

The Effect of Perceived Opportunities and Regulatory Focus on Task Performance for  
First- and Continuing-Generation College Students

by

Sarah D. Herrmann

A Thesis Submitted in Partial Fulfillment  
of the Requirements for the Degree  
Master of Arts

Approved July 2014 by the  
Graduate Supervisory Committee:

Virginia S.Y. Kwan, Chair  
Morris A. Okun  
Delia S. Saenz

ARIZONA STATE UNIVERSITY

December 2014

## ABSTRACT

First-generation college students, for whom neither parent has a bachelor's degree, are at an increased risk for dropping out of college compared with their continuing-generation counterparts. This research aims to examine whether varying perceptions of the future may contribute to these differences; specifically, whether presentations of future opportunities with and without a college degree impact academic motivation and performance, and whether this relationship holds for people from different college generation status backgrounds. Additionally, the study explores whether the effect is consistent with regulatory focus profiles—whether someone is motivated to avoid negative outcomes (e.g., prevention orientation) or attain positive outcomes (e.g., promotion orientation). Prevention oriented first-generation students were expected to have increased motivation and performance when asked to contrast the future with and without a college degree, whereas promotion oriented continuing-generation students were expected to have increased motivation and performance by merely thinking about the future with a college degree. Participants consisted of 330 undergraduates from an introductory psychology course. Participants were randomly assigned to presentations of future opportunities with a degree, with and without a degree, or a no-prime control condition. Motivation and performance were assessed using academic motivation and delay of gratification scales and a short anagram task. The proposed hypotheses were not supported; however, important findings emerged from exploratory analysis. First- and continuing-generation college students perceived future opportunities with a college degree similarly, meaning that both first- and continuing-generation students believed that a degree would endow opportunities. Additionally, belief in future opportunities

significantly predicted academic motivation, delay of gratification, and anagram performance; thus, belief in future opportunities is a determinant of academic motivation and performance. Finally, first-generation students' performance varied by belief that a college degree would create future opportunities. Therefore, future interventions to increase performance and retention among first-generation students should emphasize the value of a college degree for future success. This research has implications for the understanding of college generation status, academic motivation, and performance.

## TABLE OF CONTENTS

	Page
LIST OF TABLES .....	vi
LIST OF FIGURES .....	vii
CHAPTER	
1. INTRODUCTION .....	1
Academic Problems for First-Generation College Students .....	2
Future Time Perspective, College Generation Status, and Social Class .....	4
Future Time Perspective and Academic Motivation .....	4
Regulatory Focus and Academic Motivation .....	9
Identity Based Motivation .....	9
Regulatory Focus .....	10
2. THE PRESENT STUDY .....	12
Aims and Hypotheses .....	12
3. METHODS .....	14
Participants .....	14
Design .....	15
Experimental Manipulations .....	15
Future Opportunities Prime Conditions .....	15
Measures .....	17
Regulatory Focus Scales .....	17
Academic Motivation Scale .....	17
Academic Delay of Gratification Scale (ADOG) .....	18

CHAPTER	Page
Performance Task .....	18
Demographics .....	19
Procedure .....	19
4. RESULTS .....	20
Hypotheses Related Analyses .....	21
Hypothesis 1: Contrasts of Future Opportunities Prime and CGS on Academic Motivation, ADOG and Anagram Performance .....	21
Hypothesis 2: Mediation of the Effect of Future Opportunities Prime on Anagram Performance and Effort by Academic Motivation and ADOG .....	23
Hypothesis 3: Main Effect of CGS on Regulatory Focus .....	23
Hypothesis 4: Moderated-Mediation of the Effect of Future Opportunities Prime on Academic Motivation and ADOG by CGS and Regulatory Focus .....	24
Exploratory Analyses .....	24
Perceived Likelihood of Future Opportunities with a College Degree .....	24
Factor Analysis of Perceived Likelihood of Future Opportunities with a College Degree Scale .....	24
Perceived Likelihood of Future Opportunities with a College Degree as a Predictor .....	28

