

City University of New York (CUNY)

## CUNY Academic Works

---

Student Theses

Baruch College

---

1-1-2013

### The relationship between self-perception and external factors : self-efficacy and self construals

Sara Dowd  
*Baruch College*

[How does access to this work benefit you? Let us know!](#)

More information about this work at: [https://academicworks.cuny.edu/bb\\_etds/15](https://academicworks.cuny.edu/bb_etds/15)

Discover additional works at: <https://academicworks.cuny.edu>

---

This work is made publicly available by the City University of New York (CUNY).  
Contact: [AcademicWorks@cuny.edu](mailto:AcademicWorks@cuny.edu)

**The Relationship between Self-Perception and External Factors: Self-Efficacy and Self-Construals**

By: Sara Dowd

Submitted to the Committee of Undergraduate Honors at Baruch College of the City University of New York on April 30<sup>th</sup>, 2013 in partial fulfillment of the requirements for the degree of Bachelor of Arts in Psychology with Honors.

---

Professor Daniele Artistico  
Faculty Sponsors

---

Professor Mindy Engle-Friedman  
Departmental Honors Committee

---

Professor Angela Pinto  
Departmental Honors Committee

## Table of Contents

Abstract.....	3
Introduction.....	4
Method.....	16
Results.....	26
Discussion.....	30
Figures.....	35
Appendix.....	36
Acknowledgments.....	42
References.....	44

### Abstract

The objective of this thesis is to fill an extant gap in the literature on self-efficacy, or one's perception of one's ability to perform a specific task, and its relationship to the two types of self-construals. A self-construal refers to how individuals perceive themselves with respect to a particular group, class, organization, or more generally stated, community. People with an independent self-construal tend to focus on the "I", whereas people with interdependent self-construal prefer to think in terms of "We" with respect to a community (Markus & Kitayama, 1991). I primed 36 participants using scenario tasks that were found to foster either an independent self-construal mindset or interdependent self-construal mindset during a preliminary study and tested their self-construal level using the individualism-collectivism scale (Singelis, 1995). Levels of self-efficacy for a puzzle task were then measured by asking participants to self-report how confident they were in their ability to complete each of the five brain-teasers they were given. Participants were also randomized to a high or low anchor statement. The anchor statements were used to give the participants a point of reference by telling them that most people who had previously attempted the puzzle tasks either had been successful at completing all five or hadn't been successful at completing all five. I first hypothesized that self-construal types would affect self-efficacy level. Results showed that independent self-construal participants who were given a high anchor statement self-reported significantly higher self-efficacy scores for the puzzles ( $M=46.33$ ,  $SD=8.09$ ) than interdependent self-construal participants who were also given a high anchor statement ( $M=34.2$ ,  $SD=16.36$ ,  $p=.024$ ). This finding indicates a relationship between self-construal and self-efficacy and suggests that further research should be performed to examine the possible implications of this relationship. I also hypothesized that self-construal type would affect task performance and persistence however, no significant effect was found. Limitations and further directions of research are discussed.

## Introduction

Self-efficacy, or one's perceived ability to accomplish a designated behavior (Bandura, 1977), predicts persistency on tasks that require sustained cognitive effort (Bandura & Cervone, 1983, 1986; Cervone & Peake, 1986). Self-efficacy research originated to explain people's ability to perform challenging behaviors. Such behaviors were found to be influenced by the person in question's observation of other people's successes or failures (Bandura, 1977). Self-efficacy is part of the Social Cognitive Theory; in that individuals with a higher level of self-efficacy are more likely to imitate a model's behavior compared to the less efficacious individuals (Bandura, 1986). Bandura found that self-efficacy can be enhanced by witnessing the success of other individuals (1977). One's self-construal is formed either by using others as a tool for comparison or by using others to define themselves as part of one group or another (Markus & Kitayama, 1991). Both self-efficacy and self-construal are perceptions of the self. However, they do not solely depend on introspection and actually rely heavily on the observation and consideration of other individuals, which is a key link that indicates that they are actually interrelated. This thesis seeks to support the conceptual idea that there should be a relationship between one's self-construal and their level of self-efficacy.

Understanding the interaction between self-construal and self-efficacy is important because, as I will discuss in-depth later on, high levels of self-efficacy have been shown to facilitate task successes and overall psychological wellbeing. Therefore, insight about what elements enhance self-efficacy is valuable and applicable to a wide variety of situations. Accomplishing tasks in a multicultural environment, for example, might be an example of a situation particularly relevant to this thesis because self-construal is often discussed in a cultural context (Markus & Kitayama, 1991).

Self-efficacy and self-construal have been examined together in earlier research. For instance, a study on cultural differences and self-efficacy's effect on coping with job demands by Schaubroeck et al. (2000) used bank tellers from Hong Kong to represent their interdependent sample and bank tellers from America to represent their independent sample. China has been found to be a collectivist society, which means that its citizens typically display an interdependent self-construal and America has been found to be an individualistic society, which means that its citizens typically display an independent self-construal (Markus & Kitayama, 1991). Their sample age mean was 24.8 years old (89% female and 11% male). Job control, job self-efficacy, job demands, and psychological symptoms such as anxiety and depression were all measured by the same scales which were sent to the 556 participants, 436 surveys were returned (207 from Hong Kong and 229 from America). Their results found that a higher perception of job control alleviated the effects of job demands in regards to the psychological symptoms measures for the American tellers with high job self-efficacy but aggravated the effects of job demands on American tellers with low self-efficacy. However, in the Hong Kong sample, the three way interaction between job demands, job control, and job self-efficacy did not predict effects on psychological symptoms (Schaubroeck et al., 2000). This study suggests that self-construal types can affect the way in which self-efficacy works because self-efficacy was found to mediate the effects of job demands on psychological factors for independent self-construals, depending on perception of job control. However, it did not have that affect for interdependent self-construals. But in this study, self-efficacy and self-construal work in congruence with other factors and both self-efficacy and self-construal types serve as independent variables. Prior research has not yet investigated how self-construal directly affects self-efficacy.

### *Self-Efficacy*

Perceived self-efficacy is context-driven. That is, an individual's perceived self-efficacy is not consistent across all domains (Bandura, 1997). Therefore, there are intraindividual self-efficacy variations as well as interindividual self-efficacy differences. For example, an individual who has a high self-efficacy for academic tasks does not necessarily have a high self-efficacy for social situations. These are intraindividual differences (interindividual differences are variations between two or more individuals). Variations in levels of self-efficacy within a person across different domains indicate that the milieu must also have an effect.

Self-efficacy is an important mediator of cognitive performance. Bandura (1986) stated that self-efficacy affects how successful an individual will be at completing a task or achieving a goal. For more than three decades, there has been substantial research performed which supports these ideas, some of which will be explained in further detail in this section and in the next (Bandura, 1997 for an overview). Furthermore, it has been found that people who perceive themselves as highly efficacious, those who score high on measures of self-efficacy, tend to set goals to increase their motivation (Bandura & Cervone, 1983, 1986) and be persistent on tasks (Cervone & Peake, 1986). An individual who exhibits low levels of self-efficacy is more likely to utilize tactics to avoid a problem instead of persisting until they find a solution because they do not feel confident in their abilities (Bandura, 1977, 1989). A high level of self-efficacy means that an individual is more confident in their ability to successfully complete a task or solve a problem. Data from specific studies on self-efficacy and problem solving success support Bandura's theories and will be discussed in greater detail in this section.

A research study by Artistico, Cervone, and Pezzuti (2003) examined the influence of age on participants' levels of problem solving self-efficacy for a variety of age-specific problems. The researchers found that each of the two age groups, young adults (20-29) and older adults (65-75) exhibited higher levels of self-efficacy for tasks that were ecologically relevant to the participants' stage of life. Specifically, young adults had higher levels of self-efficacy for problems that were relevant to their age group (20-29), for example, answering a difficult question on an exam. Similarly, older adults (60-75) were found to have higher levels of self-efficacy for older-adult problems, for example, initiating a conversation about an adult offspring's problematic lifestyle choices. These findings indicate that self-efficacy is not simply affected by biological traits, like one's fluid intelligence, but is also influenced by the environment or the type of problem and its relevancy or familiarity, whereby the role of crystallized intelligence is salient. In other words, one's natural ability to solve problems creatively, fluid intelligence, does not necessarily predict one's confidence in their ability to solve a problem. The domain of the problem, whether it was applicable to young or older adults, and the participants' experience with those problems due to their age, their crystallized intelligence, was found to be significant.

