and as of now there seems to be no clear way to determine whether the effort withdrawal was strategic or simply due to a lack of investment in the task. It is also plausible that participants experiencing self-doubt and focused on outcomes were not strategically exerting effort to guarantee a successful outcome, but instead were just more psychologically invested in the task at hand. Thus, effort withdrawal may simply be due to psychological withdrawal from the task, while excessive expenditure might simply be due to an intense investment in the task- not strategic attempts to appear competent. Recall, however, that all participants thought it was equally important to do well on the task possibly suggesting that participants all were equally invested in doing well on the task. Thus, although it is possible that effort expenditure may due to differences in investment in the task, there is a reason to believe that effort regulation was more strategic in nature- designed to create the appearance of competence appropriate to the situation.

Despite these limitations, this pair of studies provides evidence that feelings of self-doubt and a belief of how competence will be judged can drive both overachievement and self-handicapping. Self-doubting individuals focused on the importance of ability seem to withdraw effort on a task; self-doubting individuals focused on the importance of outcomes seem to exert heroic effort on a task.
4.3 Areas for future research

Although these studies are provocative in demonstrating the importance of self-doubt and focus in directing overachievement and self-handicapping there are still several other fruitful avenues of research to further test this idea.

4.3.1 Alternate manipulations of self-doubt

In both studies presented here, feelings of self-doubt were manipulated by having participants memorize words [either self-doubt related words (self-doubt present condition) or neutral words (self-doubt absent condition)] by relating the words to themselves. Additional studies using alternate measures of self-doubt would increase confidence in the pattern of results.

There are several interesting candidates for other methods to manipulate self-doubt. First, as mentioned previously, Hermann and Leonardelli (1998) attempted to use an ease of retrieval paradigm reported by Schwarz, Bless, Strack, Klump, Rittenauer-Schatka, & Simons (1991). Although the result of this study only found the manipulation to be effective for those already chronically high in self-doubt, it is plausible that increasing the number of instances of confidence participants have to recall might lead the manipulation to work for those low in self-doubt. This manipulation is enticing largely because of its ironic nature- by recalling more instance of times he or she was confident, a person actually becomes less confident.

Second, manipulating participants' learning curves in a procedure suggested by Josephs, Silvera, and Giesler (1996) might also manipulate self-doubt. Josephs and
Schroeder (in press) created two sets of practice problems. In one set of problems, participants experienced feedback consistent with increasing performance. Specifically, participants solved anagrams that got progressively easier. This was called the learning curve condition. In the other set of problems, called the variable set condition, participants received feedback consistent with inconsistent performance. The anagrams in this condition varied in difficulty, some being easy, and some being hard. The researchers found that those in the learning curve condition reported feeling optimally prepared to take the test earlier than those in the variable set condition. This suggests that experiencing one's performance as improving may increase confidence in one's ability to do well on a task, while experiencing one's performance as variable might decrease confidence. Even more interesting might be a condition in which participants experience their performance as decreasing, which might surely heighten feelings of self-doubt.

An honors thesis by Jamieson Duvall (1998) included a learning curve and variable set condition. He was able to show that those in a learning curve condition reported their upcoming exam performance would be higher than those in the variable set condition. In addition, those in the learning curve condition reported feeling more overall improvement in the practice session. Again, this suggests that using different learning curves might be an effective way to manipulate self-doubt.

Next, research by Michael Sargent (personal communication, July 30, 1998) suggests that feelings of self-doubt might be manipulated by varying the ways in which individuals are selected for an important task, selecting people on the basis of merit or selecting people preferentially. He had one participant and a confederate complete a
supposed test of managerial skill. In the merit condition, the participant was informed that he or she performed very well on the test and for the rest of the experimental session would serve as manager. In the preferential selection condition, the participant was told that he or she would serve as manager for the rest of the experimental session because of his or her gender, specifically because the experimenter needed more managers of that gender.

Preliminary results suggest that males, but not females, report feeling self-doubt in the merit condition. According to Sargent, these males felt that the test was an inadequate measure of managerial skill and felt that their selection as manager was unearned. In other words, this success felt non-contingent. This is reminiscent of the original Berglas and Jones (1978) study in which males who received non-contingent success feedback self-handicapped, presumably because they were feeling doubtful.

The reliability of this effect still needs to be more clearly demonstrated and its effectiveness for women further explored. Still, creating meritous selection that feels unearned might be an intriguing way to manipulate self-doubt.

Another unique way to manipulate feelings of confidence comes from a recent study by Savistky, Medvec, Charlton, & Gilovich (1998). There is a documented tendency “for participants’ confidence to decline with increasing proximity to the ‘moment of truth’ (Gilovich, Kerr, & Medvec, 1993)” (Savistyky et al, 1998, p. 530). Very simply as a performance situation nears, confidence drops. While writing a dissertation, for instance, one might feel completely confident that the defense will go well. As the date of the defense approaches, one’s confidence that things will go well
might also drop. This suggests that one easy way to manipulate feelings of self-doubt is simply to vary when a performance situation will occur, either in the near future or in the distant future.

More intriguing though was the misattribution paradigm used by these authors. Reasoning that people might use their level of arousal to assess their confidence, the authors predicted that in a proximal performance situation in which participants were able to attribute feelings of arousal to an outside noise they might not suffer the typical drop in confidence. Results of a study Savistky, Medvec, Charlton, and Gilovich (1998) conducted confirmed this suspicion. Participants expecting to perform a task in the distant future and those who expected to perform a task in the near future but could attribute any arousal to "subliminal noise" that would make them feel anxious reported feeling more confident than those who only expected to perform a task in the near future. This may suggest another way to manipulate self-doubt. Providing participants with a way to misattribute feelings of arousal to another stimulus might decrease their level of self-doubt compared to those with no such attributional luxury. Or a condition could be created in which participants are told that the subliminal music should have a calming affect. Still feeling somewhat anxious about an upcoming performance situation might lead participants in these circumstances to feel even more doubtful than they would without the misattribution.
4.3.2 Alternate manipulation of focus

Just as future research would do well to replicate the experiments presented here using different manipulations of self-doubt, it would also be wise to also vary the focus manipulation. One possibility of an alternate manipulation of self-doubt comes from research by Mueller and Dweck (1998). These researchers had children complete tasks and either praised them for their intelligence or praised them for their effort. Those praised for intelligence reported viewing intelligence as fixed (an entity theory), and after failure showed less persistence and less task enjoyment than those praised for effort.

As this study demonstrates, praise or feedback may serve as one way to manipulate people’s focus in a situation. This procedure could be modified to focus people on the importance of outcome or on the importance of ability. For instance, the experimenter might praise participants for showing their natural talent on a task or praise participants for achieving a good outcome.

Although it was argued earlier that self-generated arguments seem to be more effective in manipulating focus than those that are other-generated, this procedure might still be a strong manipulation of focus because of its interpersonal nature. Rather than simply reading about others believing ability is key, for instance, as in Study 2, participants in this proposed procedure would hear one-on-one from the experimenter the importance of ability.
4.3.3 Alternate dependent variables

A way to provide convergent evidence for the idea that self-doubt coupled with a focus on ability drives self-handicapping and self-doubt coupled with a focus on outcomes drives overachievement was suggested by members of the Arkin research team. They suggested using an alternative dependent measure. Specifically, task choice rather than effort might be an interesting dependent measure.

Diane Tice (1991) in exploring the motivation behind self-handicapping (either augmenting ability attributions for success or discounting ability attributions for failure) as a function of self-esteem developed a creative methodology. She created two conditions. In one condition, participants were told that the task they would be doing identified only those who were deficient in the ability. Scoring well on the task did not say much about one's ability level, thus this task was “failure-meaningful.” In the other condition, “success-meaningful,” participants were told that the task they would be doing identified only those who had an extremely high level of ability. In this case, scoring poorly was uninformative as to one's ability level. Tice (1991) found that individuals high in self-esteem self-handicapped by practicing less in the success-meaningful condition, thus trying to augment ability attributions for a successful performance. Individuals low in self-esteem, on the other hand, self-handicapped when failure was meaningful, thus trying to discount ability attributions for failure.

The creation of two tasks might be useful in assessing the importance of ability and outcome focus when coupled with self-doubt. One task might be described as indicating only outcomes and as being uninformative as to one's ability. Another task
might be described as indicating only one's ability and as uninformative as to one's effort, etc. Although requiring a creative cover story, a possible study might manipulate self-doubt and focus (on either outcomes or ability). Then participants might be given a choice between the two tasks, either ability-meaningful or outcome-meaningful. It would be expected that those individuals experiencing no self-doubt might choose both tasks equally regardless of their focus condition. Appearing competent is not a pressing concern for these individuals and the basis of competence as suggested by the focus manipulation might be irrelevant to them. It is equally plausible that these individuals might prefer the task that matches their focus condition. For instance, the individual not experiencing self-doubt and focused on outcomes might choose to do the outcome meaningful task. These individuals have no particular reason to question their competence and might feel free to try the diagnostic task. Those experiencing self-doubt, though, might be expected to avoid the task that matches their focus condition. For instance, those individuals who are unsure about their ability and are plagued with the need to maintain an image of competency and further believe that outcomes are important may favor the ability-meaningful task. For them, it might be better to avoid the outcome-meaningful task than to attempt it and fail. Future research might want to try using such a task choice dependent measure.

4.3.4 Using individual difference measures

One additional way to provide convergent evidence for the hypotheses tested in this work is to use individual difference measures to examine the role self-doubt and focus play in producing overachievement and self-handicapping. Already scales exist to
measure Doubt in Ability Level and Concern for Performance the latter which might be considered a measure of a focus on outcomes. These are both subscales of the Overachievement Scale (Oleson, Poehlmann, Yost, Lynch, & Arkin, 1998).

Overachievers, individuals scoring high on both subscales, should exert the most effort on a task, evidencing overachievement.\textsuperscript{15}

Although a scale already exists to measure tendencies to self-handicap (Strube, 1986), this scale seems to measure frequency of engaging in certain behaviors (e.g. "I overindulge in food or drink more often than I should" "I tend to put things off to the last moment") rather than assessing the motivation that underlies this behavior. It is proposed here that self-handicapping is driven by a focus on ability. Future research might want to develop a Concern for Ability scale to more clearly assess this construct. It would then be expected that individuals scoring high in self-doubt and scoring high in the concern for ability would exert the least effort on a task, evidencing self-handicapping.

Future research could also conduct studies using the paradigm presented here but combining individual difference measures with manipulations. For instance, researchers might want to measure self-doubt while manipulating focus. Doing so would provide convergent validity between the individual difference measures of the constructs (self-doubt and focus) and the manipulations of the constructs.

4.4 Oscillating between self-handicapping and overachievement

Given that both self-handicapping and overachievement are proposed to derive from feelings of self-doubt about one's competence, it is possible that the same individual
might exhibit both patterns of behavior to cope with their feelings of self-doubt. In other words, individuals concerned with their competency image might oscillate between self-handicapping and overachievement to cope with feelings of self-worth. A recent study by Yost, Lichstein, Poehlmann, and Arkin (1995) suggests that this is indeed a possibility.

These researchers were concerned with testing the prediction that overachievers, because of their self-doubt in their ability, exert more effort than non-overachievers on a task to guarantee success. They told overachievers and non-overachievers (as measured by the Overachievement Scale (Oleson, Poehlmann, Yost, Lynch, & Arkin, 1998)) that they would be taking a social competency test. They were further told that before taking the test they were going to be given the opportunity to do some practice problems and that, in the past, people who practiced more before the test usually performed better. In other words, practice (effort) was relevant to final performance on the test. It was hypothesized that overachievers would exert more effort and thus do more practice problems than non-overachievers. However, the results yielded by this study were not as expected. Overachievers actually did fewer practice problems than did non-overachievers-though this difference was not significant.

After the first test, all of the participants were told that they had scored at the 91st percentile on the Social Competency test. They were then informed that they would be taking a second version of the test and were asked how many practice problems they would like to attempt before taking a second version of the test. Overachievers requested significantly more practice problems before the second test than did non-overachievers.
This research suggests that overachievers are not willing to automatically exert effort on a task. Only after receiving success feedback on the test did overachievers outwork non-overachievers. In fact, overachievers exhibited self-handicapping behavior prior to the first test having withdrawn effort.

As suggested by Jones and Berglas (1978), self-handicappers and overachievers are in many ways similar. They both have an intense concern with maintaining the image that they are competent. Their feelings of self-worth are fragile. Poor performance and its correspondent loss of others' love and approval can shatter this fragile image. Thus, overachievers and self-handicappers are not willing to fracture this competency image. Self-handicappers do so by sabotaging their own performance but creating a plausible excuse for any failure; overachievers exert heroic amounts of effort to render failure unlikely. For both sets of individuals, a powerful investment in the question of their self-worth leads to a unique pattern of thoughts, feelings, and behaviors.

Yost, Lichstein, Poehlmann, & Arkin (1995) suggest an even more intriguing possibility than the idea that overachievers and self-handicappers share the same concern with their self-worth. They propose that one individual may be capable of exhibiting both sets of behaviors, withdrawing effort and exerting heroic amounts of effort, in the service of buffering their self-image from negative interpersonal evaluation. In that study, the same individuals were, on one occasion, self-handicappers, and on another occasion, overachievers.

An important question becomes what transforms a self-handicapper into an overachiever? Lichstein (1994) suggested one possible explanation for overachievers'
oscillation between the withdrawal and expenditure of effort in that study. When confronted with an unfamiliar task, such as the Social Competency Test, overachievers were unsure whether or not they could succeed. Overachievers, confronted with a gripping self-doubt may have chosen to withdraw effort to prevent an ability attribution to themselves from being made if they failed the test. Overachievers seemed unwilling to risk their competency image by trying and possibly still failing and so instead may have chosen the next best option-using self-handicapping to protect their self-worth.

On the second test, though, overachievers reported they were willing to exert effort. After receiving success feedback despite not trying on the test, overachievers may have increased their expectation of success. A successful performance may indicate to overachievers that this is a task on which they can succeed. If overachievers become more certain that their effort will lead to a success, they may then be more willing to engage in effort expenditure to achieve that success, risking the protection of their competency image.

In sum, Lichstein (1994) suggests that success feedback may increase overachievers' subjective probability of success, and it is only when overachievers feel confident that effort will lead to success, will they expend effort. This conjecture, however, has not yet been empirically tested.16

It is suggested here that increasing the subjective probability of success of a person high in self-doubt, like the overachiever, might also result in a change in his or her focus. On a new task with no indication of how they might do, those high in self-doubt might be concerned about their competence as indexed by their level of ability.
they receive success feedback on the test, learning that success is possible, those high in self-doubt might then switch to a focus on outcomes, demonstrating competence by succeeding. Although nothing in the experimental situation created by Lichstein (1994) should have indicated to those experiencing self-doubt that ability or outcome was a more important indicator of competence, their subjective reality might have. This subjective reality then is what determines their behavior- self-handicapping when focused on ability, overachievement when focused on outcome.