CHAPTER	Page
Comparing Contrast and Reverse Contrast Conditions .....	30
Interaction of Prevention and Promotion on DVs .....	34
5. DISCUSSION .....	38
Findings Pertaining to Hypotheses .....	39
Findings Pertaining to Exploratory Questions .....	41
Perceived Likelihood of Future Opportunities Primes .....	41
College Generation Status and Order Effects .....	42
Regulatory Focus and College Generation Status .....	44
Limitations .....	45
Future Directions .....	46
Implications for Helping FGC Students to be Academically Successful .....	49
REFERENCES.....	51
APPENDIX	
A. STUDY MATERIALS .....	65
B. DEBRIEFING .....	77
C. RECRUITMENT E-MAIL .....	79
D. SUPPLEMENTARY TABLES .....	81

## LIST OF TABLES

Table	Page
1. Breakdown of Participants by Condition and College Generation Status .....	15
2. Correlations Between Dependent Variables .....	21
3. Factor loadings and commonalities based on a factor analysis with a varimax rotation for 12 items from the Perceived Likelihood of Future Opportunities with a College Degree Scale .....	26
4. Perceived Likelihood of Future Opportunities with a College Degree by CGS .....	27
5. Perceived Likelihood of Future Opportunities Without a College Degree by CGS ....	28
6. Means of Academic Motivation by Condition and College Generation Status .....	83
7. Means of ADOG by Condition and College Generation Status .....	83
8. Means of Prevention Focus by Condition and College Generation Status .....	83
9. Means of Promotion Focus by Condition and College Generation Status .....	84
10. Means of Anagrams Correct by Condition and College Generation Status .....	84

## LIST OF FIGURES

Figure	Page
1. Proposed Model .....	14
2. Interaction of Condition and Perceived Likelihood of Future Career Opportunities with a College Degree on Anagram Performance .....	30
3. Interaction of Condition and CGS on Lifestyle Subscale .....	32
4. Interaction of Condition and CGS on Meaning Subscale .....	33
5. Interaction of Condition and CGS on Respect Subscale .....	33
6. Interaction of Promotion and Prevention on Academic Motivation for FGC .....	35
7. Interaction of Promotion and Prevention on Academic Motivation for CGC .....	36
8. Interaction of Promotion and Prevention on Anagram Performance .....	37
9. Interaction of Promotion and Prevention on ADOG .....	37
10. Interaction of Promotion and Prevention on Academic Motivation .....	38
11. Regulatory Focus Profiles .....	48



## The Effect of Perceived Opportunities and Regulatory Focus on Task Performance for First- and Continuing-Generation College Students

In the summer of 1995, after his first year of college, Andy Blevins dropped out. He had taken a summer job in a supermarket warehouse, and was excited to be making some money. He felt more at home around his family and friends, made more money than his parents, and had not been getting good grades at college anyway. “I enjoyed working hard, getting the job done, getting a paycheck,” he said. Ten years later, in 2005, he was working in the same warehouse, and now had a wife and child. He was focused on making ends meet in the present, rather than opportunities for the future. Without a college degree, he said, he felt trapped: “Looking back, I wish I had gotten that degree. Four years seemed like a thousand years then, but I wish I would have just put in my four years” (Leonhardt, 2005).

Many students experience this same dilemma. The high dropout rate among college students is a persistent problem. Based on the latest report from The National Center for Higher Education (2012), the four-year college graduation rate in the United States is 27 percent, and the six-year rate is only 55 percent. This problem is magnified among first-generation college students, who make up an average of 25 percent of incoming freshman. Among this population, a staggering 89 percent of students will drop out of college within six years. In their first year alone, more than a quarter of first-generation college students drop out; a rate four times higher than continuing-generation college students (Engle & Tinto, 2008, p. 2; Ramsey & Peale, 2010).

This thesis examines how perceived future opportunities affect academic motivation, academic delay of gratification, and performance, and whether these

relationships vary by college generation status and regulatory focus, or whether someone is more motivated to avoid negative outcomes or attain positive outcomes. Examining college generation status and regulatory focus as moderator variables may help to identify strategies tailored to subpopulations of students to increase engagement and performance.