Although self-efficacy varies within a person depending on the domain of the task in question, a study by Zajacova (2005) found that the effect of a specific self-efficacy perception can have a substantial effect on overall health and wellbeing. Zajacova's (2005) study on 107 college freshman (27.1% male and 72.9% female) at a City University of New York College with a mean age of 20.7 years ( $SD= 3.8$ ) focused only on academic self-efficacy but was able to extend the results to another domain. They used an academic self-efficacy scale ( $M= 6.7$ ,  $SD= 1.7$ ), which was created by using parts of the Academic Milestones Scale (Lent et al., 1986) and



the College Self-Efficacy Inventory (Solberg, O'Brien, Villareal, Kennel, and Davis, 1993). They also used a stress scale which was an 11-point likert scale that asked participants to rate how stressful they found activities that students who were attending the study's college but not participating in the study listed as stressful. ( $M=4.6$ ,  $SD= 1.7$ ). Finally, they also used the participants' first year average GPA ( $M= 2.6$ ,  $SD= 1.0$ ). The data showed academic self-efficacy to be a good predictor of GPA (grade point average), with students who displayed high levels of self-efficacy in academic settings having earned the higher GPAs. In the same study, only academic self-efficacy levels were measured but the results found trends that transcended the participants' scholastic proficiency. For example, the research also found that high levels of academic self-efficacy were negatively correlated with stress levels (Zajacova, 2005). The relationship shows that although self-efficacy is measured in a contextualized manner, domain-specific efficacy scores can affect other variables. In this case, academic self-efficacy was relevant to stress levels.

Self-efficacy's ability to predict GPA scores indicate that self-efficacy does not only impact the realm of cognition. It also has the ability to empirically impact behavior. In the case of the Zajacova (2005) study, having a higher level of self-efficacy meant that a student actually performed better in their classes. The mechanisms involved in self-efficacy's effect on behavior are outlined below.

#### *Self-Efficacy's Ability to Affect Behavior*

Bandura stated that, "expectations of personal efficacy are derived from four principal sources of information: performance accomplishments [or mastery experience], vicarious experience [or social learning], verbal persuasion, and physiological states [or arousal]"

(Bandura, 1977). Bandura's broader theory, his Social Cognitive Theory, explains that human development and behavior rely on and affect self-efficacy. It describes the significance of observation in regard to personality development and the learning process. According to the Social Cognitive Theory, an individual learns by observing what others will and will not do and then choosing whether or not to imitate their behaviors (Bandura, 1986). This decision is influenced by self-efficacy; a person with high self-efficacy is more likely to attempt to imitate a model. Furthermore, successful vicarious experience, or witnessing a successful model can increase self-efficacy and ultimately lead to a more successful performance. Parent & Fortin (2000) randomly split 56 male patients undergoing a coronary artery bypass graft surgery into a control group (n=29) and an experimental group (n=27). The control group had a mean age of 55.9 years (SD= 7.9) and the experimental condition had a mean age of 57.6 years (SD= 7.4). The experimental group met with volunteers who had recovered from the same surgery before their own surgery and during the recovery time, they were given a vicarious experience. The volunteers told the patients about their ability to be active and commitment to a healthy lifestyle after they underwent surgery. Participants in the control group followed a standard procedure of recovery without meeting with the volunteers. Participants in the experimental group reported significantly higher levels of self-efficacy (M=7.5, SD= 2.1) for daily life activities, walking, and climbing stairs than the control group (M=5.4, SD= 1.7) five days after the surgery. They also self-reported higher levels of performing these activities at four weeks after surgery than the control group (Parent & Fortin, 2000). The use of successful models increased patients' self-efficacy which made them more likely be more active after their surgery than those in the control group.

Just as vicarious experience has been found to affect self-efficacy; anchoring heuristics by which comparisons can be made can also impact self-efficacy. An anchoring heuristic is a reference point that primes people to adjust their expectations or perceptions accordingly (Tversky & Kahneman, 1974). For example, suppose that a jar of marbles is shown to two groups of people. The first group is first asked if they think if there are more or less than 1000 marbles in the jar. The second group is asked if they think if there are more or less 100 marbles in the jar. According to the theory, when asked to come up with a final estimate for the amount of marbles in the jar, the first group is more likely to estimate a larger number. By drawing upon this idea, Cervone and Peake (1986) experimentally demonstrated that self-efficacy can be influenced by “anchoring” a mental representation of the task to a level (easy or difficult). Thirty-one male and 31 female undergraduate participants were split into conditions that either subjected them to a high anchor statement, a low anchor statement, or no anchor statement and they were all asked to complete either 20 anagrams or 20 cyclic graphs. Participants in the high anchor condition were first asked if they thought they could complete more or less than 18 graphs. Participants in the low anchor condition were first asked if they thought they could complete more or less than four graphs. After this comparison question, all participants in either the high or low anchor conditions were asked how many of the 20 graphs they believed they would be able to successfully complete. Participants in the no anchor condition were only asked how many of the 20 graphs they believed they would be able to successfully complete. Self-efficacy was measured by the amount of graphs participants guessed they would be able to successfully solve. Researchers found that if individuals were given a high anchoring heuristic, their perceived self-efficacy was higher ( $M=12$ ) than if they were given a low anchoring heuristic ( $M=8.25$ ) or no anchor statement ( $M=10.14$ ). The study also found that participants in

the high anchor condition persisted on the tasks for longer and successfully complete more of the puzzles than those in the low anchor condition, which mirrored the self-efficacy results between the anchor conditions (Cervone & Peake, 1986). Thus, participants who were given a high anchor statement reported higher self-efficacy scores and were also more persistent and ultimately, more successful than participants who were given a low anchor statement or no anchor statement at all.

As seen in previously discussed studies (Zajacova, 2005; Parent & Fortin, 2000; Cervone & Peake, 1986), self-efficacy is a good predictor of how successful an individual will actually be. For another example, in one of the aforementioned studies on problem solving between younger and older adult populations, a behavioral measure was used to determine if there was a correlation between self-efficacy and actual performance on tasks (Artistico et al., 2003). Subjects were given a series of everyday problems that were relevant to both young adults and older adults. These problems were derived during a preliminary study which asked two groups of people how often they were faced with a variety of 91 questions. The two groups each had 50 individuals (25 men and 25 women). One group, the young adult group, had a mean age of 25.08 years ( $SD= 2.09$ ) and the other group, the older adult group, had a mean age of 70.44 years ( $SD= 3.36$ ). Problems that were reported to be faced equal amounts by each group, the young adults and the older adults, during this preliminary study, were used in the larger hypothesis-testing study because they were found to be equally relevant to both age groups. These problems included issues such as coping with loneliness and coping with chronic insomnia.

Participants in the larger study were given a self-efficacy assessment and then asked to verbally provide as many solutions as possible to the everyday problems found to be relevant to both age groups. They were told to come up with as many possible solutions to the problem,

even if they would not choose to solve the problem using all the strategies they came up with. Their responses were scored by two middle-aged judges who counted how many solutions each participant came up with that were relevant to the problem and viable. The results showed that there was a relationship between levels of self-efficacy and successful problem solving. Participants who exhibited higher levels of self-efficacy were more likely to come up with more effective solutions to everyday problems (Artistico et al., 2003).