The studies presented here suggest that self-doubt is a commonality between self-handicapping and overachievement. Once feelings of self-doubt are in place, assessments of how competence will be judged are proposed to affect which self-protective strategy is chosen: self-handicapping or overachievement. Given that these two behaviors are linked by self-doubt, it is reasonable that the same person, someone who is uncertain about his or her competence and overly interested in appearing competent, might use both strategies. The study by Yost, Lichstein, Poehlmann, & Arkin (1995) hints that this might be true.

Future research would do well to explore the possibility that the same individual can be a self-handicapper and an overachiever and to examine the role that a focus on outcomes or ability plays in causing an oscillation between self-handicapping and overachievement. For instance, a study could be conducted in which self-doubting individuals and individuals not experiencing doubt (where self-doubt was either manipulated or measured by the Self-Doubt in Ability scale) performed two tasks; one on which it was explained that ability was important and one on which outcomes were
important. The individuals experiencing self-doubt might be expected to exert effort on the task on which outcomes were important and to withdraw effort on the task on which ability was important. Those individuals not experiencing self-doubt might be expected to exert the same amount of effort on the tasks regardless of whether outcome or ability was important in the situation.

4.5 The public vs. private nature of self-handicapping and overachievement

If self-doubt lies at the root of both self-handicapping and overachievement and the same individual can exhibit both patterns of behaviors, there might also be important differences in the public versus private nature of self-handicapping and overachievement.¹⁷

The goal of both self-handicapping and overachievement is to appear competent. It is argued here that the self-handicapper strives to appear competent by demonstrating ability. By withdrawing effort, ability attributions are discounted in the face of failure and augmented in the case of success. For the handicap to be effective in affecting others' attribution of their competence, the self-handicapper must make their handicap known (i.e. it must be public). In fact, past research has shown that self-handicapping is more prevalent in public situations than when the handicap is private (e.g. Kolditz & Arkin, 1982).¹⁸

Overachievers, on the other hand, want to appear competent by demonstrating outcomes. By exerting extra effort they are increasing the likelihood of success.
Interestingly, though, the overachiever might be better served by keeping this extra effort private. Exerting effort and still failing can only lead to an attribution of incompetence.

Perhaps the best situation for the person high in self-doubt when the performance will be known to others is to use both self-handicapping and overachievement simultaneously.

A distinction can be made between acquired and claimed self-handicaps (Arkin & Baumgardner, 1985). When claiming a self-handicap a person merely reports factors that would impede a successful performance. When actually acquiring a self-handicap, the actual impediment to performance is procured. Thus, a person claiming a self-handicap might report to others that they did not study for an exam (when they actually did study) while the person acquiring a handicap would actually not study for the exam.

The ideal situation then for a person high in self-doubt who wants to maintain an image of competence would be to publicly claim a handicap while privately overachieving. For instance, before a personally relevant test, a person high in self-doubt might claim not to have studied while in actuality he or she has studied extensively. If he or she fails, others may attribute the failure to a lack of studying, not a lack of ability. If he or she succeeds, which is the more likely option given the excessive studying, he or she not only achieves the desired outcome but might also be seen a possessing a high level of ability since from an outsider's point of view he or she succeeded despite not studying.
Such a strategy of claiming a self-handicap while privately exerting effort might be particular effective because in some situations it might difficult to assess whether competence is judged on ability or on outcomes. Claiming a public self-handicap while privately overachieving makes the chances of appearing competent on both dimensions more likely. Exerting effort makes a successful outcome more likely, while claiming not to have tried on a task gives the appearance that the person succeeded because of his or her natural ability.

Of course, as with all presentational techniques this technique must be used carefully (Jones & Pittman, 1982). By claiming to not exert effort while actually doing so, the individual high in self-doubt using the strategies simultaneously runs the risk of being “found out”. In other words, others might discover that these individuals are lying about the effort they exert. The person might then not only lose the illusion of competence but also gain the impression of being a liar. Still, when used carefully, combining self-handicapping and overachievement- doing the first in public and the latter in private- might be an effective way to deal with feelings of self-doubt and maintain an image of competence.

This analysis suggests that those individuals who are high in self-doubt about their ability might not only oscillate between effort expenditure and effort withdrawal; they might use both strategies simultaneously- self-handicapping in public while overachieving in private. No empirical research has examined the public versus private nature of overachievement. Nor has any empirical research examined the dual use of self-handicapping and overachievement behavior. Both areas are ripe for future researchers.
4.6 Other strategies to deal with self-doubt

In addition to self-handicapping and overachievement at least three other strategies by which individuals can cope with feelings of self-doubt—defensive pessimism, using psychological crutches, and reassurance seeking—have been suggested in the literature. It is informative to look at these strategies and how they might be related to self-handicapping and overachievement.

4.6.1 Defensive pessimism

Julie Norem and her colleagues (Norem & Cantor, 1986b; Norem & Illingsworth, 1993) suggested that individuals who are worried about performing well on an upcoming task may use a strategy they call defensive pessimism. Defensive pessimists set “unrealistically low expectations in a risky situation in an attempt to harness anxiety so that performance is unimpaired” (Norem & Cantor, 1986b, p. 1208). The authors argue that such a strategy allows its users to prepare themselves for failure by setting low expectations but also might motivate them to work hard in order to avoid that failure.

Norem and Cantor (1986) describe a prototypical defensive pessimist this way:

Think, for instance, of straight-A students who have never failed a test in their lives but repeatedly insist that they are, without a question, going to “bomb” an upcoming exam. Nothing their friends can say reassures them; indeed, reminding them of their past successes seems to lead to more anxiety or confusion. These persons proceed only to rush home, drink gallons of coffee, study furiously throughout the night, and, annoyingly, but not surprisingly, receive the highest exam in the class. (Norem and Cantor, 1986, p. 1209).
Norem and her colleagues find consistent evidence for the usefulness of this strategy for the defensive pessimist. For individuals accustomed to using such a strategy, interfering with its use has been found to result in the individual deprived of his or her strategy feeling worse and being more anxious (Norem & Illingsworth, 1991) and actually performing more poorly (Norem & Cantor, 1986b).

Individuals who are high in self-doubt might engage in defensive pessimism to cope with their anxiety. Not surprisingly, scores on the Self-Doubt in Ability Level scale correlate with those on the Defensive Pessimism Questionnaire (Norem & Cantor, 1986a), $r(56) = .51, p < .0001$ such that individuals high in self-doubt also report using the strategy of the defensive pessimism (Oleson, Poehlmann, Yost, Lynch, & Arkin, 1998).

But how does defensive pessimism relate to self-handicapping and overachievement? It is proposed here that defensive pessimism is another strategy available to those high in self-doubt that can complement the tendency to self-handicap or overachieve. Defensive pessimism seems to be primarily a cognitive strategy that is used, as the authors describe, primarily to "a priori structure a situation" (Norem & Cantor, 1986, p. 1210). Through their thoughts, by setting low expectations and visualizing failure, defensive pessimists seem to be trying to cognitively manage their feelings of anxiety before a task. Self-handicapping and overachievement, however, are behavioral strategies use to manage the appearance of competence. By regulating effort through self-handicapping and overachievement those who use these strategies can demonstrate their competence, whether it be through ability or outcomes.
The above quote would suggest that defensive pessimism always leads to higher effort, like that of an overachiever. It is easy to see then how an overachiever might use both of these strategies simultaneously to cope with self-doubt. In anticipation of a task, they might cognitively "gear up" by imagining the worst case scenario and setting low expectations. This might then motivate them to behaviorally overachieve by exerting extra effort.

The link between self-handicapping and defensive pessimism might be less clear. Although Norem and colleagues suggest that defensive pessimists should not withdraw effort like self-handicappers (Norem & Cantor, 1986b), no studies have looked specifically at effort expenditure of defensive pessimists. Although the research consistently shows no differences in performance between defensive pessimists and non-defensive pessimists, it is unclear whether effort mediates this effect. It might be the case that a person high in self-doubt uses defensive pessimism to cognitively prepare themselves for failure and then still proceeds to self-handicap.

Perhaps the most intriguing scenario is that individuals experiencing self-doubt use three strategies simultaneously—before a task they use defensive pessimism to try to control their anxiety, they may then publicly claim a self-handicap, and then proceed to privately overachieve. Not only would such an individual try to cognitively manage their affective life but would also behaviorally manage their image of competence. Future research will want to explore the use of defensive pessimism by individuals concerned about their competency image in conjunction with the strategies of self-handicapping and overachievement.
4.6.2 Psychological Crutches

Drawing on the idea that people are inherently interested in maintaining a public sense that they are competent and may adopt strategies to maintain this perception of competence, Mello and Wurf (1993) have suggested that there is a "companion notion to that of self-handicapping" (p. 3), what they term "psychological crutches." They define psychological crutches as

"extraneous (that is, nonessential) aids to performance that the person uses while performing. Examples might include use of a "cheat sheet" or the presence of a "lucky rabbit's foot" while taking an exam. As these examples indicate, psychological crutches may include things that enhance actual control (the cheat sheet) and perceived control (the rabbit's foot); but even in case where the actual control is enhanced, the performance aid is nonessential (e.g. the person could take-and might even succeed equally well on - the exam without using the cheat sheet). Similar to handicaps, crutches form the basis of cognitive strategies ("coherent patterns of appraisal, planning, retrospection, and effort," (Norem, 1989, p. 45)), and are used either before or during the performance itself. The critical difference is not in the actions taken (e.g. drinking might serve as a handicap for academic performance and as a crutch for social interaction) but in the functions that they serve; handicaps ostensibly function to impede performance, while crutches ostensibly function to facilitate it. (p. 3-4).

In the conceptualization of the construct of psychological crutches is the idea that they will be used by individuals concerned about appearing competent. Individuals may use psychological crutches in tandem with other strategies to cope with feelings of self-doubt. A person unsure about his or her ability to perform on an upcoming task might
exert extra effort (overachieve) and bring a cheat sheet to guarantee a successful outcome. Or a person might claim to withdraw effort on a test (self-handicap) but also have their lucky rabbit's foot present while taking the test.

Interestingly, excessive effort might be construed as one example of a psychological crutch. If moderate amount of effort would have led to a successful outcome, exerting Herculean effort is an "extraneous variable" that serves to facilitate performance.

4.6.3 Reassurance-seeking

Harlow and Cantor (1995) provide yet another strategy to cope with self-doubt: reassurance seeking. Specifically, they suggest that individuals whom they term "outcome-focused" often seek reassurance from others after a negative outcome. These individuals seek encouraging others who can reassure that they are competent and that everyone experiences setbacks. As a result, they often feel better and are able to continue in the task.

Harlow and Cantor (1995) describe individuals as being outcome-focused "because of their tendency to be excessively swayed by academic outcomes and because of their concern that good outcomes will be difficult to achieve" (p.173-4). Thus, these individuals want to achieve positive outcomes to appear competent and are uncertain about their ability to do so. Although, the authors do not speak to the behavior pattern adopted by these individuals it seems these individuals, given the focus on outcomes, might exert extraordinary effort on a task; i.e. overachieve.
Of interest, here, though is the notion that following a poor performance, these uncertain individuals seek the reassurance of others to try to boost their confidence. Again, the strategy of reassurance seeking can be used in conjunction with the other strategies to cope with self-doubt. For instance, an individual might use defensive pessimism to prepare for a task, use extra effort to make a successful outcome more likely, and then in the unfortunate case of failure, they might seek reassurance from others.

Although Harlow and Cantor (1995) find that only outcome-focused individuals seek reassurance following failure, it is plausible that all individuals experiencing self-doubt might seek reassurance following failure. Thus, those experiencing self-doubt and are focused on ability, those who might self-handicap, might also seek solace when they fail.

Having an outcome focus is associated with self-uncertainty (Ryan, Koestner, & Deci, 1991, in Harlow & Cantor, 1991). Thus it is possible that there are also individuals who are uncertain and focused on ability. It might be self-uncertainty more generally that drives reassurance-seeking and not specifically a focus on outcomes. Of course, it is left for future research to assess the validity of this proposition.

To summarize, individuals who are uncertain about their level of competence have an arsenal of strategies from which to draw to cope with these feelings of self-doubt: self-handicapping, overachievement, defensive pessimism, psychological crutches, and reassurance seeking. These strategies can be used in combination to battle feelings of self-doubt both cognitively and behaviorally, and before, during, and after a
performance situation. Future research will want to explore the use of combinations of these strategies.

4.7 Consequences of strategy use

The person experiencing self-doubt has an arsenal of strategies to use to deal with feelings of self-doubt and to maintain his or her competency image. These strategies might be effective in that they allow their users to manage what could be debilitating feelings of self-doubt and to present an image of competence appropriate to the situation. However, these strategies are not without costs. In particular, the use of strategies to cope with self-doubt might actually perpetuate feelings of self-doubt, can lead to distinct affective consequences, and can have interpersonal costs.

4.7.1 Perpetuating feelings of self-doubt

Ironically the strategies that individuals use to cope with uncertainty about their competence might serve to perpetuate these feelings.

By withdrawing effort, self-handicappers may not receive equivocal feedback about their ability level. In particular, when they fail they are unable to assess whether they failed because of low ability or low effort. The same holds true for individuals who overachieve or use a psychological crutch. By using a crutch or exerting effort, individuals may arrive at a state of attributional ambiguity in the case of success. When a person with a crutch or who exerted effort succeeds, clear attributions to ability are not possible because of the facilitative effect of the crutch or effort expenditure. Without clear assessments of ability, self-doubt might be sustained. This may be a sacrifice these
individuals gripped with self-doubt are willing to make. It might be better to not know for certain how competent one is than to know for sure that one is incompetent.

Mello and Wurf (1995) provide more evidence for the self-perpetuating nature of these strategies. They found that subjects who succeeded on a task with a crutch or subjects who failed on a task with a handicap were in a state of attributional ambiguity. These individuals tended to make external attributions for their performance. In addition, those who succeeded with a crutch also reported lower self-concept clarity and performed worse on a subsequent task than those participants not in a state of attributional ambiguity (These latter effects did not emerge for those who failed with a handicap). Of most importance for the discussion here is that using a crutch resulted in lower self-concept clarity which is “the extent to which knowledge and beliefs about the self are clearly and confidently defined” (Campbell, 1990, p. 538), a construct that might obviously be linked to self-doubt. Being unsure about one's competence would prevent a person from having a clear confident belief about this aspect of his or her self. Thus, self-doubt was sustained.