Additionally, a more nuanced understanding of mediators of the proposed relationship between future opportunities and task performance is needed. To this end, the current study examines whether the proposed effect of future opportunities on task performance is mediated by academic motivation and academic delay of gratification. In the remainder of this chapter, I review the existing literature on: (1) academic problems for first-generation college students; (2) how future time perspective varies by college generation status; (3) how academic engagement and performance relate to future time perspective; and (4) the relationship of regulatory focus and academic motivation. Then, I examine how perceived likelihood of future opportunities with and without a college degree may affect academic motivation, academic delay of gratification, and task performance.

### **Academic Problems for First-Generation College Students**

First-generation college students are those whose parents' highest education level is less than a bachelor's degree, whereas continuing-generation college students have at least one parent with a bachelor's degree. Continuing-generation college students are more likely than first-generation college students to come from middle or high socioeconomic status backgrounds. In previous research, socioeconomic status has been assessed using perceived rank vis-à-vis others in the social class hierarchy (Adler, Epel, Castellazzo, & Ickovics, 2000; Kraus, Piff, & Keltner, 2011), objective financial wealth

(Drentea, 2000), and college generation status (e.g., Snibbe & Markus, 2005).<sup>1</sup>

First-generation college students receive lower grades, enroll in fewer classes, and have a higher dropout rate than students who have at least one parent with a bachelor's degree (Bowen, Kurzweil, & Tobin, 2005; Housel & Harvey, 2009; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Sirin, 2005; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). Additionally, first-generation college students come from a different cultural background; they tend to have lower incomes (Day & Newburger, 2002), less geographic mobility (Argyle, 1994; Rossi, 2001), more interaction with family (Allan, 1979; Markus, Ryff, Curhan, & Palmersheim, 2004), different parenting styles (Kohn, 1969; Kusserow, 2005; Lareau, 2003), and jobs with limited autonomy (Kohn & Schooler, 1983).

An emerging area of psychological research examines differences between FGC and CGC students. College generation status (CGS) has been shown to influence a variety of domains, including feelings about choice (Stephens, Markus, & Townsend, 2007), aesthetic preferences (Snibbe & Markus, 2005), and concerns about academic fit (Johnson, Richeson, & Finkel, 2011). For these reasons, FGC students are more interdependent compared to their CGC counterparts and may experience a cultural mismatch when they reach college, which puts them at increased risk for academic underperformance, disengagement, and dropout (Markus & Kitayama, 2003; Snibbe & Markus, 2005; Stephens, Fryberg, & Markus, 2012; Stephens, Markus, Fryberg, Johnson, & Covarrubias, 2012).

---

<sup>1</sup> Empirical studies with large, representative samples suggest that these indices are highly correlated ( $r = .42$  for income and education;  $r = .53$  for education and occupational grade, or subjective rank;  $r = .58$  for income and occupational grade; Singh-Manoux, Adler, & Marmot, 2003).

For the purposes of this study, CGS may have the greatest impact on participants' perceptions of future opportunities with a college degree, because FGC students may not have an immediate role model who provides an example of opportunities with a college degree (Gofen, 2009). There is a well-documented and pervasive sense of difference and alienation among FGC students (e.g., Cohen, 1998; Dews & Law, 1995; hooks, 2000; Jensen, 2004; Levine & Nidiffer, 1996; Lubrano, 2003; Nelson, Englar-Carlson, Tierney, & Hau, 2006; Roberts & Rosenwald, 2001; Stewart & Ostrove, 1993; Tokarczyk, 2004; Tokarczyk & Fay, 1993). Which psychological factors increase or inhibit academic motivation for FGC students? How do these factors differ from CGC students?

### **Future Time Perspective, College Generation Status, and Social Class**

Although there has been extensive research on SES differences in future time perspective, recent research has demonstrated that differences in future time perspective extend to FGC and CGC students, such that CGC students are more likely to have a future time perspective orientation than FGC students (Guthrie, Butler, & Ward, 2009). This may explain a tendency for people from different CGS backgrounds to envision a future characterized by varying opportunities that, in turn, might affect how individuals devote time to present activities such as school or work; for this reason, FGC students may focus more on the present than the future.