### *Self-Construal*

The concept of self-construal relates to the way individuals think of themselves with respect to a particular group, class, organization, or in general, a community (Markus & Kitayama, 1991). There are two types of self-construal, independent and interdependent. Both self-construals use other people to form their perception of themselves. Those who fall on the more independent side of the self-construal spectrum tend to focus on the “I.” Perception of self for someone who has an independent self-construal is very autonomous and centered around internal thoughts, feelings, and actions. However, independent self-construals do use others as a means of comparison when defining themselves (Markus & Kitayama, 1991). For example, when asked to describe themselves they might say “intelligent” or “athletic” because compared to their cohorts, they perceive themselves as having a particularly high intellectual level or a unique aptitude for sports in contrast to others. Whereas people who exhibit an interdependent self-construal prefer to think in terms of “We,” with respect to a community that they feel they belong to. Their self-perception relies heavily on social roles and intimate relationships with others who are considered a part of the “clan” (Markus & Kitayama, 1991). Interdependent self-construals might describe themselves as “a mother” or “a Catholic” because those social roles play a large role in the way they define themselves. Instead of an interdependent person feeling

intelligent because they feel smarter than their peers in comparison, they might find comfort in their level of intellect because they are part of a successful math team.

Self-construals have been found to be related to emotional, psychological, and a variety of other personal characteristics. For example, a cross-cultural study conducted by Norasakkunkit and Kalick (2002) on a sample of 150 Asian Americans (49 men and 101 women) with a mean age of 23.25 (SD= 5.92) and 135 European Americans (49 men and 86 women) with a mean age of 22.91 (SD= 6.48) suggested that Asians, who are typically more interdependent, exhibit higher levels of emotional distress than European Americans, who are usually more independent. Their findings showed that depression, social avoidance, and distress were directly related to measures of interdependent self-construal but inversely correlated with levels of independent self-construal. That is, participants who had higher interdependent self-construal scores also had higher depression, social avoidance and distress scores. Participants who had higher independent self-construal scores had lower depression, social avoidance, and distress scores.

Self-construal types have also been found to have a profound effect on behavior, as does self-efficacy. For example, Mandel primed 106 undergraduate students to be either independent or interdependent using a previously-tested scenario task and then asked them to complete a questionnaire about their willingness to take certain types of risks (2003). Participants who were successfully primed to be interdependent were more likely to be risk-seeking in their financial choices than those who were had a more individualized perception of self. However, interdependent people were found to be less risk-seeking in social endeavors compared to independent self-construals (Mandel, 2003). These findings suggest that self-construals are an important factor for certain, distinct behavioral patterns. This study could also indicate a

contextualized nature in the way that self-construal works on behavior. Participants were not found to be universally more risk-seeking dependent on their self-construal; their decisions depended on the environment, or the situation they were placed in.

### *Connection between Self-Efficacy and Self-Construal*

The theories and research that have been discussed thus far have established self-efficacy and self-construal type as self-perceptions that rely on the use of other individuals. Independent self-construals use others as a means of comparison while interdependent self-construals define themselves by the social roles they play or intimate relationships they hold (Markus & Kitayama, 1991). Self-efficacy can be enhanced through watching others successfully perform a task, or vicarious experience (Bandura, 1977). Both concepts have also been found to predict behaviors. According to the Social Cognitive Theory, someone with a high self-efficacy is more likely to imitate a model's behavior than someone with a low self-efficacy (Bandura, 1986). An example of self-construal's ability to affect behavior was depicted in the Mandel (2003) study where individuals with an interdependent self-construal were willing to take less social risks but more financial risks than those with an independent self-construal. Both concepts are components of one's self-perception. In addition, while self-efficacy is consistently examined in a domain-specific manner, as illustrated in the Mandel study (2003), the effect of self-construal on behaviors could be contextualized as well. Despite these similarities, the extant literature has not yet examined whether these two concepts are directly related. I propose that the way in which we use others to define ourselves must also impact the way vicarious experiences influence our confidence in our abilities. Thus, the thrust of this thesis is to fill this gap and support my theory that one's self-construal type does affect self-efficacy.

### *Hypotheses*

In sum, research has demonstrated that, the higher levels of self-efficacy for a particular task, the higher probability for success on that task. I would argue (see below) that self-construal theory could inform the predisposition individuals have to process information that is aimed at instilling a higher sense of self-efficacy. An independent self-construal fosters the use of others as a comparison tool (Markus & Kitayama, 1991). Thus, individuals with an independent self-construal more naturally compare themselves to others. Given a high “anchor” statement as a reference point, these participants will adjust their self-perception more agentically and exhibit higher levels of self-efficacy than participants with an interdependent self-construal.

The first hypothesis states that self-efficacy is affected by one’s self-construal. To be more specific, I postulated that in this study, participants with an independent self-construal who were given a successful anchoring statement would have significantly higher levels of self-efficacy than those that displayed an interdependent self-construal, even if they were given the same anchor. Moreover, because previous research (Cervone & Peake, 1986) has shown that a lower anchor as a point of reference predicts lower self-efficacy, participants in the high anchor independent construal will exhibit a higher self-efficacy than those who were primed with a low anchor.

In the present study, self-efficacy will be measured in regards to five puzzle tasks that consistently increase in difficulty. Before they attempt the task, participants will be asked to identify how much confidence they have in their ability to complete each of the five puzzles that they will soon be asked to solve. These self-efficacy scales are the main dependent variables for this hypothesis. Previously mentioned studies or theories suggested that self-efficacy affects task



performance (Artistico et al., 2003; Bandura 1977, 1997; Cervone & Peake, 1986; Parent & Fortin, 2000) and persistence (Cervone & Peake, 1986). Self-efficacy in these studies was found to have a direct relationship with task persistence and successful task performance. Thus, as an extension of the first hypothesis, it is expected that if self-construal type affects self-efficacy, it will also affect task performance and persistence. If the independent self-construal with a high anchor does indeed fosters higher self-efficacy levels, I postulated that as a result, participants in that condition will also persist for longer and perform better when they attempt the five puzzle tasks. The dependent variable for this performance hypothesis was measured by scoring each puzzle between zero and five. If participants got the puzzle correct, they automatically got a score of five for that puzzle. If they persisted until the end of their allotted time, they also received a five. If they did not get the right answer and asked to move on more quickly, they were given a score relative to the amount of time they spent working. For example, if a participant worked for two minutes before asking to move on and did not get the right answer, that participant would get a two for that puzzle. This dependent variable allows for a measure of both persistence and task success.

## **Method**

### ***Study 1: Scenarios Development and Validation***

The purpose of study 1 was to validate the independent and interdependent scenarios that would serve as the self-construal primes in the larger study. It was approved (#12-01-002-0131) by the Institutional Review Board (IRB) in December, 2012 and was completed in January, 2013.

### **Participants**

Participants were recruited via an online solicitation email. They were told that the study would take no longer than a half hour of their time, that it was an online survey and could be completed anywhere they felt comfortable, and that they would be assisting a Baruch College Undergraduate student complete an honors thesis. The only requirement was that subjects had to be at least 18 years old to participate. The average age of the 55 participants (24 males and 31 females) was 21.71 years ( $SD= 2.22$ ).

### **Procedure**

Individuals who responded to the email solicitation were randomly sorted into two groups, independent, which would receive the independent priming scenario and interdependent, which would receive the interdependent priming scenario. The online survey program, Qualtrics, randomly assigned an ID number to each participant to protect anonymity. After reading and electronically signing the consent form, they continued to complete the rest of the study online.

The independent scenario, which was written to create a sense of autonomy (see Appendix A) used the pronouns “me” and “I” and only used the possessive adjective “my.” The interdependent scenario, which endeavored to instill a feeling of camaraderie and interconnectedness (see Appendix B) used the pronouns “we” and “us” and the possessive adjective “our.” All subjects were initially given instructions on how to read their passage. They were told that they should read the passage as if they were a part of the story and as if the sequence of events they were reading were taking place at that moment. They were also asked to consider what they might be feeling, thinking, smelling, or hearing as if they were actually the protagonist of the story as they read. Participants then read either the independent scenario or interdependent scenario, depending on which condition they were placed into. After they read

the scenario, they all moved on to the next page of the online survey which provided them with the scenario for a second time so that they could refer back to it and three open-ended questions. These questions asked what sort of tasks the scenario described, if they felt they had worked as an individual or as a group on these tasks, and what strategies they would employ if they were to find themselves in the same situation again. If participants wrote that they worked as an individual and listed strategies for the future that entailed working alone or competing against others, they were graded as having responded in accordance with their condition. If participants wrote that they worked as a team and listed strategies for the future that involved working harmoniously with others, they were graded as responding interdependently. Finally, they were asked simple demographic questions.