Harlow and Cantor (1995) also suggest that reassurance seeking behavior can maintain the feelings of self-doubt it is intended to alleviate. They suggest that individuals who seek reassurance might have to elicit this reassurance from others and in so doing might present themselves as needing encouragement. Although the authors note that this is self-presenational, “individuals may internalize the images they portray and as a consequence actually exacerbate their self-doubts” (p. 183).
4.7.2 Affective consequences

The use of strategies to cope with self-doubt about one's competence might also have negative affective consequences. Feelings of uncertainty might not only be unpleasant, strategies to cope with these feelings might actually also contribute to negative affect. There are additional affective consequences of these strategies. As mentioned above, overachievers and people who use psychological crutches might be unable to attribute a successful outcome to ability. As a result, these individuals may lose the opportunity to experience the positive emotions, such as confidence, that might be associated with such attributions to ability (Poehlmann, 1994). In addition, the self-handicapper who makes success less likely might also miss out altogether on the experience of these positive emotions. Poehlmann (1994) suggests that there are still more affective consequences associated with overachievement (and potentially psychological crutches). Being unable to attribute a success to ability, instead of enjoying their success, these individuals might have the added worry of performing equally well in future performance situations.

In addition, using the strategy to cope with self-doubt might itself be unpleasant. Overachievers' strategy involves expending effort, something they report disliking (Poehlmann, 1994). Similarly, defensive pessimists by imagining the worst case scenario before a performance situation might also create an unpleasant affective state as imagining failing cannot be a pleasant endeavor.

To be fair, there does seem to be a few positive affective consequence of using these strategies to cope with self-doubt. Individuals who seek-reassurance from others
reported feeling better and less stressed after getting reassurance from others (Harlow & Cantor, 1995). In addition, Deppe and Harackiewicz, 1996) found that once a handicap is in place, self-handicappers often report increased enjoyment and intrinsic motivation in the task. The handicap serves as an excuse in the case of failure and may decrease concern about performance evaluation leading to more enjoyment of the task. Overachievers and those who use psychological crutches might not get such a release from concern about performance. They have no guarantee that their hard work or crutch will lead to a success. They also do not have the advantage of knowing that their competence image will be maintained and as a result might never be able to find joy in doing a task.

In sum, although strategies to cope with self-doubt may bring a few positive affective consequences, there are also several negative affective consequences that accompany them.

4.7.3 Interpersonal consequences

All of the coping strategies described also can have negative interpersonal consequences. The self-handicapper, for instance, may be successful in acquiring higher ability attributions in some situations. Research also suggests that individuals often are unaware of the strategic nature of self-handicapping (Oleson, Riley, & Arkin, 1995). Observers do not seem to realize that self-handicapping is motivated by an actor's doubt about his or her ability and a desire to have an excuse for failure, unless the observers themselves are self-handicappers or high in self-doubt (Vargas & Arkin, 1997). As
Vargas and Arkin (1997), suggest “it takes one to know one” (p. 5). Future research would do well to investigate whether others are able to identify the strategic nature of the other strategies individuals use to cope with feelings of self-doubt (e.g. overachievement) or whether, as with self-handicapping, “it takes one to know one.”

Despite these interpersonal benefits in terms of judgments of competence, self-handicappers are often seen as lazy, less motivated, and less likeable than non-self-handicappers. (Luginbuhl & Palmer, 1991; Oleson, Riley, & Arkin, 1995). In addition, depression, alcohol consumption, and obesity might serve as self-handicaps, each of which carries its own social stigma.

There is currently no research on the interpersonal consequences of overachievement. However, one can speculate that individuals who exert inordinate amounts of effort may be labeled “workaholics. In addition, expending more effort on tasks than is necessary may detract time from the social activities of the overachiever.

As Norem and Cantor (1986b) note the defensive pessimism strategy can also have interpersonal costs. The person who continually claims failure is inevitable but nevertheless succeeds can be “annoying” (p. 209). It might be better to use this strategy privately, lowering one’s expectations and imagining failure internally without sharing these thoughts with others.

A person who continually uses psychological crutches also runs the risk of being perceived negatively. A person who uses a rabbit’s foot or a “lucky” pencil as a crutch
may be seen as superstitious and a little odd. Those who use a cheat sheet might be seen as dishonest. Thus, depending on the crutch chosen, this strategy can also be costly.

Reassurance seeking is also comes with interpersonal costs. Individuals who engage in reassurance seeking often pay the price in their social life. According to Harlow and Cantor (1995):

Relative to other kinds of social interaction, reassurance-seeking yields little social pleasure (cf. Coyne, 1976). One can easily imagine that a quick bite grabbed after a stressful exam could be a time to relax and unwind after the exam. However, for the individual who insists on talking about the exam and fretting over his performance, that meal will be extension of an already unpleasant experience both for himself and his interaction partner. (p. 182).

Thus, the reassurance-seeker might temporarily alleviate some feelings of self-doubt but might do so by alienating those from whom he or she seeks reassurance. Further, if as Harlow and Cantor (1995) suggest, individuals seek reassurance more following negative outcomes than positive outcomes, the person from whom they are seeking reassurance might come to view them as incompetent, the very image he or she might have been trying to avoid.

Because they might perpetuate feelings of uncertainty, have negative affective consequences, and interpersonal costs, strategies to cope with self-doubt (including self-handicapping, overachievement, defensive pessimism, psychological crutches, and reassurance seeking) should be used with care. Using the strategies in moderation might be advisable, but for those individuals continuously doubting their competence this may
not be an option. Feelings of self-doubt might be so great and so aversive that some individuals are willing to accept the negative consequences of these strategies in exchange for temporary relief from never-ending questions of self-worth they provide.

4.8 Conclusion

Edward Jones (1991) concluded, “our self-defined or socially confirmed competence is a central ingredient of our identity and our social value” (p. 491). Although everyone would like to appear competent, this may be particularly important to individuals who feel uncertain about their level of competence. Thus individuals experiencing self-doubt are proposed to adopt strategies to maintain their image of competence.

Individuals uncertain about their capabilities can maintain an image of competence in two ways. First, they might self-handicap, impeding their own performance to sustain an image of ability in the face of failure and enhance the image of ability in the face of success. Second, self-doubting individuals might overachieve, exerting extra effort to guarantee a successful outcome.

The current work suggests that individuals deal with a shaky sense of confidence differently depending on their frame of reference. Specifically, people’s subjective construction of how competence will be judged will lead them to choose one of the two strategies to cope with self-doubt. When ability is the key to competence, individuals experiencing self-doubt, self-handicap. When outcome is the key to competence, individuals experiencing self-doubt overachieve.
APPENDIX A

Overachievement Scale

A.1 Overachievement Scale Items and Scale Placement

<table>
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<tr>
<th>Item number</th>
<th>Self-doubt</th>
<th>Concern for Performance</th>
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<td>17</td>
<td>R</td>
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*Note.* An X indicates that the item falls on that particular scale. An R indicates that the item is reverse scored.

Table 20: Overachievement Scale Items and Scale Placement

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A.2 The Overachievement Scale

Listed below are statements that concern how you feel about yourself. Read each statement carefully, and then decide how much you agree with it. Place the appropriate number on the line next to the statement. Use the following scale:

1 = Disagree very much
2 = Disagree pretty much
3 = Disagree a little
4 = Agree a little
5 = Agree pretty much
6 = Agree very much

There are no “right” or “wrong” answers to these statements. Answer in the way that is right for you. Please be as truthful as possible; your answers will be kept confidential.

___ 1. It is important that I succeed in all that I do.
___ 2. Failure has its advantages.
___ 3. Failure is unacceptable to me.
___ 4. I think that in some situations it is important that I not succeed.
___ 5. Sometimes I am more comfortable when I lose or do poorly.
___ 6. I try to avoid being too successful.
___ 7. For me, being successful is not necessarily the best thing.
___ 8. There are some situations where I think it is better that I fail.
___ 9. I strive to be successful at all times.
___ 10. When engaged in an important task, most of my thoughts turn to bad things that might happen (e.g., failing) than to good.
___ 11. For me, avoiding failure has a greater emotional impact (e.g., sense of relief) than the emotional impact of achieving success (e.g., joy, pride).
___ 12. More often than not I feel unsure of my abilities.
___ 13. I sometimes find myself wondering if I have the ability to succeed at important activities.
___ 14. I often wish that I felt more certain of my strengths and weaknesses.
___ 15. As I begin an important activity, I usually feel confident in my ability.
___ 16. Sometimes I feel that I don’t know why I have succeeded at something.
___ 17. As I begin an important activity, I usually feel confident in the likely outcome.
APPENDIX B

Greeting script

My name is and I am working with Professor Robert Arkin. I will be running today's experiment. Today you will be taking the Verbal Reasoning Association Test, otherwise known as the V-RAT. The purpose of this is to develop local norms for the V-RAT which is a test of integrative orientation. To this end, you will have two practice sessions with items on the V-RAT and then you will actually take the test. This test was designed by the Educational Testing Service, the same people who do the SAT and ACT. Every ten years they need to collect norms in the population and Dr. Arkin has received a grant to collect this data here at OSU. The Educational Testing Service sent us the computer program, some questionnaires and an instruction manual. So my job today is just to administer the test. I am going to be reading to you from a script that they sent with the test.
C.1 Before practice test 1

Today you will be taking the V-RAT or Verbal Reasoning Association Test. This is a test that measures integrative orientation. Integrative orientation is a capacity that is associated with creative problem solving and your ability to process and integrate verbal information independent of your overall intellectual capacity. People who are high in integrative orientation are better able to generate new information from previously known information; they are able to abstract and generalize and they are able to find new solutions to problems. This test, then, is able to predict many differences in people's functioning, especially their ability to adapt to novel and changing situations and to learn from and use new information.

As previously mentioned, integrative orientation is not accurately measured by standard intelligence tests. In other words, your performance on past tests like the SAT or ACT or your past academic performance are unable to predict your performance on this test. The V-RAT assesses integrative ability, not intelligence. In fact, when norms have been developed in the past at other universities, there is a fairly normal curve across
students, and about half of the university students score high in integrative orientation and about half were low and these scores were unrelated to academic performance. Do you have any questions so far?

You are going to complete the V-RAT at the end of this session. And since it is on the computer we will be able to score it and then report your score to you. Thus, when the session is over, you will be able to review how high or low your level of integrative orientation is.

The final test is a 10-minute timed test. Before you take the test, we are going to offer you the opportunity to practice. Obviously, when people attempt a new type of task, practicing can be advantageous in attaining the best possible scores. Some people have not had much experience working on this type of integration problem. So we have created a set of practice problems that are similar to and use the same skills as those that you will see on the V-RAT. You will complete two separate practice tests, each of which will offer you practice at different aspects of integrative orientation. The final test will involve a combination of the skills you will practice on the two practice tests. The practice problems will be similar to the V-RAT in terms of difficulty and same type of problem. Just as athletes perform better after warming up, you should do better on this test if you practice and “warm up” with the practice tests.

The computer should ask for a subject number-enter that number and push ENTER. The computer should then ask for the subject’s age-enter it an push ENTER. The computer should then ask for gender-enter F or M. The function menu then should come up.
What you are looking at is the function menu. As you can see this computer program has two practice tests. After you complete the practice session, there are two forms of the test, “individual” and “group.” Obviously, you will be taking the individual form. Finally, there is a score analysis program so that we can look at and interpret your results.

The first practice test will be administered by the computer. It will consist of 20 analogy problems. You can read the instructions on the computer and then answer each question by pressing the appropriate key to indicate your answer. For example, if your answer is “3” you press the “3” key.

Be aware that periodically the computer will give you feedback on your performance. By periodic, I mean that the computer is programmed to spot check your answers randomly and give you feedback. That is, out of the 20 questions, you will probably get feedback 3-4 times. This does not mean that when you do not get feedback that you got the problem correct or incorrect; it simply means the computer is just not giving you feedback.

Let subject do practice test 1.

Hit “1” and the Practice Test 1 screen should come up. Instruct the subject to open the door when they are finished so you can start them on the second practice test. Tell them not to go on without you because you need to give them further instructions.

C.2 Interim questionnaire

Before taking the second practice test, we are going to allow for a short break.
**Interim questionnaire 1**

You will now be filling out a brief questionnaire about your experience with the V-RAT so far. This questionnaire allows us to assess people’s reactions to the practice tests and impressions of the test.

Give the subject interim questionnaire 1

C.3 Practice Test 2

Now we are ready to go on to the second practice test. This time, you will be allowed to practice as much or as little as you like. Remember though that the more that you practice on this test, the better your V-RAT score will be. On this second practice test, you will be again solving analogy problems. But this time the rules underlying the analogies will be different and the analogies will be in a different form. Just like the last set of analogies, you will begin to learn the rules of how the words are integratively linked as you practice. *Thus, although these problems are still analogies and they may seem similar to the problems on practice test 1, the logic behind them and the relationships that they test are different than the last practice test.* Again, remember that practice or “warming up” has been shown to help you score better on the V-RAT. Just like athletes warm up before a big meet or game, we’d like you to spend as much or as little time as you would like warming up before you take the final test. If you are warmed up, you could score better on the test.

Again all of the problems will be on the computer. The computer will also instruct you how to stop practicing when you are ready for the final test.
Finally, the computer will not provide you with feedback on this practice test. So unlike practice test 1, you will not get any feedback.