### **Future Time Perspective and Academic Motivation**

Future time perspective (FTP) has been defined in a variety of ways, but most relevant to the present research is the division of future time perspective into short-term (short FTP) and long-term (long FTP) goal setting behavior. When an individual sets motivational goals in the distant future and develops a long-term behavioral program to

accomplish those goals, they utilize a long FTP (De Volder & Lens, 1982). Participants who utilize a short FTP, on the other hand, tend to set goals in the near future, which does not require behavioral modifications (e.g., Simons, Vansteenkiste, Lens, & Lacante, 2004; see also Klineberg, 1968; Lessig, 1968).

Future Time Perspective is an important construct for understanding motivation (Holman & Silver, 1998; Jones, Banicky, Lasane, & Pomare, 1996; Stratham & Joireman, 2005; Suddendorf & Corballis, 1997; Zimbardo & Boyd, 1999). Studies testing expectancy-instrumentality value theories demonstrate that students with a long FTP have greater motivation than students with short FTP in present activities, such as school performance in pursuit of a degree (Eccles & Wigfield, 2002; Feather, 1990, 1992). Also, there are positive correlations between FTP, perceived importance and instrumentality of schoolwork, and student motivation (De Volder & Lens, 1982; Tabachnick, Miller, & Relyea, 2008). This is consistent with previous work, where affective attitudes toward the future moderated perceived instrumentality of schoolwork, such that instrumentally-motivated students who had a positive impression of the future were more motivated than those who had a negative impression of the future (Van Calster, Lens, & Nuttin, 1987). Therefore, it is important for students to have a detailed and positive vision of the future in order to be motivated at present.

Research by Bandura (1986) demonstrated that proximal goals are more motivating than distal ones. However, individuals with a long FTP are more persistent when working toward a long-term goal and feel greater satisfaction from present goal-oriented actions, compared to those with short FTP (Brickman, Miller, & Roedel, 1997; Husman, 1998; Husman & Lens, 1999; Lasane & Jones, 1999; Lennings, 1991; Miller,

DeBacker, & Greene, 1999; Zaleski, 1987). This also relates to the ability to delay gratification, or resist an immediate reward in pursuit of a larger, distal reward, which is an essential ingredient for academic success. For example, longitudinal research by Mischel (1974; 1981) demonstrated that young children who were able to delay gratification had higher SAT scores and were less likely to have drug problems or be divorced as adults (Mischel & Ayduk, 2011).

Academic delay of gratification refers to students' postponement of immediate opportunities to satisfy impulses in favor of pursuing larger academic goals that are temporally distant but more valuable, such as attaining a degree (Bembenutty & Karabenick, 2004). Students who score highly on the Academic Delay of Gratification scale (ADOG) are more likely to use a variety of strategies for learning, including cognitive strategies such as elaboration, organization, and rehearsal, and are more likely to regulate time and study environments, seek help when needed, and form study groups with peers. Additionally, ADOG significantly mediates the effect of students' self-efficacy on final course grade, such that efficacious students are better able to delay gratification and attain higher course grades as a result (Bembenutty, 2002). This suggests that ability to postpone immediate impulses results in greater long-term success in achieving large, distal goals, such as attaining a college degree.

Future time perspective is generally described as a trait variable, consistent across time (Gonzalez & Zimbardo, 1985; Zimbardo & Boyd, 1999); other research supports this and suggests that merely inducing a future time perspective will not necessarily result in motivational improvements. For example, only thinking about future opportunities (e.g., indulging) without considering the challenges or constraints at present minimizes

the belief that reaching future goals requires effort to overcome obstacles and resist temptation in pursuit of the larger goal (Oettingen & Mayer, 2002). In other words, merely thinking about a positive future does not heighten goal commitment. Studies examining future indulging with both adolescents and adults demonstrate that positive fantasies fail to activate goal-directed action (Oettingen, 2012; Taylor, Pham, Rivkin, & Armor, 1998). In educational psychology, research has demonstrated that students who completed a mental contrasting task (e.g., think about future goals and present challenges) outperform students who only thought about success (Gollwitzer, Oettingen, Kirby, Duckworth, & Mayer, 2011). This suggests that interventions must do more than just inspire participants to think about their positive future, contrary to the tactics embraced by many schools (i.e., posters encouraging positive thought, “Dream it, believe it, achieve it!”; Duckworth, Kirby, Gollwitzer, & Oettingen, 2013).