### ***Results for Preparation Study***

#### *Statistical Analyses*

Initially, I simply determined the percentage of participants who responded to the dependent variables, the three open-ended questions, in accordance with their condition. I then calculated the number of participants who were measured as responding independently or interdependently in each condition. I then performed an independent samples t-test to illustrate that more participants in the interdependent group would approach the tasks from a communal perspective than participants in the independent group and vice versa.

#### *Scenario Prime Effectiveness*

Results showed the prime manipulation to be effective. In the interdependent condition, 85% of participants agreed that they felt they had acted as “part of a team” and 89% of participants in the independent condition reported that they felt they acted as “an individual.”

When asked what strategies they would employ if they were to find themselves in a similar situation, 85% of interdependent participants and 75% of independent condition participants wrote strategies that were relevant to their condition type. For example, interdependent participants often wrote answers such as “I would invite more people to be a part of my team and work on communicating better.” Participants in the independent condition were more likely to say they would employ tactics such as “be more reclusive and be more competitive” ( $t(53) = -5.52, p < .001$ ). Collectively, only 20% of participants wrote strategies that were not in accord with their scenario.

These findings showed that the scenarios successfully portrayed situations in which participants felt that they were being either individualistic or communal, depending on the condition. Furthermore, they also primed participants to look for solutions that required them to be either autonomous from others or involved them working with others, again, depending on condition. Participants in the independent condition were more likely to approach the hypothetical future task from an independent perspective and those in the interdependent condition were more likely to employ teamwork tactics. Therefore, these priming scenarios were used to create the self-construal independent variables (interdependent self-construal and independent self-construal) for the larger study’s conditions.

### ***Study 2: Hypotheses Testing***

The larger study (#13-03-022-0131) was approved by the Institutional Review Board (IRB) in March, 2013. I began and finished collecting data during the last three weeks of the month.

### **Participants**

Undergraduate students from Baruch College (City of New York) were recruited for this study through the use of an online research pool system, SONA. Participants who completed both of the two sessions received two credits towards the fulfillment of their class research requirement. Students self-selected the study from several other research options. The only requirements were that students had to be enrolled at Baruch College, be over the age of 18, and could not have participated in Study 1 (Materials Preparation Study). Three hundred students completed the session 1 online survey but only 54 of those participants signed up for session 2. This difference in the number of participants is likely because session 1 consisted of an online questionnaire that participants could complete from home. Although the SONA solicitation indicated that it was a two-part study and students were encouraged to participate in both sessions, they could not be required to do so. They received .5 credits for completing the session 1 online survey whether or not they signed up for or participated in session 2, which had to be completed at a computer lab within Baruch College at a designated time. Data from session 1 and 2 were being collected simultaneously for two weeks in March, 2013. To sign up for session 2, participants had to have already completed session 1 at least 24 hours prior.

Of the 54 participants that completed session 1 and 2, only 36 sets of data were analyzed. Nine sets of data were excluded from the analyses because during session 1, participants were asked to choose an identification code to remember for session 2; those nine participants did not remember the correct identification code when they arrived at session 2. I felt that having participants choose their own identification code was the best way to protect their identity and anonymity while still being able to match up their data sets. The session 1 questionnaire reminded participants to remember or write it down their identification code both at the start and conclusion of the survey. If they still did not, I could not match up their data sets; hence, the

omission of those nine data sets. In regards to the second exclusion criterion, a question in the middle of the session 2 survey asked the participants to recall a simple percentage that appeared on the previous page that they had just been asked to read. Participants who did not type the correct percentage were also not included in the analyses because this indicated that they were not attentively reading. This percentage was a part of the anchor statement, which I will explain in the measure section. There were two different anchor statements, high or low, and participants read one or the other depending on the condition. It was critical for participants to have actually read this percentage; otherwise the conditions were not really distinct from each other. An additional nine participants were excluded for writing the wrong percentage for their condition. The 36 participants used in the analyses had an average age of 21.81 years ( $SD=3.99$ ).

## **Materials and Measures**

- 1) The same scenario primes (Appendices A and B) that were previously discussed and used in Study 1 (Materials Preparation Study) were also used for Study 2 (Hypothesis Testing). Study 1 was completed in January 2013 and the participants for Study 2, which was completed in March 2013, were not allowed to have previously participated in Study 1 to make sure the participants were seeing the scenarios for the first time. Participants were asked to read either the independent scenario or the interdependent scenario, depending on their condition.
- 2) Self-construals were determined using the 32 question Singelis (1995) Individualism-Collectivism Scale (Appendix C). This was measured during both the session 1 online

questionnaire and the session 2 in-person study. The purpose of repeating this measure was to see if the participants' baseline self-construal (their session 1 responses are called their baseline self-construal because at that point they had not been exposed to any independent variables, the priming scenarios) differed from their self-construal measure in session 2 which was measured after they were subjected to the independent or interdependent scenario prime. The Singelis Individualism-Collectivism scale was created to measure how individualistic or collectivistic a person is by asking how strongly one agrees or disagrees with the 32 statements on a 7 point Likert scale. Individualism and collectivism are cultural terms that are related to independence and interdependence, respectively. That is, an individualistic society (such as United States) fosters more independent self-construals and a collectivistic society (such as China) foster more interdependent self-construals (Markus & Kitayama, 1991). The Individualism-Collectivism Scale was used as the self-construal measure because its questions are broader than the Self-Construal scale, which includes specific hypothetical scenarios. For example, the Self-Construal scale asks how likely it is that one would "give up your seat for a professor" (Singelis, 1994, p. 585). The Individualism-Collectivism Scale is longer and more abstract in nature which makes the details of it less likely to be remembered by participants between session 1 and 2. Participants who scored higher overall on the individualism points were identified as having an independent self-construal and participants who scored higher overall for the collectivism points were defined as interdependent.

- 3) Five puzzles, or brain teasers, were given to participants on pieces of paper which allowed them to be as creative with their attempts as possible if the puzzle required

imaginative strategies (Appendix D). For example, the final puzzle was a supposedly cyclic graph and their task was to trace over the lines of the graph without lifting their pencil or retracing any of the lines. This is not actually possible to complete unless one decides to go beyond the lines that are supposed to be traced and create additional lines. Participants were told that they could spend at most five minutes on each puzzle but that they did not have to spend the entire five minutes on a particular puzzle. Research Assistants recorded the amount of time each participant spent on each puzzle.

Performance on these puzzles was measured by a single score that served to represent the participants' willingness to persist and their task performance. I scored each of the puzzles on whether or not the solution was found without knowing which condition the papers that I was grading belonged to. Each puzzle was graded out of five points so that the highest possible combined score for all five puzzles was 25 points. If the participants successfully completed the puzzle, they received five points. There were no partial points given for correct answers, they either got the puzzle correct or they did not. They also received five points if they were willing to persist for the entire five minute time period and had to be asked to move on by a Research Assistant. If they asked to move on before the time limit and did not find a solution, they were graded based on the amount of time spent attempting the task. For example, if the participant stopped working at three minutes and did not find the right answer, they would receive a score of three for that puzzle. Participants were not told that they were being graded or timed. The total of the scores participants received on each of the five puzzles was their total performance score. This performance measure was used as the dependent variable for the second hypothesis



which seeks to identify whether self-construal types affect performance success and duration of persistence.

- 4) Self-efficacy for each puzzle was measured before the participants attempted the puzzles using Likert scale questions. Subjects were told that the five puzzles would get progressively more difficult and were asked to rate their confidence in their ability to complete each of the five puzzles on a scale from 0 to 10. These were created using Bandura's "Guide for Constructing Self-Efficacy Scales" (Bandura, 2006). These five scores were added up to get a total self-efficacy for puzzles score for each participant. This score was used as the dependent variable for the first hypothesis.
- 5) A short demographic questionnaire that asked participants for their age and gender was given at the end of the session 1 online questionnaire.