Start subject on practice test 2
To do this hit CONTROL-Z
The function menu should appear, hit “2” and Practice Test 2 should appear
APPENDIX D

Computer program

REM ******************
REM Program Name: molly.exe
REM Experimenter:
REM    Molly Lynch
REM    <lynch.121@osu.edu>
REM Revision Date: 97/11/22
REM Author: Jerry Lynch
REM Credits: Based on PhD Thesis of Karen Kovacs
REM Written in MicroSoft Quick Basic 4.5
REM ******************

REM ******* Define Subroutines *******
DECLARE SUB StartPage()
DECLARE SUB MainMenu(choice%)
DECLARE SUB AnyKey()
DECLARE SUB LoadPriorParticipants(FileExist%,PriorCount%,
    UsedNumbers%(),)
DECLARE SUB GetSubjectInfo(UsedNumbers%(),PriorCount%,SID%,age%,
    sex$)
DECLARE SUB StoreSubjectInfo(SID%,age%,sex$)
DECLARE SUB PracticeI()
DECLARE SUB PracticeII()
DECLARE SUB DonePractice()
DECLARE SUB PresentI(N%,Level%,Item$,Right%,key$,ET!)
DECLARE SUB FileNotFound(filename$)
DECLARE SUB DrawBorder()
DECLARE SUB InstructionsI()
DECLARE SUB InstructionsII()
DECLARE SUB ExampleI()
DECLARE SUB ExampleII()
DECLARE SUB OpenFiles(FileExist%)
DECLARE SUB EmptyAnalogies()
DECLARE SUB PresentII(N%,Level%,Item$,Right%,key$,ET!)
DECLARE SUB centerext(text$,row%)
DECLARE FUNCTION maxLength%(A$,B$,C$,D$,E$,F$)
DECLARE SUB Loadanalogies(Level%,filename$,analogy$(),total%,FileExist%)
REM ******** Define Characters for File I/O *********
COMMON SHARED QS
COMMON SHARED C$
QS = CHR$(34)
C$ = CHR$(44)

REM ******** Define Display Type and Error Handling ********
SCREEN 0
ON ERROR GOTO ErrorHandler

REM ******** Declare and Initialize Variables *****
CONST MaxParticipants% = 300
CONST EASY% = 1
CONST MEDIUM% = 2
CONST HARD% = 3
CONST ScoreFL% = 4
CONST ScoreFLnmS = "SCORES2A.TXT"
CONST EasyFLnmS = "EASY.TXT"
CONST MediumFLnmS = "MEDIUM.TXT"
CONST HardFLnmS = "HARD.TXT"
CONST TotalPracticeI% = 20
CONST LowPercent = .68
CONST HighPercent = .78
CONST Rows% = 24
CONST Cols% = 80
CONST CHOICES% = 5
CONST MAXANALOGIES% = 50

DIM SHARED analogies$(1 TO 3, 1 TO MAXANALOGIES%, 1 TO CHOICES% + 2, 1 TO 2)
DIM SHARED Atotals%(1 TO 3)
DIM SHARED Apointer%(1 TO 3)
DIM UsedNumbers%(MaxParticipants%)

I% = 0
Selection% = 0
PriorCount% = 0
SID% = 0
age% = 0
sex$ = ""
FOR I% = 1 TO 3: Apointer%(I%) = 1: NEXT I%

REM ******** Load Analogies ********
CALL Loadanalogies(1, EasyFLnmS, analogies$, Atotals$(1), FileExist%)
CALL Loadanalogies(2, MediumFLnmS, analogies$, Atotals$(2), FileExist%)
CALL Loadanalogies(3, HardFLnmS, analogies$, Atotals$(3), FileExist%)

REM ******** MAIN ********
300
CALL StartPage
CALL LoadPriorParticipants(FileExist%, PriorCount%, UsedNumbers$())
CALL GetSubjectInfo(UsedNumbers$(), PriorCount%, SID%, age%, sex$)

197
CALL StoreSubjectInfo(SID%, age%, sex$)
CALL OpenFiles(FileExist%)
DO
CALL MainMenu(Selection%)
IF (Selection% = 1) THEN CALL PracticeI
IF (Selection% = 2) THEN CALL PracticeII
LOOP UNTIL Selection% = 0
CLOSE
END

ErrorHandler:
400
CONST BADFILENAME = 53
CONST PASTEOF = 62
CONST OVERFLOW = 6
IF ERR = BADFILENAME THEN
FileExist% = 0
RESUME NEXT
ELSEIF ERR = PASTEOF THEN
LOCATE 22, 26
COLOR 4, 15, 0
PRINT "Input past EOF at Line"; ERL
ELSEIF ERR = OVERFLOW THEN
LOCATE 22, 26
COLOR 4, 15, 0
PRINT "OVERFLOW at Line"; ERL
ELSE
LOCATE 22, 26
COLOR 4, 15, 0
PRINT "QuickBasic Error #: "; ERR; " In Line"; ERL
END IF
COLOR 7
CLOSE
END

SUB AnyKey
1000
COLOR 29, 0, 0
CALL centertext("<STRIKE ANY KEY TO CONTINUE>", 22)
COLOR 7, 0, 0
WHILE (LEN(INKEYS) = 0): WEND
END SUB

SUB centertext (text$, row%)
Size% = LEN(text$)
col% = (Cols% - Size%) / 2
LOCATE row%, col%
PRINT text$
END SUB

SUB DonePractice
2000
CLS
LOCATE 10, 26
PRINT "PLEASE GET THE EXPERIMENTER."
LOCATE 20, 29
COLOR 14
PRINT "(CONTROL-Z to continue)"
COLOR 7
DO
DO: key$ = INKEY$: LOOP WHILE key$ = ""
LOOP UNTIL (ASC(key$) = 26)
END SUB

SUB DrawBorder
I% = 0
CLS
COLOR 1, 9, 13
FOR I% = 1 TO Cols%
LOCATE 1, I%
PRINT "**";
LOCATE Rows%, I%
PRINT "**";
NEXT I%
FOR I% = 1 TO Rows%
LOCATE I%, 1
PRINT "**";
LOCATE I%, Cols%
PRINT "**";
NEXT I%
COLOR 7, 0, 0
END SUB

SUB EmptyAnalogies
CLS
COLOR 4
CALL centertext("<ANALOGY FILES ARE EMTPY>", 8)
CALL centertext("PLEASE GET THE EXPERIMENTER.", 10)
LOCATE 20, 29
COLOR 14
PRINT "(CONTROL-Z to continue)"
COLOR 7
DO
DO: key$ = INKEY$: LOOP WHILE key$ = ""
LOOP UNTIL (ASC(key$) = 26)
END SUB

SUB ExampleI
CALL DrawBorder
LOCATE 1, 35
COLOR 15
PRINT "EXAMPLE I"
COLOR 7
LOCATE 6, 15
PRINT "CEDAR", " : " ; "WOOD";
LOCATE 7, 15
PRINT "**";}
PRINT "1) PINE", " : "; "CHEST";
PRINT "2) MICA", " : "; "GOLD";
PRINT "3) COPPER", " : "; "METAL";
PRINT "4) CIRCLE", " : "; "CUBE";
PRINT "5) LYNX", " : "; "ANIMAL";
PRINT "CEDAR is a particular kind of WOOD. The answer is (3)";
PRINT "because COPPER is a particular kind of METAL and therefore";
PRINT "the two parts make an analogy. Do you understand how";
PRINT "to answer these items [Y/N]? ";

SUB ExampleII
CALL DrawBorder
LOCATE 1, 3
COLOR 15
PRINT "EXAMPLE II";
COLOR 7
LOCATE 6, 15
PRINT "SNAPSHOT", " : "; "SCRAPBOOK";
LOCATE 7, 15
PRINT "";
LOCATE 8, 15
PRINT "1) MEMO", " : "; "FILE";
LOCATE 9, 15
PRINT "2) PHOTOGRAPH", " : "; "BOOK JACKET";
LOCATE 10, 15
PRINT "3) CAMERA", " : "; "CASE";
LOCATE 11, 15
PRINT "4) FILM", " : "; "FRAME";
LOCATE 12, 15
PRINT "5) CAREER", " : "; "PORTFOLIO";
LOCATE 18, 10
PRINT "The answer is (1) because a SHAPSHOT is stored";
LOCATE 19, 10
PRINT "for future reference in a SCRAPBOOK, in the same";
LOCATE 20, 10
PRINT "way that a MEMO is stored in a FILE.";
CALL AnyKey
END SUB

SUB FileNotFound (filenames)
3000
LOCATE 22, 26
COLOR 14, 0, 0
PRINT "File not found: "; filenames
SUB GetSubjectInfo (UsedNumbers%, PriorCount%, SID%, age%, sex$)
 4000
  I% = 0
  Valid% = 0
  SID% = 0
  age% = 0
  sex$ = ""

CALL DrawBorder
LOCATE 6, 10
PRINT "ENTER YOUR 3 DIGIT SUBJECT ID NUMBER: "
DO
  LOCATE 6, 48
  INPUT "", SID%
  LOCATE 20, 15
  PRINT "";
  IF (SID% >= 100 AND SID% <= MaxParticipants% + 100) THEN
    Valid% = 1
    FOR I% = 1 TO PriorCount%
      IF (SID% = UsedNumbers%(I%)) THEN
        COLOR 15
        LOCATE 20, 15
        PRINT "SUBJECT ID ALREADY EXISTS, PLEASE RE-ENTER";
        COLOR 7, 0, 0
        Valid% = 0
        I% = PriorCount%
      END IF
    NEXT I%
  END IF
  END IF
  LOOP UNTIL Valid%

LOCATE 7, 10
PRINT "ENTER YOUR AGE: "
DO
  LOCATE 7, 27
  INPUT "", age%
  LOOP WHILE (age% < 15 OR age% > 99)

LOCATE 8, 10
PRINT "ENTER YOUR GENDER M/F: "
DO: sex$ = UCASE$(INKEYS); LOOP UNTIL (sex$ = "M" OR sex$ = "F")
END SUB

SUB Instructional
CALL DrawBorder
LOCATE 3, 34
COLOR 15
PRINT "INSTRUCTIONS";
COLOR 7

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HERE IS A DESCRIPTION OF THE TEST ITEMS FOR YOU.

EACH ITEM REQUIRES THAT YOU SOLVE AN ANALOGY.

ANALOGIES ARE WORD RELATIONSHIPS AND AS SUCH SHOULD BE TACKLED WITH THE SAME KIND OF ATTITUDE YOU HAVE FOR A CROSSWORD PUZZLE OR A GAME OF SCRABBLE.

EACH OF THESE TEST QUESTIONS BEGINS WITH TWO CAPITALIZED WORDS WHICH ARE RELATED TO EACH OTHER IN SOME WAY. YOUR JOB IS TO FIGURE OUT WHAT THE RELATIONSHIP IS BETWEEN THE TWO-WORDS ON THE FIRST LINE AND TO SELECT THE WORD FROM THE LIST THAT WHEN COMBINED WITH THE WORD ON THE SECOND LINE.
PRINT "BEST EXPRESS THAT SAME RELATIONSHIP.";
CALL AnyKey
END SUB

SUB Loadanalogies (Level%, filenames, analogyS(), total%, FileExist%)
FileExist% = 1
FL% = 99
OPEN filenames FOR INPUT AS #FL%
IF (FileExist% = 0) THEN CALL FileNotFound (filenames)

total% = 0
DO WHILE NOT EOF(FL%)
    total% = total% + 1
    IF NOT EOF(FL%) THEN INPUT #FL%, analogyS(Level%, total%, 1, 1)
    FOR I% = 2 TO CHOICES + 2
        IF NOT EOF(FL%) THEN INPUT #FL%, analogyS(Level%, total%, I%, 1)
        IF NOT EOF(FL%) THEN INPUT #FL%, analogyS(Level%, total%, I%, 2)
    NEXT I%
    IF NOT EOF(FL%) THEN INPUT #FL%, BlankLineS
LOOP
CLOSE #FL%
END SUB

SUB LoadPriorParticipants (FileExist%, PriorCount%, UsedNumbers%())
PriorCount% = 1
FileExist% = 1
OPEN ScoreFLnmS FOR INPUT AS #ScoreFL%
IF FileExist% THEN
    DO WHILE NOT EOF(ScoreFL%)
        LINE INPUT #ScoreFL%, recS
        UsedNumbers%(PriorCount%) = VAL(MIDS(recS, 1, 3))
        PriorCount% = PriorCount% + 1
    LOOP
CLOSE #ScoreFL%
END IF
EXIT SUB
END SUB

SUB MainMenu (choice%)
key$ = ""
REM Display Options
CALL DrawBorder
LOCATE 4, 17
COLOR 15
PRINT "TEST MENU";
COLOR 7
LOCATE 7, 17
PRINT "CODE TEST FUNCTION";
LOCATE 8, 17
COLOR 15
PRINT "=================================";
COLOR 7
LOCATE 9, 17
PRINT "1 PRACTICE TEST I."
LOCATE 10, 17
PRINT "2 PRACTICE TEST II."
LOCATE 11, 17
PRINT "3 TEST FORM - INDIVIDUAL."
LOCATE 12, 17
PRINT "4 TEST FORM - GROUP."
LOCATE 13, 17
PRINT "5 SCORE ANALYSIS."
LOCATE 14, 17
PRINT "0 END PROGRAM."
REM Get Selection
LOCATE 18, 17
COLOR 15
PRINT "PLEASE ENTER OPTION:";
COLOR 7
DO
DO: key$ = INKEY$:  LOOP WHILE key$ = ""
LOOP UNTIL (ASC(key$) >= ASC("0") AND ASC(key$) <= ASC("5"))
choice% = VAL(key$)
END SUB

FUNCTION maxlength% (A$, B$, C$, D$, E$, F$)
Max% = LEN(A$)
IF LEN(B$) > Max% THEN Max% = LEN(B$)
IF LEN(C$) > Max% THEN Max% = LEN(C$)
IF LEN(D$) > Max% THEN Max% = LEN(D$)
IF LEN(E$) > Max% THEN Max% = LEN(E$)
IF LEN(F$) > Max% THEN Max% = LEN(F$)
maxlength% = Max%
END FUNCTION

SUB OpenFiles (FileExist%)
FileExist% = 1
OPEN ScoreFLnm$ FOR APPEND AS #ScoreFL%
IF (FileExist% = 0) THEN CALL FileNotFound (ScoreFLnm$)
END SUB

SUB PracticeI
8000
CALL DrawBorder
COLOR 15
LOCATE 10, 32
PRINT "Practice Test I";
COLOR 7, 0, 0
CALL AnyKey
CAL CALL InstructionsI
CALL ExampleI
DO: key$ = UCASE$(INKEY$): LOOP UNTIL (key$ = "Y" OR key$ = "N")
IF (key$ = "N") THEN CALL ExampleII

AVERAGE = .5
NCORRECT% = 0
ETTOT! = 0
STARTtime! = TIMER
REWARD% = 0
GOTREWARD% = 0

FOR N% = 1 TO TotalPracticeI%
IF (AVERAGE <= LowPercent) THEN
Level% = EASY%
ELSEIF (AVERAGE >= LowPercent AND AVERAGE < HighPercent) THEN
Level% = MEDIUM%
ELSEIF (AVERAGE >= HighPercent) THEN
Level% = HARD%
END IF
REM Verify Analogies Remain and Present Anology
IF Apointer%(Level%) > Atotals%(Level%) THEN
Level% = (Level% MOD 3) + 1
IF Apointer%(Level%) > Atotals%(Level%) THEN Level% = (Level% MOD 3) + 1
END IF
IF Apointer%(Level%) > Atotals%(Level%) THEN
REM CALL Empty Analogies
EXIT FOR
ELSE
CALL PresentI(N%, Level%, Item$, Right%, choice$, ET!)
END IF

ETTOT! = ET! + ETTOT!
NCORRECT% = NCORRECT% + Right%
NWRONG% = N% - NCORRECT%
NCORRECT = NCORRECT%
N = N%
AVERAGE = NCORRECT / N

IF (Right% = 1) AND (NCORRECT% = 2 OR NCORRECT% = 8) THEN
CLS
BEEP
LOCATE 9, 37
COLOR 15
PRINT "CORRECT";
COLOR 7, 0, 0
CALL AnyKey
REWARD% = 1
IF NCORRECT% = 2 THEN GOTREWARD% = 1
END IF
IF (Right% = 0) AND (GOTREWARD% = 1) THEN
CLS
BEEP
LOCATE 9, 36
COLOR 15
PRINT "INCORRECT";
COLOR 7, 0, 0
CALL AnyKey
REWARD% = 2
GOTREWARD% = 0
END IF

PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(N%)))); C$;
PRINT #ScoreFL%, Q$; Item$; Q$; C$;
PRINT #ScoreFL%, LTRIMS(RTRIMS(choice$)); C$;
PRINT #ScoreFL%, LTRIMS(RTRIMS(RSTR$(Right%)))); C$;
PRINT #ScoreFL%, LTRIMS(RTRIMS(RSTR$(ET!)))); C$;
PRINT #ScoreFL%, LTRIMS(RTRIMS(RSTR$(REWARD%)))); C$;
REWARD% = 0
NEXT N%
ENDtime! = TIMER
TOTALtime! = ENDtime! - STARTtime!
PRINT #ScoreFL%, LTRIMS(RTRIMS(RSTR$(STARTtime!)))); C$;
PRINT #ScoreFL%, LTRIMS(RTRIMS(RSTR$(ENDtime!)))); C$;
PRINT #ScoreFL%, LTRIMS(RTRIMS(RSTR$(TOTALtime!)))); C$;
PRINT #ScoreFL%, LTRIMS(RTRIMS(RSTR$(ETTOT!)))); C$;
PRINT #ScoreFL%, LTRIMS(RTRIMS(RSTR$(NCORRECT%)))); C$;
PRINT #ScoreFL%, LTRIMS(RTRIMS(RSTR$(AVERAGE))) C$;
CALL DonePractice
END SUB

SUB PracticeII
9000
CALL DrawBorder
COLOR 15
LOCATE 10, 32
PRINT "Practice Test II"
COLOR 7, 0, 0
CALL AnyKey

CALL InstructionsII

AVERAGE = .5
NCORRECT% = 0
ETTOT! = 0
STARTtime! = TIMER
N% = 0

DoneKey$ = "N"

DO
IF (AVERAGE <= LowPercent) THEN
Level% = EASY%
ELSEIF (AVERAGE >= LowPercent AND AVERAGE < HighPercent) THEN

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Level% = MEDIUM%
ELSEIF (AVERAGE >= HighPercent) THEN
Level% = HARD%
END IF

REM Verify Analogies Remain and Present Anology
IF Apointer%(Level%) > Atotals%(Level%) THEN
Level% = (Level% MOD 3) + 1
IF Apointer%(Level%) > Atotals%(Level%) THEN Level% = (Level% MOD 3) + 1
END IF
IF Apointer%(Level%) > Atotals%(Level%) THEN
REM CALL EmptyAnalogies
EXIT DO
ELSE
N% = N% + 1
CALL PresentII(N%, Level%, Item$, Right%, choice$, ET!) END IF

ETTOT! = ET! + ETTOT!

NCORRECT% = NCORRECT% + Right%
NWRONG% = N% - NCORRECT%

NCORRECT = NCORRECT%
N = N%
AVERAGE = NCORRECT / N

PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(N%))); CS;
PRINT #ScoreFL%, Q$; Item$; Q$; C$;
PRINT #ScoreFL%, LTRIMS(RTRIMS(choice$)); C$;
PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(Right%))); CS;
PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(ET!))); CS;

LOCATE 22, 23
PRINT "DO ANOTHER PRACTICE PROBLEM? [Y/N]"
DO: DoneKey$ = UCASE$(INKEY$): LOOP UNTIL (DoneKey$ = "Y" OR DoneKey$ = "N")
LOOP UNTIL DoneKey$ = "N"

ENDtime! = TIMER
TOTALtime! = ENDtime! - STARTtime!

PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(STARTtime!))); CS;
PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(ENDtime!))); CS;
PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(TOTALtime!))); CS;
PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(ETTOT!))); CS;
PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(NCORRECT%))); CS;
PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(AVERAGE))); CS;
PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(N%)));

CALL DonePractice
END SUB
SUB PresentI (N%, Level%, Item$, Right%, key$, ET!)
10000
Item$ = analogies$(Level%, Apointer%(Level%), 1, 1)
StimA$ = analogies$(Level%, Apointer%(Level%), 2, 1)
StimB$ = analogies$(Level%, Apointer%(Level%), 2, 2)
op1A$ = analogies$(Level%, Apointer%(Level%), 3, 1)
op1B$ = analogies$(Level%, Apointer%(Level%), 3, 2)
op2A$ = analogies$(Level%, Apointer%(Level%), 4, 1)
op2B$ = analogies$(Level%, Apointer%(Level%), 4, 2)
op3A$ = analogies$(Level%, Apointer%(Level%), 5, 1)
op3B$ = analogies$(Level%, Apointer%(Level%), 5, 2)
op4A$ = analogies$(Level%, Apointer%(Level%), 6, 1)
op4B$ = analogies$(Level%, Apointer%(Level%), 6, 2)
op5A$ = analogies$(Level%, Apointer%(Level%), 7, 1)
op5B$ = analogies$(Level%, Apointer%(Level%), 7, 2)
ans$ = analogies$(Level%, Apointer%(Level%), 1, 2)
Apointer%(Level%) = Apointer%(Level%) + 1
Max% = maxlength%(StimA$, op1A$, op2A$, op3A$, op4A$, op5A$)

CALL DrawBorder
LOCATE 2, 2
COLOR 15
PRINT "ITEM: "; N%
COLOR 7
LOCATE 6, 15
PRINT "; StimA$; TAB(Max% + 18); ": ; StimB$
LOCATE 8, 15
PRINT "; op1A$; TAB(Max% + 18); "; ; op1B$
LOCATE 9, 15
PRINT "; op2A$; TAB(Max% + 18); "; ; op2B$
LOCATE 10, 15
PRINT "; op3A$; TAB(Max% + 18); "; ; op3B$
LOCATE 11, 15
PRINT "; op4A$; TAB(Max% + 18); "; ; op4B$
LOCATE 12, 15
PRINT "; op5A$; TAB(Max% + 18); "; ; op5B$

LOCATE 18, 15
PRINT "ANSWER? ";
T1! = TIMER
DO key$ = INKEY$; LOOP WHILE key$ = ""
LOOP UNTIL (ASC(key$) => ASC("1") AND ASC(key$) <= ASC("5"))
T2! = TIMER
IF key$ = ans$ THEN Right% = 1 ELSE Right% = 0
ET! = T2! - T1!
END SUB

SUB PresentII (N%, Level%, Item$, Right%, key$, ET!)
11000
Item$ = analogies$(Level%, Apointer%(Level%), 1, 1)
StimA$ = analogies$(Level%, Apointer%(Level%), 2, 1)
StimB$ = analogies$(Level%, Apointer%(Level%), 2, 2)
oplA$ = analogies$(Level%, Apointer%(Level%), 3, 1)
oplB$ = analogies$(Level%, Apointer%(Level%), 3, 2)
op2A$ = analogies$(Level%, Apointer%(Level%), 4, 1)
op2B$ = analogies$(Level%, Apointer%(Level%), 4, 2)
op3A$ = analogies$(Level%, Apointer%(Level%), 5, 1)
op3B$ = analogies$(Level%, Apointer%(Level%), 5, 2)
op4A$ = analogies$(Level%, Apointer%(Level%), 6, 1)
op4B$ = analogies$(Level%, Apointer%(Level%), 6, 2)
op5A$ = analogies$(Level%, Apointer%(Level%), 7, 1)
op5B$ = analogies$(Level%, Apointer%(Level%), 7, 2)
ans$ = analogies$(Level%, Apointer%(Level%), 1, 2)
Apointer%(Level%) = Apointer%(Level%) + 1

Max% = maxlengch%(StimA$, op1A$, op2A$, op3A$, op4A$, op5A$)

CALL DrawBorder
LOCATE 2, 10
PRINT "ITEM: "; N%
LOCATE 6, 15
PRINT " StimA$; TAB(Max% + 18); "; StimB$
LOCATE 7, 15
IF VAL(ans$) = 1 THEN
PRINT " op1A$; TAB(Max% + 18); ";
ELSEIF VAL(ans$) = 2 THEN
PRINT " op2A$; TAB(Max% + 18); ";
ELSEIF VAL(ans$) = 3 THEN
PRINT " op3A$; TAB(Max% + 18); ";
ELSEIF VAL(ans$) = 4 THEN
PRINT " op4A$; TAB(Max% + 18); ";
ELSE
PRINT " op5A$; TAB(Max% + 18); ";
END IF
LOCATE 10, 15
PRINT "1) "; op1B$
LOCATE 11, 15
PRINT "2) "; op2B$
LOCATE 12, 15
PRINT "3) "; op3B$
LOCATE 13, 15
PRINT "4) "; op4B$
LOCATE 14, 15
PRINT "5) "; op5B$
LOCATE 18, 15
PRINT "ANSWER? ";
T1! = TIMER
DO
DO: key$ = INKEY$: LOOP WHILE key$ = ""
LOOP UNTIL (ASC(key$) >= ASC("1") AND ASC(key$) <= ASC("5"))
T2! = TIMER
IF key$ = ans$ THEN Right% = 1 ELSE Right% = 0
ET! = T2! - T1!
END SUB
SUB StartPage
12000
CALL DrawBorder

REM Display Official Message
LOCATE 5, 24
COLOR 15
PRINT "VERBAL REASONING ASSOCIATION TEST"
COLOR 7, 0, 0
LOCATE 8, 29
PRINT "ADMINISTRATION PROGRAM"
LOCATE 13, 34
PRINT "VERSION 3.4"

CALL AnyKey
END SUB

SUB StoreSubjectInfo (SID%, age%, sex$)
1300
OPEN ScoreFLnm$ FOR APPEND AS #ScoreFL%
PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(SID%))); CS;
PRINT #ScoreFL%, LTRIMS(RTRIMS(STR$(age%))); CS;
PRINT #ScoreFL%, QS; LTRIMS(RTRIMS(sex$)); QS; CS;
PRINT #ScoreFL%, QS; LTRIMS(RTRIMS(TotalPracticeI%))); CS;
PRINT #ScoreFL%, QS; LTRIMS(RTRIMS(DATES))); QS; CS;
CLOSE #ScoreFL%
END SUB
APPENDIX E

Analogies

E.1 Easy analogies

E1 ELM : TREE
1) dollar : dime
2) currency : dime
3) map : leaves
4) oak : maple
5) dollar : money (correct answer)

E2 RAIN : STORM
1) wind : hurricane (correct answer)
2) hail : thunder
3) snow : freeze
4) clouds : sky
5) sun : warm

E3 GUN : HOLSTER
1) shoe : soldier
2) sword : warrior
3) paper : pen
4) books : school bag (correct answer)
5) cannon: plunder

E4 DOCTOR : DISEASE
1) miser : money
2) illness : prescription
3) sheriff : crime (correct answer)
4) theft : punishment
5) intern : hospital
E5 LARGE : ENORMOUS
1) lion : tiger
2) warmth : frost
3) plump : fat (correct answer)
4) royal : regal
5) happy : solemn

E6 READ : BOOK
1) taste : salty
2) movie : attend
3) sound : odor
4) listen : record (correct answer)
5) touch : paper

E7 CHAIR : FURNITURE
1) tire : iron
2) tree : plant (correct answer)
3) food : meat
4) boat : float
5) transport : car

E8 FOREST : DESERT
1) wig : coat
2) egg : hen
3) rain : drought (correct answer)
4) skin : scar
5) young : healthy

E9 CANOE : SHIP
1) pistol : cannon (correct answer)
2) canoe : paddle
3) oar : water
4) aft : stem
5) land : sea

E10 POWERFUL : LARGE
1) muscle : boxer
2) same : alike
3) strength : exercise
4) weak : small (correct answer)
5) clipboard : stopwatch
E11 BRIGHT : BRILLANT
1) color : red
2) yellow : green
3) window : light
4) light : dark
5) happy : ecstatic (correct answer)

E12 SPANIEL : DOG
1) kitten : cat
2) lion : tiger
3) spider : fly
4) robin : bird (correct answer)
5) fish : trout

E13 MAXIMUM : MINIMUM
1) pessimist : optimist
2) minimum : optimum
3) best : good
4) most : least (correct answer)
5) wane : wax

E14 PROTEIN : MEAT
1) calories : cream
2) energy : sugar
3) cyclamates : diet
4) carbohydrates : potatoes (correct answer)
5) fat : cholesterol

E15 GOBBLE : TURKEY
1) poison : cobra
2) bark : tree
3) trunk : elephant
4) twitter : bird (correct answer)
5) king : lion

E16 MILK : BUTTER
1) eggs : omelets
2) fruit : tree
3) steer : sheep
4) water : ice (correct answer)
5) vine : grape

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E17  KEY : DOOR
1) combination : safe (correct answer)
2) keyhole : porthole
3) lock : key
4) opening : closing
5) bolt : safety

E18  STUDYING : LEARNING
1) running : jumping
2) investigating : discovering (correct answer)
3) reading : writing
4) dancing : singing
5) feeling : thinking

E19  ROLE : ACTOR
1) opera : soprano
2) private : soldier
3) melody : singer
4) position : ballplayer (correct answer)
5) character : part

E20  RUN : WALK
1) slow : fast
2) hard : soft
3) big : small
4) sprint : jog (correct answer)
5) cold : hot

E21  FURIOUS : ANGRY
1) cold : hot
2) love : like (correct answer)
3) look : listen
4) yell : hit
5) wish : fulfillment

E22  WOOD : PAPER
1) chair : wall
2) cut : clip
3) oil : gasoline (correct answer)
4) fireplace : lighter
5) forest : fire
E23  
CHOP : MINCE
1) fry : bake
2) meat : cake
3) ax : mallet
4) Washington : Lincoln
5) stir : beat (correct answer)

E24  
DECEMBER : WINTER
1) April : showers
2) September : tornado
3) June : fall
4) March : spring (correct answer)
5) February : snowstorm

E25  
CONCERT : MUSIC
1) performance : art
2) exhibition : art (correct answer)
3) play : actor
4) operetta : singer
5) flute : soloist

E26  
SCIENTIST : LABORATORY
1) chemist : test tube
2) lawyer : client
3) dentist : drill
4) teacher : classroom (correct answer)
5) actor : playwright

E27  
COG : WATCH
1) plant : biome
2) piston : engine (correct answer)
3) scale : weight
4) handle : pot
5) leash : dog

E28  
APPLE : FRUIT
1) dog : bone
2) tree : bush
3) sparrow : bird (correct answer)
4) robin : owl
5) elm : birch
E29  NEST : BIRD
1) lair : lion (correct answer)
2) kennel : dog
3) ring : elephant
4) corral : horse
5) coop : chicken

E30  LAVA : VOLCANO
1) snow : mountain
2) water : spring (correct answer)
3) balloon : air
4) eyes : makeup
5) chimney : brick

E31  CONDUCTOR : ORCHESTRA
1) violinist : bow
2) pianist : hands
3) author : books
4) president : country (correct answer)
5) school : principal

E32  LAKE : WET
1) electricity : nuclear
2) ice : cold (correct answer)
3) fog : unavoidable
4) jewel : expensive
5) tardy : early

E33  FEEL : TOUCH
1) tickle : hurt
2) see : look (correct answer)
3) sprint : lift
4) giggle : laugh
5) shed : grow

E34  TRIGGER : PISTOL
1) bullet : gun
2) rifle : revolver
3) guard : police
4) switch : motor (correct answer)
5) fire : shoot
E35  DAY : SUN
    1) sunlight : daylight
    2) night : moon (correct answer)
    3) moon : star
    4) ray : sun
    5) heat : cold

E36  NOVEL : BOOK
    1) act : play
    2) article : magazine
    3) mitten : hand
    4) sock : foot
    5) loafer : shoe (correct answer)

E37  GOBBLE : TURkey
    1) shed : cobra
    2) chop : tree
    3) graze : elephant
    4) twitter : bird (correct answer)
    5) sleep : lion

E38  SELL : PURCHASE
    1) pay : charge
    2) offer : bid
    3) buy : earn
    4) donate : demand
    5) give : receive (correct answer)

E39  HAMMER : HIT
    1) screw : replace
    2) wrench : leak
    3) glue : paste
    4) saw : cut (correct answer)
    5) heat : melt

E40  TOOTH : COMB
    1) book : store
    2) horse : race
    3) cog : gear (correct answer)
    4) hair : brush
    5) dog : hound
E41  CLARINET : WOODWIND
1) piano : key
2) symphony : composer
3) banjo : guitar
4) trumpet : brass (correct answer)
5) horn : blow

E42  PAIL : WATER
1) milk : quart
2) eggs : dozen
3) gallon : container
4) river : ocean
5) shaker : salt (correct answer)

E43  FISH : AQUARIUM
1) birds : aviary (correct answer)
2) car : garage
3) insects : ground
4) lightning : sky
5) dogs : pets

E44  SCHOOL : FISH
1) cars : traffic
2) dog : puppy
3) bird : wing
4) herd : cows (correct answer)
5) pig : barn

E45  AUTHOR : NOVEL
1) composer : piano
2) artist : easel
3) sculptor : statue (correct answer)
4) painter : color
5) mechanic : oil

E46  MILK : SPOIL
1) metal : bend
2) water : filter
3) wood : rot (correct answer)
4) fish : swim
5) animal : rest
E.2 Medium difficulty analogies

M1 PEARL : WISDOM
1) fall : winter
2) knife : murder
3) sickle : grain
4) harvest : crops
5) arrow : love (correct answer)

M2 CARNIVORE : ANIMALS
1) omnivore : omelets
2) vegetarian : vegetables (correct answer)
3) trace : minerals
4) herbivore : healthy
5) pollination : plants

M3 MAUVE : COLOR
1) basil : spice (correct answer)
2) colorless : colored
3) light : dark
4) tan : brown
5) blue : rainbow

M4 MUFFLE : SILENCE
1) cover : bell
2) sound : hearing
3) cry : loud
4) stymie : defeat (correct answer)
5) glimpse : look

M5 BONES : LIGAMENT
1) break : stretch
2) muscles : tendon (correct answer)
3) fat : cell
4) knuckle : finger
5) knee : joint

M6 WATERMARK : BIRTHMARK
1) buoy : stamp
2) paper : person (correct answer)
3) tide : character
4) line : signal
5) meaning : significance
M7 NEWS REPORT : DESCRIPTIVE
1) weather report : unpredictable
2) editorial : objective
3) feature story : newsworthy
4) commercial : prescriptive (correct answer)
5) joke : funny

M8 AGREEMENT : CONSENSUS
1) count : census
2) pleasure : enjoy
3) peace : tranquility (correct answer)
4) argument : solution
5) action : incite

M9 WATER : HYDRAULIC
1) energy : atomic
2) power : electric
3) gasoline : combustion
4) pressure : compress
5) air : pneumatic (correct answer)

M10 PROW : SHIP
1) snout : hog
2) nose : airplane (correct answer)
3) bird : beak
4) wheel : car
5) point : shaft

M11 SENSATION : ANESTHETIC
1) breath : lung
2) drug : reaction
3) satisfaction : disappointment
4) poison : antidote (correct answer)
5) observation : sight

M12 DISEMBARK : SHIP
1) board : train
2) dismount : horse (correct answer)
3) intern : jail
4) discharge : navy
5) dismantle : clock
M13  GOLD : PROSPECTOR
1) medicine : doctor
2) prayer : preacher
3) wood : carpenter
4) clue : detective (correct answer)
5) iron : machinist

M14  PECCADILLO : CRIME
1) district attorney : criminal
2) hesitate : procrastinate (correct answer)
3) armadillo : bone
4) bushel : peck
5) sheriff : jail

M15  DAM : WATER
1) over : under
2) embargo : trade (correct answer)
3) curse : water
4) beaver : fish
5) river : stream

M16  ALLAY : PAIN
1) damp : noise (correct answer)
2) create : noise
3) regain : consciousness
4) fray : edge
5) nerves : soothe

M17  TILLER : SHIP
1) wheel : car (correct answer)
2) motor : truck
3) row : boat
4) kite : string
5) wing : plane

M18  OIL : WELL
1) water : faucet
2) iron : ore
3) silver : mine (correct answer)
4) gas : tank
5) lumber : yard
M19  YOKE : OX
  1) saddle : stallion
  2) tether : cow
  3) herd : sheep
  4) brand : steer
  5) harness : horse (correct answer)

M20  DECIBEL : SOUND
  1) calorie : weight
  2) volt : electricity (correct answer)
  3) temperature : weather
  4) color : light
  5) area : distance

M21  PHARMACIST : DRUGS
  1) psychiatrist : ideas
  2) mentor : drills
  3) mechanic : troubles
  4) chef : foods (correct answer)
  5) nurse : diseases

M22  LUTE : STRING
  1) flute : treble
  2) xylophone : percussion (correct answer)
  3) drum : rhythm
  4) violin : concert
  5) piano : octave

M23  BAY : SEA
  1) mountain : valley
  2) plain : forest
  3) peninsula : land (correct answer)
  4) cape : reef
  5) island : sound

M24  RADIUS : CIRCLE
  1) rubber : tire
  2) bisect : angle
  3) equator : earth
  4) cord : circumference
  5) spoke : wheel (correct answer)
M25 DEARTH : PAUCITY
1) few : many
2) scarcity : shortage (correct answer)
3) shortage : plethora
4) empty : container
5) commodity : expectation

M26 HAND : GNARLED
1) tree : tall
2) foot : sore
3) flower : crushed
4) brow : creased (correct answer)
5) tire : round

M27 PLANET : ROTATES
1) top : spins (correct answer)
2) star : shines
3) moon : glows
4) toy : plays
5) rocket : fires

M28 GATE : PLANE
1) latch : door
2) fence : yard
3) track : train (correct answer)
4) highway : car
5) driver : bus

M29 MICROSCOPE : INSTRUMENT
1) autobiography : novel
2) hammer : metal
3) necktie : accessory (correct answer)
4) oar : boat
5) telescope : stars

M30 CURE : PHYSICIAN
1) prescribe : pharmacist
2) discuss : writer
3) entertain : comedian (correct answer)
4) train : athlete
5) trust : policeman

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M31 TALKATIVE : RECLUSE
1) deadly : gun
2) orderly : desk
3) wicked : saint (correct answer)
4) fast : athlete
5) taciturn : surgeon

M32 ROOF : PITCH
1) triangle : side
2) basement : cement
3) mountain : grade (correct answer)
4) tree : sap
5) ceiling : rafter

M33 PREMIERE : MOVIE
1) unveiling : statue (correct answer)
2) rookie : football
3) debutante : teenager
4) ruler : subject
5) celluloid : film

M34 TRICKLE : GUSH
1) flow : stream
2) listen : hear
3) soar : dive
4) touch : collide (correct answer)
5) drive : ride

M35 WINK : EYE
1) swallow : food
2) tap : toe (correct answer)
3) flirt : hand
4) hit : nail
5) smell : nose

M36 HAIR : HORSE
1) feather : bird
2) wool : sheep (correct answer)
3) down : pillow
4) fuzz : peach
5) fur : animal
M37 MISER : STINGINESS
1) dilettante : skill
2) demagogue : passivity
3) tyrant : dignity
4) altruist : selflessness (correct answer)
5) miscreant : honesty

M38 HOUSE : VILLA
1) home : apartment
2) tablespoon : teaspoon
3) friend : foe
4) car : limousine (correct answer)
5) hamburger : meal

M39 DAMAGE : DEMOLISH
1) whimper : wail (correct answer)
2) break : mar
3) loosen : cinch
4) punish : accept
5) plan : act

M40 HOSE : WATER
1) lawn : grass
2) speaker : sound
3) window : air
4) vent : flap
5) chimney : smoke (correct answer)

M41 AWL : PUNCTURE
1) tire : ride
2) cleaver : cut (correct answer)
3) plane : soar
4) throttle : start
5) axle : steer

M42 HILT : BLADE
1) holster : gun
2) sheath : knife
3) leash : dog
4) stem : leaf (correct answer)
5) petal : branch
M43  FINGER : RING
1) bandage : wound
2) neck : necklace (correct answer)
3) bracelet : wrist
4) glove : hand
5) lip : tune

M44  PEPPER : SEASON
1) cinnamon : prepare
2) sugar : sweeten (correct answer)
3) celery : plant
4) accent : cook
5) salt : taste

E.3 Difficult analogies

H1  INTERRUPT : HECKLE
1) disrupt : intrude
2) tease : hector (correct answer)
3) maintain : uphold
4) condemn : implore
5) speech : performance

H2  JUSTICE : SCALES
1) ruler : education
2) weather vane : cock
3) tree : farm
4) court : crime
5) pearl : credo
   no correct answer

H3  PEOPLE : ELECT
1) states : govern
2) debate : lawyers
3) teach : teachers
4) diplomats : judge
5) journalists : news
   no correct answer
H4 MUNDANE : TEMPORAL
1) earthly : heavenly
2) celestial : starry
3) spiritual : cavalier
4) angelic : religious
5) ephemeral : eternal
no correct answer

H5 SEWER : CONDUIT
1) pickle : tank
2) lance : philosophy
3) hero : conquest
4) service : plaintiff
5) seed : spore
no correct answer

H6 CANDID : DEVIOUS
1) unnerved : unhinged
2) unruffled : unnerved
3) unhinged : unspoken
4) unsullied : unruffled
5) overhanded : underhanded
no correct answer

H7 UXORIOUS : MISOGYNOUS
1) philanthropic : charitable
2) useless : mystic
3) mankind : angelic
4) tender : gracious
5) domestic : national
no correct answer

H8 EXPURGATE : SOLECISM
1) defoliate : leaves
2) cancel : checks
3) incest : family
4) apostasy : dogma
5) till : fields
no correct answer
H9  MAGNANIMOUS : PETTY
1) arrogant : insolent
2) valiant : belligerent
3) passionate : blasé (correct answer)
4) munificent : generous
5) circumspect : prudent

H10  TRAVESTY : RIDICULE
1) reproduction : provoke
2) forgery : deceive (correct answer)
3) imitation : feign
4) treachery : reprieve
5) poetry : comprehend

H11  BRAGGART : DIFFIDENCE
1) benefactor : generosity
2) pariah : esteem (correct answer)
3) partisan : partiality
4) savant : wisdom
5) sycophant : flattery

H12  JOCULAR : SOLEMNITY
1) latent : visibility (correct answer)
2) pompous : spectacle
3) ruined : demolition
4) vindictive : enmity
5) lonely : insularity
This part of the study is interested in how different memory strategies improve people's memories. People use several different strategies when they try to memorize things. However, no research has examined which of these strategies is better. This is what this study wants to look at.

The experimenter will be giving you a list of words to memorize. Please memorize the words by using the strategy of relating the words to yourself. That is try to imagine how the word describes you or fits an experience you have had.

You will have four or five minutes to memorize the words and later on in the experiment you will be asked to recall as many words as you can.
This part of the study is interested in how different memory strategies improve people's memories. Below are a list of words. We want you to spend the next few minutes memorizing the words because you will be tested on them later in the experiment.

As a strategy to help you remember the words, try to relate the words to yourself. That is try to imagine how the word describes you or fits an experience you have had.

Remember that you will be tested on how well you remember these words later in the experiment AND remember to relate the words to yourself.

artistic
aroused
bewildered
different
doubtful
humble
insecure
perplexed
puzzled
indecisive

Doubt present condition

unclear
unconfident
unsure
hungry

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This part of the study is interested in how different memory strategies improve people’s memories. Below are a list of words. We want you to spend the next few minutes memorizing the words because you will be tested on them later in the experiment.

As a strategy to help you remember the words, try to relate the words to yourself. That is try to imagine how the word describes you or fits an experience you have had.

Remember that you will be tested on how well you remember these words later in the experiment AND remember to relate the words to yourself.

artistic
aroused
average
different
innocent
humble
outspoken
unlucky
quiet
thrifty
talkative
solemn
blunt
hungry

Doubt Absent Condition
APPENDIX H

Focus manipulation script

H.1 Ability focus script

Thank you for helping with this research project for me. I have done some research looking at success with scholarships. Academic scholarships are often given according to two criteria. They can either be given based on overall outcomes, such as GPA, or they can be given on the basis of ability, such as IQ or SAT scores. Our research has found that scholarships should be given on the basis of ability alone. In other words, those that get scholarships for college based on ability tend to do better than those getting scholarships using others standards of evaluation. This basically means that measures of intellectual ability, such as IQ, are better predictors of success with the scholarship than things like effort, time spent studying, or even GPA.

This is a very interesting finding and I am now trying to find ways to explain it. This finding makes sense to me but I am trying to understand how others would explain it. I would like your help in doing that. I would like you to spend the next five-ten minutes writing why it might be the case that scholarships should be given based on ability only. Even if you do not personally believe this to be the case, the research has
shown it is true. So try to come up with reasons and explanations for why this might be the case.
H.2 Outcome focus script

Thank you for helping with this research project for me. I have done some research looking at success with scholarships. Academic scholarships are often given according to two criteria. They can either be given based on overall outcomes, such as GPA, or they can be given on the basis of ability, such as IQ or SAT scores. Our research has found that scholarships should be given on the basis of overall outcome. In other words, those that get scholarships for college based on outcomes tend to do better than those getting scholarships using others standards of evaluation. This basically means that measures of overall outcome, such as GPA which might include time spent studying and effort, are better predictors of success with the scholarship than things like IQ or SAT scores.

This is a very interesting finding and I am now trying to find ways to explain it. This finding makes sense to be but I am trying to understand how others would explain it. I would like your help in doing that. I would like you to spend the next five-ten minutes writing why it might be the case that scholarships should be given based on outcomes only. Even if you do not personally believe this to be the case, the research has shown it is true. So try to come up with reasons and explanations for why this might be the case.
APPENDIX I

Focus manipulation materials

I.1 Outcome Focus

Past research (Lynch & Arkin, 1997) has demonstrated that scholarships should be given on the basis of outcome alone. In other words, those that get scholarships for college based on their final outcomes such as GPA tend to do better than those getting scholarships using others standards of evaluation. This means that measures of overall outcome such as GPA, are better predictors of success with the scholarships than measures that only consider ability, like IQ.