### **Conditions**

Participants who attended session 2 of the study (after completing session 1 on their own time) were randomly assigned to one of four conditions, independent self-construal with a high anchor, independent self-construal with a low anchor, interdependent self-construal with a high anchor, and interdependent self-construal with a low anchor. The two independent groups were given the independent scenario prime to read and the two interdependent groups were given the interdependent scenario prime to read. The high anchor statement that participants in the interdependent high and independent high conditions were given was, "90% of people who have previously attempted these puzzle tasks were successfully able to complete all five." Participants in the interdependent low and independent low conditions were given the low anchor statement, "10% of people who have previously attempted these puzzle tasks were successfully able to complete all five." These statements serve as

representatives of an “external” element or reference point. In relation to the Social Cognitive Theory, they replace the “model” which the subjects would attempt to “imitate,” by endeavoring to solve the puzzles themselves or the vicarious experience that similarly affects self-efficacy. These anchoring heuristics were necessary because the connection between self-efficacy and self-construal comes from the fact that they are self-perceptions that rely on the evaluation and use of other individuals. Our hypothesis predicts that these anchors will work on the two types of self-construals differently and therefore produce different levels of self-efficacy across the four conditions.

### **Procedure**

The larger study was administered in two parts, session 1 and session 2. Subjects who participated in session 1 first read and signed an electronic consent form and were then asked to complete an online questionnaire which included the Individualism-Collectivism scale and demographics.

Participants had to have completed session 1 at least 24 hours before signing up for session 2. They began session 2 by reading and signing out another electronic consent form and then moving on to read either the interdependent scenario or the independent priming scenario, depending on their condition (Appendices A and B). Subsequently, participants all completed the Individualism-Collectivism Scale. This scale was given to participants during session 1 and session 2 so that self-construals could be measured before and after the priming scenario. This way, I could see what participants’ baseline self-construal was and identify whether or not the prime was effective. In other words, if a participant had an independent self-construal (or interdependent) and was placed into an interdependent condition (or

independent) I wanted to determine if the prime altered their responses to the Individualism-Collectivism Scale. I used the session 2 Individualism-Collectivism measure to determine which self-construal mindset participants associated with while responding to the dependent variable measures, which were the self-efficacy questions and the puzzle tasks. Next, each participant was told that they would soon have to work on five brain teaser puzzles, which would get progressively harder. Then they were given either the high anchor statement or the low anchor statement, dependent upon their condition. Afterward, they were given the five self-efficacy scale questions which asked about their confidence in their ability to complete each of the five puzzles. Finally, they were actually given the five puzzles to attempt. Their written work on these puzzles was graded and used as the performance measure. Participants were limited to five minutes per puzzle and were observed by the Research Assistant, who kept track of the amount of time spent on each puzzle.

## **Results**

The 54 original participants were distributed fairly evenly across the four conditions, with either 13 or 14 participants in each group. The two independent groups combined (independent high anchor and independent low anchor) had 27 participants and the two interdependent groups combined (interdependent high anchor and interdependent low anchor) had 27 participants as well. However, after excluding participants for not being able to recall the anchor statement or for forgetting their participant identification code from session 1, the sample was left with 14 participants in both independent groups combined and 22 participants in both interdependent conditions combined.

To make sure these groups actually represented independent and interdependent individuals, I computed their scores from the Individualism-Collectivism scales from session 1

and session 2. All 14 participants who were placed in the independent conditions scored higher in total on the individualism points of the scale than the collectivism points during the session 2 assessment, which was given after they were exposed to the prime. However, three of these participants had originally scored as more collectivist during their session 1 responses, meaning that the independent priming scenario was effective. Of the 22 participants who were randomly placed into the interdependent condition, only 11 actually scored higher on the collectivism points during their session 2 self-construal assessment. Nine of these participants had scored as interdependent during session 1 as well and two of these participants were originally identified as independent but responded as interdependent during session 2 after they were exposed to the interdependent prime. That left 11 participants who were randomly placed into an interdependent condition but had a baseline independent self-construal that was not affected by the prime. To reiterate, this meant that when these participants completed the Individualism-Collectivism Scale during session 1, they exhibited a baseline independent self-construal. When they came to the computer lab for session 2, they were randomly placed into an interdependent self-construal condition. During session 2 they read the interdependent self-construal prime scenario and completed the Individualism-Collectivism Scale again but they still scored as an independent self-construal. Because this thesis is concerned with the effect of self-construals on the self-efficacy and task performance dependent variables, these 11 participants were analyzed as part of the independent groups because that is the self-construal they identified with when they took the Individualism-Collectivism Scale during session 2. Therefore the groups that were used in the analyses had 25 participants in independent conditions (15 in the independent with a high anchor condition and 10 in the independent a low anchor condition) and 11 participants in

interdependent conditions (5 in the interdependent high anchor condition and 6 in the interdependent low anchor condition).

### *Statistical Analyses*

To test the hypotheses that the anchor statement and self-construal variables has a significant effect on self-efficacy level and also has a significant effect on task performance, two types of Analysis of Variance (ANOVA) tests were conducted. A 2X2 ANOVA was conducted for each of the two hypotheses to examine if each of the independent variables' (high or low anchor and self-construal type) effect on the dependent variables (either self-efficacy or task performance). The 2X2 ANOVAs also indicate whether or not there is an interaction effect between these two independent variables on the dependent variables. A one-way ANOVA was also performed for the self-efficacy hypothesis to clearly compare the dependent variable across each of the four conditions. This would test the hypothesis that the independent high anchor condition fostered significantly higher self-efficacy levels than the other conditions. Finally, to examine the relationship between self-efficacy and performance with respect to the self-construal and anchor conditions, a separate Pearson product-moment correlation coefficient which assessed the relationship between puzzle self-efficacy scores and performance on the puzzles was computed within each of the four conditions. I expected that these correlations would suggest a positive relationship between puzzle self-efficacy and puzzle performance. In other words, as participants' self-efficacy for the puzzles increased, I postulated that their performance scores would as increase as well.

### *Testing Hypothesis on Self-Efficacy*

Figure 2 shows the comparison of total self-efficacy levels between each of the four separate conditions. Results of this one-way ANOVA revealed significant differences between conditions ( $F(3,32)= 5.230, p=.005$ ). An LSD Post Hoc test revealed that the independent high anchor condition ( $M=46.33, SD=8.09$ ) was significantly higher than the independent low anchor condition ( $M=32.33, SD=6.71, p=.003$ ). The interdependent low anchor condition ( $M=32.33, SD=6.71$ ) was also significantly lower than the independent high condition ( $p=.006$ ). Even though there was a significant difference between the interdependent low and independent high conditions, these variances can be attributed to the anchor variable. In other words, these conditions are likely significantly different because their anchor statements are different, not because their self-construals are different. However, there was also a significant difference between the interdependent high condition ( $M=34.2, SD=16.36$ ) and the independent high condition ( $p=.024$ ). Even when the anchoring heuristic was kept consistent, there was still a difference between conditions.

Figure 1 shows the direct comparison of efficacy levels for the puzzle tasks with respect to self-construal type or type of anchor statement. Results of a 2X2 ANOVA showed a main effect for the anchor factor ( $F(1,32)= 4.379, p= .044$ ) with participants in the high condition reporting significantly higher self-efficacy scores ( $M= 32.72, SD= 2.55$ ) than those in the low anchor condition ( $M= 40.27, SD= 2.55$ ) but no main effect for the self-construal factor ( $F(1,32)= 3.196, p= .083$ ), although it is approaching significance with independent self-construal participants reporting a mean self-efficacy score of 41.04 ( $SD= 10.95$ ) and participants with an interdependent self-construal reporting a mean score of 33.18 ( $SD= 11.43$ ). There was also no significant interaction between the two independent variables, the anchor statements and puzzle self-efficacy scores ( $F(1,32)= 2.481, p= .125$ ). These results indicate that giving the participants

a high anchor resulted in higher puzzle self-efficacy scores. The discrepancy between the 2x2 ANOVA interaction and the main effect per condition will be addressed in the discussion.