In the space below, please spend the next five minutes writing why you think overall outcome, such as GPA, might be the best predictor of academic success and thus should be used as the criteria for deciding who should get scholarships as opposed to other measures, such as IQ.

Even if you do not personally believe this to be the case, the research has shown it is true. So try to come up with reasons and explanations for why outcome is a good predictor of college success.
I.2 Ability Focus

Past research (Lynch & Arkin, 1997) has demonstrated that scholarships should be given on the basis of ability alone. In other words, those that get scholarships for college based on their ability, such as IQ, tend to do better than those getting scholarships using others standards of evaluation. This means that measures of ability such as IQ, are better predictors of success with the scholarships than other measures that consider effort or overall outcome, such as GPA.

In the space below, please spend the next five minutes writing why you think pure ability, such as IQ, might be the best predictor of academic success and thus should be used as the criteria for deciding who should get scholarships as opposed to other measures, such as GPA or effort.

Even if you do not personally believe this to be the case, the research has shown it is true. So try to come up with reasons and explanations for why ability is a good predictor of college success.
APPENDIX J

Interim Questionnaire

1. What score do you think that you achieved on the first practice test?
   1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20

2. How pleased were you when you got a correct answer on the V-RAT?
   1  2  3  4  5  6  7  8  9
   not at all entirely

3. How gratifying would success be on the final V-RAT?
   1  2  3  4  5  6  7  8  9
   not at all entirely

4. How distressing would failure be on the V-RAT?
   1  2  3  4  5  6  7  8  9
   not at all entirely

5. How satisfied are you with your performance on the first practice test?
   1  2  3  4  5  6  7  8  9
   not at all satisfied entirely satisfied

6. How high is your level of Integrative Orientation?
   1  2  3  4  5  6  7  8  9
   very low very high

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7. How confident are you that you will perform well/poorly on the final V-RAT?

-11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10 +11
completely certain completely uncertain completely certain
that I will do poorly that I will do well

8. How doubtful are you about your integrative orientation ability?

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

Recall sheet

RECALL SHEET

Please take a few minutes and write down as many words as you can from the list that you studied at the beginning of the hour.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
APPENDIX L

Final Questionnaire

Interim Questionnaire II

1. How many problems do you think that you attempted on the second practice test? ____

2. How many problems do you think that most people attempt on the second practice test? ____

3. How important is practice to your performance on the V-RAT?

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

4. To what extent do you believe ability will affect your performance on the V-RAT?

   1  2  3  4  5  6  7  8  9
   it is not  it is very
   important    important

5. To what extent do you believe that effort will affect your performance on the V-RAT?

   1  2  3  4  5  6  7  8  9
   it is not  it is very
   important    important

6. To what extent do you believe that luck will affect your performance on the V-RAT?

   1  2  3  4  5  6  7  8  9
   it is not  it is very
   important    important
7. To what extent do you believe that your V-RAT score will be due to the difficulty of the test?

1 2 3 4 5 6 7 8 9
it is not it is very important important

8. How anxious did you feel during the experiment?

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

9. How much is integrative orientation related to intellectual ability?

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

10. How important is it to be high in Integrative Orientation?

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

12. Past research has suggested that scholarships should be given on the basis of.....(circle one)

Outcomes (such as GPA) Ability (such as IQ)

13. According to past research, how good a candidate would each of the following people be for a scholarship?

a) This person has high ability as measured by tests of intelligence. This person does not put forth much effort. This person has a low GPA.

How good would this person be as a candidate for a scholarship?

1 2 3 4 5 6 7 8 9
very poor candidate very good candidate
b) This person has low ability as measured by tests of intelligence. This person puts forth lots of effort. This person has a high GPA.

How good would this person be as a candidate for a scholarship?

1 2 3 4 5 6 7 8 9
very poor candidate very good candidate
Debrief-Study 1

We are done with the experiment and you will not be taking a final test. Are you surprised? Obviously, then, we did not tell you everything about the study when you got here. I would like to take a few minutes to explain to you what this study was looking at and to explain why we could not tell you everything about the study from the start.

This study was designed to look at two common everyday behaviors that people who are unsure about how they will do on an upcoming task often engage in: trying harder or giving up. For instance, if you are in a class and are not sure if you can do well you can either drop the class and give up or you can stay in the class and try harder.

This study was trying to create both types of behavior: giving up and trying harder. How? In this study, we tried to make some of you doubtful or uncertain about how you well you would do on the V-RAT. How did we do this? Some of you memorized words like “uncertain,” and “doubtful,” while the other half of you just had regular words. We were hoping that those of you who memorized the word search that had words related to doubt would feel more doubtful. In psychological terms, doubt would be “primed” or made accessible in your mind.
So far, I have told you that we believe that feeling doubtful is part of the reason a person may give up or try harder on a task. But what determines if a person who is doubtful withdraws effort or exerts effort? We think the answer might lie in the person’s focus. Specifically, if a person who is doubtful is focused on the idea that ability, but not effort matters, they might give up and withdraw effort. But if a person who is doubtful is focused only on outcome, they might exert effort and try harder. Specifically, if outcome is what is important, the person’s goal should be to succeed and effort might be the way to get there. To test this we manipulated your focus. Some of you were told that research has shown that college scholarships should be given on the basis of outcome (e.g. GPA) alone and were asked to explain why this might be the case. We were hoping that this would focus people on the idea that effort matters. Some of you were told that college scholarships should be given on the basis of ability (e.g. IQ) and were asked to explain this. We were hoping that this would manipulate your focus to believe that effort is not important.

Our main interest was in how long you spent studying for practice test 2. We were hypothesizing that those who were made to feel doubtful and were focused on ability, would give up and thus do the fewest number of practice problems. We also hypothesized that those who were make to feel doubtful and were focused on outcome would try harder and do the most practice problems. Furthermore, those that were nondoubtful were expected to practice somewhere in the middle. Does this make sense?

There are a few other things that you should know. First, the V-RAT is not a real test. It is something that we created to use in this experiment so it does not measure
integrative orientation. Second, there is no research suggesting that scholarships should be based on ability or outcome. We simply made that up as a way to manipulate focus. We want to be sure that you understand that this information was not true. In fact, if you think about it you will probably have no trouble explaining why the opposite case might be true. Can you think of such a reason?

We also want to apologize for having to deceive you like this. We never like to deceive you but it is sometimes necessary to study these phenomena. For instance, it we would have told you that we were interested in how many practice problems you did on the second test based on how doubtful you felt you might not have been able to act naturally. We are trying to discover how people would normally act and to do this it is important that they act naturally. We also want you not to feel stupid if you believed what we told you. We spend a lot of time pretesting our studies so that they do seem believable and almost everyone believes the situation. Again, we apologize for deceiving you but we hope that you understand why we felt it was necessary. Understanding why people give up or try harder is an important question that unfortunately requires this deception.

Finally, we ask that you not tell other people who might be in this experiment our hypothesis. If you tell someone else that we are trying to manipulate how doubtful they feel with the memorization task, for instance, they might not act naturally on the second practice test and that would provide us with unusable results.

Are there any questions?
APPENDIX N

Self-doubt manipulations- Study 2

This part of the study is interested in how different memory strategies improve people’s memories. Below are a list of words. We want you to spend the next few minutes memorizing the words because you will be tested on them later in the experiment. As a strategy to help you remember the words, try to relate the words to yourself. That is try to imagine how the word describes you or fits an experience you have had.

Remember that you will be tested on how well you remember these words later in the experiment AND remember to relate the words to yourself.

aggressive
aroused
confused
different
doubtful
humble
insecure
perplexed
puzzled
uncertain
unclear
unconfident
unsure
wonderful

Doubt present condition

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This part of the study is interested in how different memory strategies improve people’s memories. Below are a list of words. We want you to spend the next few minutes memorizing the words because you will be tested on them later in the experiment.

As a strategy to help you remember the words, try to relate the words to yourself. That is try to imagine how the word describes you or fits an experience you have had.

Remember that you will be tested on how well you remember these words later in the experiment AND remember to relate the words to yourself.

aggressive
aroused
confess
different
double
humble
inside
perpetual
published
unicorn
unclean
uncomfortable
unspoken
wonderful

Doubt Absent Condition
APPENDIX O

Focus manipulation-study 2- cover story

Introduction

Recent articles in the newspaper have reported that a large percentage of potential teachers in Massachusetts have been unable to pass a basic test of math and English skills. One of the components of the test was a test of reading comprehension in which these potential teachers were asked to read a brief newspaper article and then summarize the basic meaning of the article and answer questions about its content.

The Ohio State University Research Foundation (OSURF) is interested in how students at Ohio State do on these reading comprehension tasks. Over the next few months, we are collecting data from students in different majors to see how they do on these tasks. We have asked several people in the psychology department to collect this data for us and that is what you will be doing now.

On the following page, you will find a brief article reprinted from the USA TODAY. Please read the article carefully, and then answer the questions that follow. We appreciate your help in this data collection project and be sure that all of your answers are confidential.
Talent over Toil: Employers Seek Those With Natural Ability

By Jayne Clark
USA TODAY

What do universities, Fortune 500 companies, Hollywood, and professional sports teams all have in common? It seems they are all interested in recruiting individuals who have natural talent.

“Our research suggests that when schools, companies, or even sports teams recruit individuals to their organizations they overwhelmingly seek those with natural talent,” says Bob Teasdale, head of the Human Initiative Project.

Dr. Teasdale and his research team at the American University in Washington, D.C. spent 16 months interviewing over 1000 people ranging from CEOs and people in hiring positions at Fortune 500 companies, the heads of admissions at major universities, human resource personnel at smaller companies, and coaches at both the amateur and professional level, about what they look for in recruiting individuals.

When asked to choose whether they focused more on a potential employee’s natural ability or on how hard a potential employee works, employers overwhelmingly (72%) said they focused more on a person’s natural ability.

“What it comes time to decide which players to recruit, I look for the ones that have natural ball playing ability. When encouraged to work hard, this player will outperform the player who works just as hard but lacks natural talent any day. Once the talent is in place, it is my job to put it to use,” claims Tubby Smith, head basketball coach at the University of Kentucky.

Richard Morgan, Vice President of the Arthur Anderson Corporation, echoes this sentiment. “We instruct our recruiters to assess how talented a candidate is. A talented candidate is a more valuable asset to the company in the long run than one who does well only by working hard.”

Teasdale cautions that the people he interviewed ideally wanted a person who had natural talent and worked hard, but in the absence of such a person they placed more weight on a person’s natural talent than on his or her willingness to work.

According to Victor Growney, head of Admissions at the University of Notre Dame, “Naturally talented students make better students. Those who lack talent and work hard can succeed but often do so at the expense of other aspects of university life. We are looking for individuals who will be well-rounded students and we have found those students to be those who are inherently bright.”

Today, then, talent is more important than toil!

What employers look for

28% Talent

72% Effort
Toil over Talent: Employers Seek Those Focused on Success

By Jayne Clark
USA TODAY

What do universities, Fortune 500 companies, Hollywood, and professional sports teams all have in common? It seems they are all interested in recruiting individuals who are focused on succeeding even if it requires putting forth extra effort.

"Our research suggests that when schools, companies, or even sports teams recruit individuals to their organizations they overwhelmingly seek those with a focus on success and a willingness to work hard," says Bob Teasdale, head of the Human Initiative Project.

Dr. Teasdale and his research team at the American University in Washington, D.C. spent 16 months interviewing over 1000 people ranging from CEOs and people in hiring positions at Fortune 500 companies, the heads of admissions at major universities, human resource personnel at smaller companies, and coaches at both the amateur and professional level, about what they look for in recruiting individuals. When asked to choose whether they focused more on a potential employee's natural ability or on a person's desire to succeed employers overwhelmingly (72%) said they focused on a person's desire to succeed.

"When it comes time to decide which players to recruit, I look for the ones that want to win and put forth the extra effort to do so. The player wanting to win and willing to work hard will outperform the player who has natural talent but refuses to exert himself any day. My job is to find the players willing to work hard and make them work," claims Tubby Smith, head basketball coach at the University of Kentucky.

Richard Morgan, Vice President of the Arthur Anderson Corporation, echoes this sentiment. "We instruct our recruiters to assess how focused a candidate is on success and how hard he or she is willing to work to achieve that success. A candidate focused on success through hard work is a more valuable asset to the company in the long run than one who does well only by natural talent."

Teasdale cautions that the people he interviewed ideally wanted a person who had natural talent and worked hard, but in the absence of such a person they placed more weight on a person's desire to succeed than his or her natural ability.

According to Victor Growney, head of Admissions at the University of Notre Dame, "Success-oriented students willing to go the extra mile make better students. Those students who are naturally talented might also be lazy and will not succeed. We are looking for individuals who will be well-rounded students and we have found those students to be those who are willing to work to succeed."

Today, then, toil is more important than talent!

What employers look for

28%
72%

Desire to Succeed
Talent
Sociability over Shyness: Employers Seek Those Who are Friendly

By Jayne Clark
USA TODAY

What do universities, Fortune 500 companies, Hollywood, and professional sports teams all have in common? It seems they are all interested in recruiting individuals who are sociable and enjoyable to interact with.

“Our research suggests that when schools, companies, or even sports teams recruit individuals to their organizations they overwhelmingly seek those who are sociable,” says Bob Teasdale, head of the Human Initiative Project.

Dr. Teasdale and his research team at the American University in Washington, D.C. spent 16 months interviewing over 1000 people ranging from CEOs and people in hiring positions at Fortune 500 companies, the heads of admissions at major universities, human resource personnel at smaller companies, and coaches at both the amateur and professional level, about what they look for in recruiting individuals. When asked to choose what they focused most on in a potential employee, employers overwhelmingly (72%) said they focused on a person’s sociability.

“When it comes time to decide which players to recruit, I look for the ones that will be able to work well with other team members. The player who is outgoing and friendly will outperform the player who does not interact well with others any day. My job is to find the players who are sociable and create a strong team-oriented environment” claims Tubby Smith, head basketball coach at the University of Kentucky.

Richard Morgan, Vice President of the Arthur Anderson Corporation, echoes this sentiment. “We instruct our recruiters to assess how sociable a candidate is. A companionable candidate who works well with others is a more valuable asset to the company in the long run than one who is more of a loner.”

Teasdale cautions that the people he interviewed ideally wanted a person who associates well with others and works well on their own, but in the absence of such a person they placed more weight on how sociable a person is than his or her ability to work independently.

According to Victor Growney, head of Admissions at the University of Notre Dame, “Sociable students make better students. Those students who are not sociable might succeed but often do so at the expense of other aspects of university life. We are looking for individuals who will be well-rounded students and we have found those students to be those who are friendly.”

Today, then, sociability is more important than shyness!

What employers look for

28% Sociability
72% Other
Please answer the following questions about the article that you just read.
1. In your own words, summarize the main point of the article.

2. a) According to the article, what are employers primarily looking for in potential employees? (Circle one)
   
   Natural ability  
   Sociability  
   Focus on success and hard work

   b) List one reason why employers would prefer employees with the characteristic you circled above.

3. Which of the following statements is true?
   a) Only sports coaches were interviewed for the survey.
   b) Bob Teasdale is Vice President of the Arthur Anderson Corporation.
   c) 72% of employers are currently interviewing candidates for positions.
   d) Over 1000 people were interviewed for the survey.

4. Write an alternative headline for the newspaper article.
APPENDIX P

Self Questionnaire

Listed below are statements that concern how you feel about yourself. Read each statement carefully, and then decide how much you agree with it. Place the appropriate number on the line next to the statement. Use the following scale:

1 = Disagree very much
2 = Disagree pretty much
3 = Disagree a little
4 = Agree a little
5 = Agree pretty much
6 = Agree very much

There are no “right” or “wrong” answers to these statements. Answer in the way that is right for you. Please be as truthful as possible: your answers will be kept confidential.

_____ 1. When engaged in an important task, most of my thoughts turn to bad things that might happen (e.g., failing) than to good.
_____ 2. For me, avoiding failure has a greater emotional impact (e.g., sense of relief) than the emotional impact of achieving success (e.g., joy, pride).
_____ 3. More often than not I feel unsure of my abilities.
_____ 4. I sometimes find myself wondering if I have the ability to succeed at important activities.
_____ 5. I often wish that I felt more certain of my strengths and weaknesses.
_____ 6. As I begin an important activity, I usually feel confident in my ability.
_____ 7. Sometimes I feel that I don’t know why I have succeeded at something.
_____ 8. As I begin an important activity, I usually feel confident in the likely outcome

Earlier in the experiment you read a newspaper article. According to the article what were employers primarily looking for in their employees? (circle one)
Natural ability   Sociability   Focus on success and hard work

How much do you agree with the views presented in the newspaper article?
1 2 3 4 5 6 7 8 9
not at all very much

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APPENDIX Q

Debrief- Study 2

We are done with the experiment and you will not be taking a final test. Are you surprised? Obviously, then, we did not tell you everything about the study when you got here. We would like to take a few minutes to explain to you what this study was looking at and to explain why we could not tell you everything about the study from the start.

This study was designed to look at two common everyday behaviors that people who are unsure about how they will do on an upcoming task often engage in: trying harder or giving up. For instance, if you are in a class and are not sure if you can do well you can either drop the class and give up or you can stay in the class and try harder.

This study was trying to create both types of behavior: giving up and trying harder. How? In this study, we tried to make some of you doubtful or uncertain about how you well you would do on the V-RAT. How did we do this? All of you were asked to memorize a list of words. Some of you were asked to memorize a list of words that had words that were related to feeling doubtful (confused, uncertain, unconfident, etc.) Some of you were asked to memorize a list of words that were unrelated to feeling doubtful (double, humble, unicorn, unclean, etc). We were hoping that the people who memorized
the doubt-related words would actually come to feel more doubtful that those who memorized the neutral words- this is known as priming. In this way, we were hoping to make some of you feel more doubtful and some of you feel less doubtful.

So far, I have told you that we believe that feeling doubtful is part of the reason a person may give up or try harder on a task. But what determines if a person who is doubtful withdraws effort or exerts effort? We think the answer might lie in the person's focus. Specifically, if a person who is doubtful is focused on the idea that ability, but not effort matters, they might give up and withdraw effort. But if a person who is doubtful is focused only on outcome, they might exert effort and try harder. Specifically, if outcome is what is important, the person's goal should be to succeed - and effort might be the way to get there. To test this, we tried to manipulate your focus. Some of you read a newspaper article explaining that employers were looking for employees with natural talent. We were hoping that people that read this article would focus on the idea that ability is what is important. Some of you read a newspaper article explaining that employers were looking for employees focused on a desire to succeed and hard work. We were hoping that those of you that read this article would be focused on success. Finally, some of you read a newspaper article explaining that employers were looking for people who were sociable. These people were the control condition and were not supposed to be focused on ability or success.

Our main interest was in how long you spent studying for practice test 2. In fact, we were not interested in whether or not you got the problems right or wrong. We were hypothesizing that those who were made to feel doubtful and were focused on ability,
would give up and thus do the fewest number of practice problems. We also hypothesized
that those who were make to feel doubtful and were focused on outcome would try harder
and do the most practice problems. Furthermore, those that were nondoubtful were
expected to practice somewhere in the middle. Does this make sense?

There are a few other things that you should know. First, the V-RAT is not a real
test. It is something that we created to use in this experiment so it does not measure
integrative orientation. Second, Obviously these newspaper articles are not real. If one
article says that talent matters and the other says that it does not, obviously these are
made-up newspaper articles.

We simply made them up as a way to manipulate focus. We want to be sure that
you understand that this information was not true

We also want to apologize for having to deceive you like this. We never like to
deceive you but it is sometimes necessary to study these phenomena. For instance, it we
would have told you that we were interested in how many practice problems you did on
the second test based on how doubtful you felt you might not have been able to act
naturally. We are trying to discover how people would normally act and to do this it is
important that they act naturally. We also want you not to feel stupid if you believed
what we told you. We spend a lot of time pretesting our studies so that they do seem
believable and almost everyone believes the situation. Again, we apologize for deceiving
you but we hope that you understand why we felt it was necessary. Understanding why
people give up or try harder is an important question that unfortunately requires this
deception.
Finally, we ask that you not tell other people who might be in this experiment our hypothesis. If you tell someone else that we are trying to manipulate how doubtful they feel with the memorization task, for instance, or that we are counting their practice problems they might not act naturally on the second practice test and that would provide us with unusable results.
APPENDIX R

Gender Differences

R.1 Study 1

R.1.1 Number of Practice Problems

<table>
<thead>
<tr>
<th>Focus Condition</th>
<th>Outcome</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-doubt</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>15.88a</td>
<td>16.40</td>
</tr>
<tr>
<td>Absent</td>
<td>11.73a</td>
<td>9.08</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 21: Mean number of practice problems as a function of self-doubt and focus for males only (Study 1).
<table>
<thead>
<tr>
<th>Self-doubt</th>
<th>Outcome</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Present</td>
<td>26.67a</td>
<td>11.48</td>
</tr>
<tr>
<td>Absent</td>
<td>10.25a</td>
<td>6.85</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

Table 22: Mean number of practice problems as a function of self-doubt and focus for females only (Study 1).
R.1.2 Time spent practicing

<table>
<thead>
<tr>
<th>Focus Condition</th>
<th>Outcome</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-doubt</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Present</td>
<td>187.46a</td>
<td>190.96</td>
</tr>
<tr>
<td>Absent</td>
<td>104.69a</td>
<td>85.06</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

Table 23: Time spent practicing as a function of self-doubt and focus for males only (Study 1).
<table>
<thead>
<tr>
<th>Focus Condition</th>
<th>Outcome</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Self-doubt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>294.16a</td>
<td>69.31</td>
</tr>
<tr>
<td>Absent</td>
<td>139.65a</td>
<td>115.58</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 24: Time spent practicing as a function of self-doubt and focus for females only (Study 1).
R.2 Study 2

R.2.1 Number of practice problems

<table>
<thead>
<tr>
<th>Focus Condition</th>
<th>Outcome</th>
<th>Neutral</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-doubt</td>
<td>M</td>
<td>SD</td>
<td>n</td>
</tr>
<tr>
<td>Present</td>
<td>16.75a</td>
<td>3.95</td>
<td>4</td>
</tr>
<tr>
<td>Absent</td>
<td>14.29a</td>
<td>10.61</td>
<td>7</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

Table 25: Mean number of practice problems as a function of self-doubt and focus for males only (Study 2).
<table>
<thead>
<tr>
<th>Self-doubt</th>
<th>Outcome</th>
<th>Neutral</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>n</td>
</tr>
<tr>
<td>Present</td>
<td>13.80a</td>
<td>12.24</td>
<td>10</td>
</tr>
<tr>
<td>Absent</td>
<td>8.88a</td>
<td>4.91</td>
<td>8</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).

Table 26: Mean number of practice problems as a function of self-doubt and focus for females only (Study 2).
R.2.2 Time spent practicing

<table>
<thead>
<tr>
<th>Self-doubt</th>
<th>M</th>
<th>SD</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>206.18a</td>
<td>87.71</td>
<td>4</td>
<td>167.00a</td>
<td>171.67</td>
<td>5</td>
<td>160.52a</td>
<td>69.11</td>
<td>5</td>
</tr>
<tr>
<td>Absent</td>
<td>173.47a</td>
<td>140.40</td>
<td>7</td>
<td>151.04a</td>
<td>135.45</td>
<td>7</td>
<td>91.85a</td>
<td>78.23</td>
<td>6</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different ($p < .05$).

Table 27: Time spent practicing as a function of self-doubt and focus for males only (Study 2).
Table 28: Time spent practicing as a function of self-doubt and focus for females only (Study 2).

<table>
<thead>
<tr>
<th>Focus Condition</th>
<th>Outcome</th>
<th>Neutral</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-doubt</td>
<td>M</td>
<td>SD</td>
<td>n</td>
</tr>
<tr>
<td>Present</td>
<td>215.86a</td>
<td>229.86</td>
<td>10</td>
</tr>
<tr>
<td>Absent</td>
<td>99.54a</td>
<td>64.15</td>
<td>8</td>
</tr>
</tbody>
</table>

By independent samples t-tests, means not sharing common subscripts, within rows and columns are significantly different (p < .05).
LIST OF REFERENCES


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ENDNOTES

1. Jones (1989) does not distinguish between self-presentations that are directed to an audience (public self-presentation) and those that are directed to the self (private self-presentation) stating that "just as we frame our competence for consumption of others who are important to us, so we frame our competences as part of self-definitions and identity" (p. 477). This paper will also not distinguish between private and public self-presentation until the general discussion.

2. Past research has been able to demonstrate the difference between achievement motivation and subjective overachievement. Specifically, work by Oleson, Poehlmann, Yost, Lynch, and (1998) has found that there is a moderate positive correlation. $r(111) = .39, p < .0001$, between the Concern for Performance subscale of the Overachievement Scale and achievement motivation as measured by the Personality Research Form (Jackson, 1967). Thus, achievement motivation appears to related to but distinct from the concern for performance of the subjective overachiever. There was also a small negative correlation, $r(111) = -.25, p < .01$, between the Self-Doubt subscale of the Overachievement Sclera and achievement motivation suggesting that those who express doubts in their abilities report lower achievement motivation although this relationship is not very strong.

3. There is evidence that a relatively high subjective probability of success, akin to high competence expectations, are necessary for overachievement behavior to occur (Yost, Lichstein, Poehlmann, & Arkin, 1995). [See section on Oscillating between self-handicapping and overachievement]

4. The V-RAT was initially developed by Karen Kovacs (1990). However, the computer program and instructions given to the participants were slightly modified from their original form.

5. For both Study 1 and Study 2, a series of ANOVAs were conducted to examine the effect of gender and counterbalancing of the manipulations. Only a few sporadic and inconsistent effects were found. Thus, effects of these variables are not reported here except for a discussion of gender difference on the main dependent variables.

6. Including this participant in the analyses does not change the overall pattern of results for the main dependent measures. However, on the analyses of the number of practice problems attempted it drops the significant two-way interaction between self-doubt and focus to marginal significance, $F(1, 53) = 3.159, p = .081$. The pattern of means still
remains the same. On the analyses of the time spent practicing, the self-doubt and focus interaction still remains significant, $F(1, 51) = 5.65, p = .021$.

For two participants, the experimenter forgot to inform them that the feedback on the first practice test was random. These subjects were still included in the analyses. When they were excluded from the analyses, the pattern of the results for the main dependent measures (time spent practicing and the number of problems attempted on practice test 2) remains unchanged.

The remaining analyses were conducted with all 56 subjects including those whose essays indicated that they did not believe in their focus manipulation and those who incorrectly identified the best basis for granting scholarships. It should be noted, that when these participants are excluded from the analyses of the main dependent measures (time spent practicing on practice test 2 and the number of problems attempted on practice test 2) the pattern on results remains the same and, if anything, provides stronger support for the hypotheses. Thus, the results presented above are probably conservative.

This analysis was also conducted using the time that participants spent on the first practice test of twenty problems as a covariate. This was done to try to control for individual differences in the time might spend on each problem. Doing so, did not change the pattern of results. The interaction between self-doubt and focus was still significant, $F(1, 49) = 7.614, p = .008$. Moreover, the covariate itself was not significant, $F(1, 49) = .746, p = .392$. The time participants spent on the first practice test did not predict how long they spent practicing on the second test.

Kovacs (1990) similarly finds that participants in the reward orientation condition were more likely to attribute their performance to effort than were those in the cost orientation condition.

This analysis was again conducted using the time that participants spent on the first practice test as a covariate. Again, the pattern of results was unchanged. The main effect of focus, doubt, and the interaction between them was still nonsignificant. The covariate was significant, $F(1, 81) = 9.485, p = .003$, such that those that spent more time on the first twenty questions also spent more time on the second practice test.

Because scores on the self-doubt subscale of the Overachievement Scale are continuous variables, using regression analysis is also an option here. Regression may be more sensitive to any differences than using a median split on the scores and conducting an ANOVA. For this reason, hierarchical regression analyses were conducted using self-doubt score as a continuous variable while focus condition was dummy coded. Again there were no significant results. For simplicity, then, the results of the ANOVAS are presented here.

Interestedly, evidence suggests that people also often tend to prefer incremental theories rather than entity theorists. Dweck, Chiu, Hong (1991a) report that when trying to assess an orientation toward incremental or entity theories, "even among respondents who endorsed items depicting an entity theory, many endorsed items depicting the
opposite incremental theory and drifted toward incremental items” (p. 270). Thus, the final measure of implicit theories only assesses agreement with entity theories.

15 As will be described later [see section on Oscillating Between Self-handicapping and Overachievement], overachievers as identified by the Overachievement Scale might not indiscriminately exert extra effort. They might first need to believe that success is possible (Yost, Lichstein, & Arkin, 1995) and that the task is important (Lynch, 1996).

16 In the studies conducted here participant completed an initial practice test in which it was hoped that they would feel they were doing fairly well thus preventing a withdrawal of effort by all those participants self-doubt.

17 In the studies presented here, no attempt was made to make the amount of effort either public or private. Participants did not know that the computer was recording how much they were practicing, so in some sense the effort may have been private. However, the experimenter would have a general idea of how long the participant practiced based on how long he or she took doing the task. It is unclear then whether participants expected their effort expenditure to be private or public.

18 Self-handicapping may still appear in private in that one might want to maintain the image of competence to oneself. In other words, self-handicapping might be done for intrapsychic rather than interpersonal reasons.