### *Self-Efficacy and Performance Hypothesis*

The total puzzle performance score described in the “Materials and Methods” section was used as the performance measure dependent variable. The ANOVA showed no significant main effect for the anchor type ( $F(1,32) = .066, p = .798$ ) with participants in the high condition reporting a mean score of 21.17 ( $SD = 3.75$ ) and those in the low anchor condition reporting a mean score of 21.35 ( $SD = 2.54$ ). There was also no main effect for the self-construal type ( $F(1,32) = .003, p = .960$ ). Participants with an independent self-construal reported a mean of 21.29 ( $SD = 3.13$ ) and those with an interdependent self-construal reported a mean of 21.21 ( $SD = 3.14$ ). Finally, there was no significant interaction between the two independent variables on the total puzzle performance score ( $F(1,32) = 1.192, p = .283$ ).

Finally, there were no significant correlation findings in any of the conditions except the independent low condition ( $r(4) = -.897, p < .015, n = 6$ ). This correlation indicated that there is a strong inverse relationship between self-efficacy and performance in individuals that exhibit an interdependent self-construal and are given a low anchor reference point. This means that in the interdependent self-construal with a low anchor condition, as the participants’ self-efficacy increased, their performance on the puzzles decreased.

## **Discussion**

The results of this thesis showed encouraging evidence for my hypothesis regarding the relationship between self-construals and self-efficacy. My findings indicated that

participants in the independent high anchor condition scored higher on self-efficacy than those in the other conditions (high anchor interdependent, low anchor both independent and interdependent). Therefore, it would seem that self-efficacy is amplified when people see themselves as autonomous from others but are also given a high anchor. Specifically, self-efficacy was significantly higher in the high anchor independent condition than in both the independent low anchor condition and interdependent low anchor condition. To further support that self-construals have an effect on self-efficacy, the participants in the independent high anchor condition also exhibited higher self-efficacy levels than those in the interdependent high anchor condition. This means that there was a significant difference in self-efficacy between conditions with opposite self-construals even though the anchor statement was consistent.

Although preliminary the implications of my findings could be substantial. As discussed previously (see introduction), self-efficacy has been found to affect task success and even overall mental health (Artistico et al., 2003; Bandura, 1986; Bandura & Cervone, 1983, 1986; Cervone & Peake, 1986; Zajacov, 2005). Thus, understanding one's predisposition to self-efficacy is useful. My research shows that such predispositions could be gauged by looking at self-construals; particularly an independent self-construal. Take a young girl who idolizes a famous actress who went to her acting school as an example. My results indicate that she (the young girl) might find herself more confident in her abilities if she does not define herself as someone who attends the same acting school as the famous actress, but instead "celebrates" her independence and use the actress's work as a high anchor by which to judge her own likelihood of career success. Training programs or exercises that help people develop tools to approach tasks from an independent perspective in conjunction with positive reference points could be a pragmatic implication of these data.



The results of the one-way ANOVA found that anchor statements have a significant effect on self-efficacy levels. Unfortunately, the results of the 2X2 ANOVA did not find a significant main effect for the self-construal factor nor for the interaction between self-construals and the anchor heuristic. Therefore, although the one-way ANOVA did find distinctive differences across conditions, my findings did not find definite support for self-construals' direct effect on self-efficacy. The discrepancy between the one-way ANOVA and the 2x2 ANOVA is certainly due to a power issue which stems out from the study limitations. One of the limitations is about the uneven cell sizes in the study. The sizes of the condition groups were vastly different from each other, varying from 15 participants in the high anchor independent condition to 5 participants in the low anchor independent condition. In the future, it will be important to replicate the study with equal groups in order to truly determine the effect self-construals have on self-efficacy.

The results I found in testing the performance hypothesis are not consistent with the previous literature. Self-efficacy has been shown to be related to probability of success so the condition that fosters self-efficacy should also foster goal achievement, which these data did not find. The data did not indicate that neither self-construal type nor high or low anchor statements have any effect on performance type whatsoever. The limitations of the puzzle tasks could be at fault and I would suggest attempting this experiment again with a more reliable performance measure. However, the strong negative correlation in the interdependent low condition should be examined more closely to determine why this relationship exists and is so potent. One possible explanation is that there were only six participants in that condition so it may not have been a reliable finding and more data could have shown different results.

In addition to the uneven cell sizes in the sample, other limitations were considerable in this study. Firstly, there were limitations within Study 1 (The Materials Preparations Study) which tested the effectiveness of the primes. In hindsight, this prime test should have included the Individualism-Collectivism Scale to test whether or not these priming scenarios were actually affecting the participants' self-perception. Although I found that the scenarios predicted either more independent or interdependent problem solving strategies, depending on the condition, the instructions asked participants to read the scenario as though it were happening to them at that moment and the scenarios described either team-working skills or skills related to being autonomous and competitive. Therefore, they may have been answering the questions as though they were still the character in the scenario that they had just read instead of considering what strategies they would actually employ in their own lives. For future studies, I would forego the attempt at priming participants and instead analyze the results of the dependent variable based on their baseline self-construal type.

Another reason for the uneven groups could be due to the data that I had to exclude because participants did not remember their chosen session 1 identification number. Although it is usually the job of the researcher to handle participant identification, this study needed participants' data to be paired up between sessions and this seemed like the best option to protect the participants' identities but it did also result in a loss of valuable data. It should also be noted that the Session 2 study was performed within a two week time period that took place in the middle of Baruch College's "midterm week" and right before the students' Spring Break. This is important because participants were likely to be tired from studying or preoccupied with worries about exams and papers or overly excited about their approaching vacation.

The nature of the performance task also presented challenges. For example, some of the puzzles were accompanied with instructions including one puzzle that asked participants to guide their pencil through a maze with their eyes closed and another asked that they not lift their pencil off the paper as they traced over the lines of a cyclic graph. Although the participants were being watched, there were up to four subjects working per session so I cannot be sure that they all followed the directions exactly. The matter of human error is also important because the time each participant spent on each puzzle was recorded by hand and a simple stopwatch by a research assistant and those times were used for analyses. The smallest time interval used was seconds but these are really only estimates. Discrepancies between seconds could have had an influence on the measures of performance. Furthermore, independent evaluators with strict guidelines would have been better judges of participants' performance on the puzzles.

One final limitation of this thesis's exploration of self-construal's effect on self-efficacy is that self-efficacy was measured only in regards to these puzzle tasks, which is very specific and an activity that participants were asked to complete in solitude. We know that self-efficacy is domain-specific and the effects of self-construal could be similarly contextualized. I suggest and hope to personally examine other domains types of performance measures, for example, a task that requires the use of teamwork or the navigation of a particular social situation.

I suggest and hope to personally examine other domains types of performance measures, for example, a task that requires the use of teamwork or the navigation of a particular social situation.

**Figures**

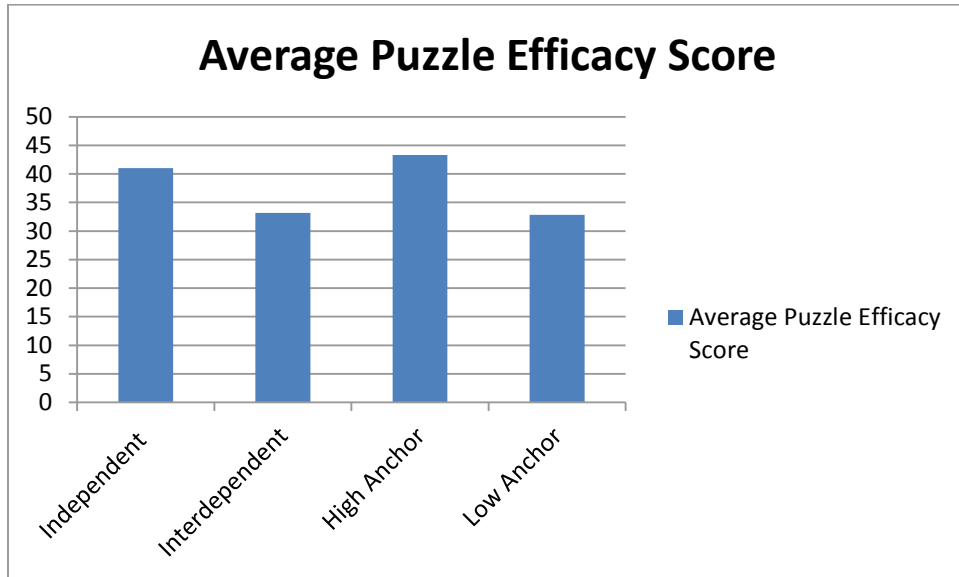


Figure 1. Self-Construal variables and anchor variables in relation to self-efficacy

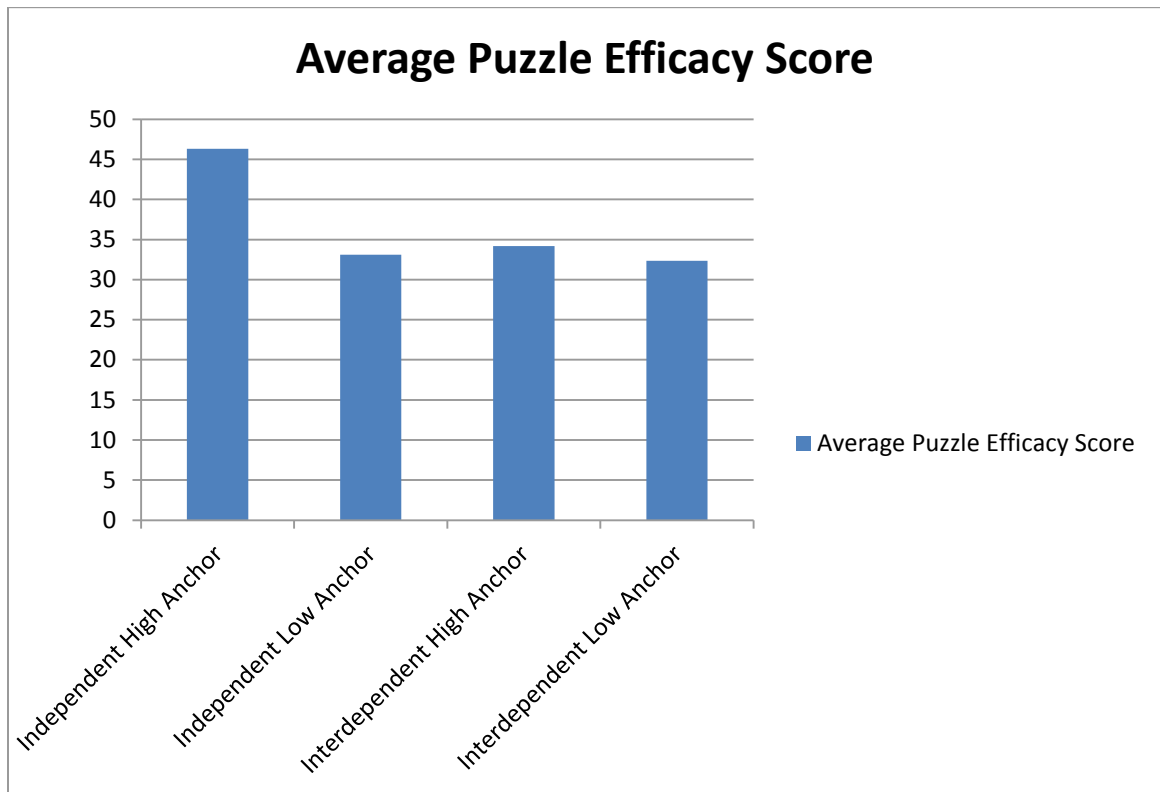


Figure 2. Four experimental conditions in relation to self-efficacy

## Appendix

### *Appendix A. Independent Self-Construal Prime*

Please read the following passage about training for and running in a footrace. As you read, try to place yourself in the story as if it were happening to you right now. Try to experience the images you would see, the sounds you would hear, the scents you would smell, and the emotions you would feel. After you are finished, you will be asked to answer a few simple questions about the passage so be sure to read carefully.

I have eaten too much during the holidays and decide that I need to start exercising. My plan is to sign up for a running race so that I am motivated to workout. One afternoon, my classmate hears me talk about the race and decides to sign up too. Knowing a peer will be running against me on the day of the competition makes me feel the pressure to train hard for the event. Whenever I am tired, the thought of beating my peer pushes me to continue. I start running a bit faster for a bit longer every day. On the day of the race, I feel that all of the long days, strenuous workouts, and hard work have made me truly prepared. I hear the voice on a speaker yell enthusiastically “on your mark, get set” and finally, “go” as I forcefully press off the pavement with the sole of my sneaker and start to quickly run, as I have practiced so many times. Despite the chill in the air, the sweat still manages to drip down my back as the uplifting music pumps through the speakers placed along the track. I begin to pass all the runners who did not train as hard. As the finish line approaches, I see the classmate and I find the will to move faster than ever before. Just in time, I take the final strides and manage to pass the line first, which is a true testament to my hard work and determination.

Again, the task is to think of yourself as the protagonist. The questions are directed to you as if you were a part of the scenario.

- 1) Did your classmate’s decision to run in the race make you work harder or discourage you?
  
- 2) Did you feel as though you were part of a team or an individual?
  
- 3) If you were to decide to run in a race again, what strategies would you employ?



*Appendix C. Singelis (1994) Individualism-Collectivism Scale*

7 point Likert scale from strongly disagree to strongly agree

I often do “my own thing”

One should live one’s own life independently of others

I like my privacy

I prefer to be direct and forthright when discussing with people

I am a unique individual

What happens to me is my own doing

When I succeed, it is usually because of my abilities

I enjoy being unique and different from others in many ways

It annoys me when other people perform better than I do

Competition is the law of nature

When another person does better than I do, I get tense and aroused

Without competition, it is not possible to have a good society

Winning is everything

It is important that I do my job better than others

I enjoy working in situations involving competition with others

Some people emphasize winning; I am not one of them

The well-being of my coworkers is important to me

If a co-worker get a prize, I would feel proud

If a relative were in financial difficulty, I would help within my means

It is important to maintain a harmony within my group

I like sharing little things with my neighbors

I feel good when I cooperate with others

My happiness depends very much on the happiness of those around me

To me, pleasure is spending time with others

I would sacrifice an activity that I enjoy very much if my family did not approve of it

I would do what would please my family, even if I detested that activity

Before taking a major trip, I would consult with most members of my family and many friends

I usually sacrifice my self-interest for the benefit of my group

Children should be taught to place duty before pleasure

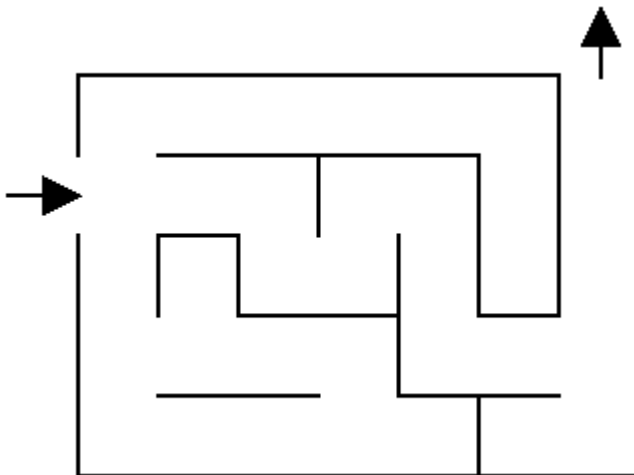
I hate to disagree with others in my group

We should keep our aging parents with us at home

Children should feel honored if their parents receive a distinguished award

#### *Appendix D. Puzzles*

- 1) Below you will see a maze. You may look at it for a few moments but then you will need to close your eyes and guide your marker through the maze with them closed.





- 2) The box below is a tool that can be used to read a sequence of numbers as a sequence of letters.

	1	2	3	4	5
1	A	B	C	D	E
2	F	G	H	I	K
3	L	M	N	O	P
4	Q	R	S	T	U
5	V	W	X	Y	Z

**Example:**

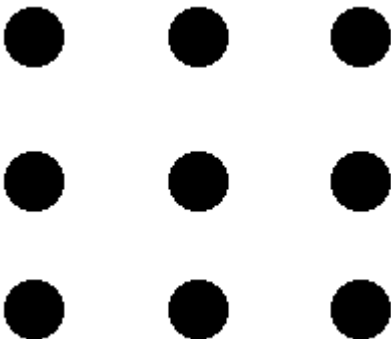
Plaintext: This is a secret message

44232443 2443 11 431513421544 32154343112215

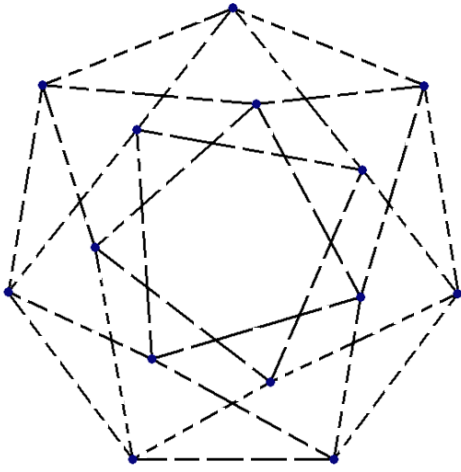
**Please decode the following message:**

35435413233431342354 2443 214533

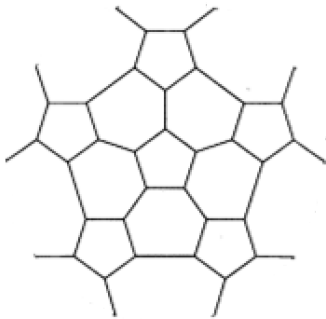
- 3) Please connect the 9 dots you see below using only **four straight** lines:



- 4) Use your marker to trace over the lines of the below graph WITHOUT lifting your marker off of the paper or WITHOUT drawing any lines besides the dotted ones. Once you trace over one line you CANNOT trace over that same line again.



- 5) Use your marker to trace over the lines of the below graph WITHOUT lifting your marker off of the paper. Once you trace over one line you CANNOT trace over that same line again.



## Acknowledgments

It is truly exciting to see my name stand on its own on a project that I am extremely proud of. However, this honors thesis was definitely a team effort that I could not have accomplished alone. I would like to first and foremost thank my amazing mentor who gave me enough room to make my mistakes and get a bit lost, but enough guidance to make sure I always found my way back. Thank you so much Dr. Daniele Artistico; I will forever be grateful for my interest in self-efficacy because it led me to your office. Your knowledge, effort, and unwavering positive attitude were admired and so appreciated throughout this process. This thesis would also not have been possible without Dr. Mindy Engle-Friedman. Aside from the valuable feedback you gave me as a reader, I would not have had the drive to begin this endeavor or the skills necessary to complete it without the constant inspiration you and the Sleep Lab members have provided me with for the past two years. You have impacted my life in so many ways by introducing me to my passion for psychology and research and even more importantly, by encouraging me every step of the way; thank you.

Dr. Angela Pinto's knowledge, feedback, and encouragement was essential to the completion of this thesis. Despite the lack of time and ever-changing internal deadlines, you gave me the comments that I needed to hear while softening the blow with your positive energy. Thank you for being so kind and generous with your time, especially towards the end when anxieties were particularly high. The support of the Writing Center staff, especially Keri Bertino, was quite often the glue that kept my project and me together this year. Even when I was being difficult and running to your office unannounced and in a panic, I never received anything but reassuring smiles and strategic plans of action. On a similar note, I need to thank my friends and fellow thesis writers, everyone involved in Baruch College's Student Life, and

the Baruch Psychology Department. From the staff members to my encouraging and ever-active peers, the only reason I was able to be on campus for so many hours a day researching, analyzing, and writing this year was because all of you have truly made Baruch my home. This thesis and any future contributions I might make to academia as an alumna, are truly testaments to the incomparable education, experiences, and relationships that Baruch has given me.

I would also like to specifically thank Ellen Gunzel and my mother, Betsy Dowd. Without Ellen I think I would have fallen apart the first time my proposal to do this thesis was returned to me back in June. You have been one of the few aspects of my especially tumultuous college career that has remained constant and I owe a lot of any successes I may have to your friendship. Finally, if I had had any other mom in the world I would probably be a lot less ferociously competitive, obnoxiously stubborn, and obsessively ambitious. Turning down the intensity may be something I should consider in the future for the sake of my sanity, but I definitely needed all of those qualities to have ended up where I am today. Thank you for always supporting my crazy goals and helping me reach them. Most importantly, thank you for teaching me to carry on when I fail and constantly increasing my self-efficacy as a subject of some of my vicarious experiences.

## References

- Artistico, D., Cervone, D., Pezzuti L. (2003). Perceived Self-Efficacy and Everyday Problem Solving Among Young and Older Adults. *Psychology and Aging*, 18, 68-79.
- Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, 84(2), 191-215.
- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1989). The concept of agency in social cognitive theory. *American Psychologist*, 44, 1175-1184.
- Bandura, A. (1997). *Self-Efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on Psychological Science*, 1, 164-180.
- Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. *Journal of Personality and Social Psychology*, 45(5), 1017-1028.
- Bandura, A., & Cervone, D. (1986). Differential engagement of self-reactive influences in cognitive motivation. *Organizational Behavior and Human Decision Processes*, 38, 92-113.
- Cervone, D., & Peake, P.K (1986). Anchoring, efficacy, and action: The influence of judgmental heuristics on self-efficacy judgments and behavior. *Journal of Personality and Social Psychology*, 50, 492-501.
- Lent, R. W., Brown, S. D., and Larkin, K. C. (1986). Self-efficacy in the prediction of academic

- performance and perceived career options. *Journal of Counseling Psychology* 33(3): 265-269
- Mandel, N. (2003). Shifting selves and decision making: The effects of self-construal priming on consumer risk-taking. *Journal of Consumer Research*, 30, 30-40.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98(2), 224-253.
- Norasakkunkit, V., & Kalick, S. M. (2002). Culture, ethnicity, and emotional distress measures: The role of self-construal and self-enhancement. *Journal of Cross-Cultural Psychology*, 33, 56–70.
- Parent, N., & Fortin, F. (2000). A randomized, controlled trial of vicarious experience through peer support for male first-time cardiac surgery patients: Impact on anxiety, self-efficacy expectation, and self-reported activity. *Heart & Lung: The Journal of Acute and Critical Care*, 29(6), 389-400.
- Schaubroeck, J., Lam, S.S.K., Xie, J.L. (2000). Collective efficacy versus self-efficacy in coping responses to stressors and control: A cross-cultural study. *Journal of Applied Psychology*, 85(4), 512-525.
- Singelis, T.M. (1994). The measurement of independent and interdependent self-construals. *Personality and Social Psychology Bulletin*, 20(5), 580-591.
- Singelis, T. M., Triandis, H. C., Bhawuk, D. P. S., & Gelfand, M. J. (1995). Horizontal and Vertical Dimensions of Individualism and Collectivism: A Theoretical and Measurement Refinement. *Journal of Personality and Social Psychology*, 4(1), 118-129.

- Solberg, V. S., O'Brien, K., Villareal, P., Kennel, R., and Davis, B. (1993). Self-efficacy and Hispanic college students: Validation of the college self-efficacy instrument. *Hispanic Journal of Behavioral Sciences* 15(1): 80–95.
- Tversky, A. & Kahneman, D. (1974). "Judgment under uncertainty: Heuristics and biases". *Science*, 185, 1124, 1128-1130.
- Zajacova, A., Lynch, S. M., & Espenshade, T. J. (2005). Self-efficacy, Stress, and Academic Success in College. *Research in Higher Education*, 46(6), 677-706.