While research in educational psychology suggests that thinking about a positive future does not necessarily ensure favorable outcomes, another framework—the future self-continuity model—has demonstrated that connectedness to one’s future self minimizes temporal discounting, or the extent to which individuals prefer small, immediate rewards compared to larger, delayed rewards (Ersner-Hershfield, Garton, Ballard, Samanez-Larkin, & Knutson, 2009). The model is rooted in the conception that the self consists of distinct, overlapping selves that vary in terms of connectedness: the greater the perceived temporal distance between selves, the weaker the connection to the future self. When people feel disconnected from their future selves, they show less concern for the future self, which results in less investment at present. Connections to one’s future self are determined by perceived vividness and positivity of the future self.

Research by Hershfield and colleagues (2011) suggests that positivity toward the future self increases retirement saving behaviors. Specifically, participants who had a more positive view of the future set aside more money for retirement, compared to those who did not have positive views of the future (Hershfield & Galinsky, 2011; Hershfield, Goldstein, Sharpe, Fox, Teykelvis, Carstensen, & Bailenson, 2011). These findings are echoed in research from educational psychology, which examine students' optimism as a predictor of academic motivation and performance. A classic study by Teahan (1958) found that students' optimism was related to increased FTP and academic performance (see also Gough, 1952; 1953a; 1953b). More recent research has found that dispositional optimism, or a general positive outlook on life outcomes, is positively related to coping and resilience, as well as academic success (Aspinwall, Richter, & Hoffman, 2000; Chemers, Hu, & Garcia, 2001; Floyd, 1997; Kao & Tienda, 1995; Peterson, 2000; Scheier & Carver, 1987).

Less research has examined academic optimism, or a positive outlook relating to educational settings, but it has been associated with higher cumulative GPA and performance perceptions among college students (Nonis & Wright, 2003). Research by Nes and colleagues (2009) found that academic optimism predicted college retention via GPA, motivation, and adjustment in the college environment (Nes, Evans, & Segerstrom, 2009). Heinonen and colleagues (2006) found that coming from an FGC background predicted lower general optimism in adulthood, suggesting that these environments provide fewer opportunities to develop optimism about the future (see also Bosma, van de Mheen, & Mackenbach, 1999). However, differences in academic optimism have not yet been examined by college generation status. This is relevant for the present research,



because individuals who have vivid and positive perceptions of future opportunities with a college degree may experience increased motivation and performance compared to those who do not.

### **Regulatory Focus and Academic Motivation**

Existing research on academic engagement and motivation tends to focus on the future, and interventions have been implemented to increase academic motivation by increasing participant connectedness and positivity toward their future selves (i.e., Destin & Oyserman, 2009; Duckworth et al., 2013; Oyserman, Bybee, & Terry, 2006; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). *Academic motivation* is defined as an individual's approach, persistence, and interest in academic subjects, the outcomes of which are reflected in grades.

**Identity Based Motivation.** A wide variety of psychological models have sought to explain and target the components of academic motivation (Destin & Oyserman, 2010; Lasane & Jones, 1999; Oyserman, Bybee, & Terry, 2006; Oyserman, Johnson, & James, 2011). One such framework is identity based motivation (IBM), a theoretical model that assumes that the self is made up of diverse parts, with content that is dynamically constructed in a given context (Oyserman, 2009a; 2009b; Oyserman & Destin, 2010). The IBM model proposes that people are more motivated when pursuing behavior that feels identity-congruent, such that students who feel their student identity is congruent with their cultural identity are more motivated to achieve their future goals, or future possible selves (Markus & Nurius, 1986). Possible selves are imagined close or distal future selves, and can be both hoped for or feared selves. While possible selves are envisioned in the future, they derive from past and present representations of the self.

Features of possible selves stem from specific goals and fears, and can be the direct result of past social comparisons (Oyserman, 2009a; 2009b).

The IBM perspective is relevant to the present study because people who have a long FTP, and envision future opportunities, may be more able to envision education-dependent future identities. If, on the other hand, people have a short FTP, it may be more difficult for them to envision a future in terms of education, career, and lifestyle opportunities. Rather, their perceptions of the future may be characterized by the lack of opportunities, such as lower incomes, restricted geographic mobility, and careers with limited autonomy, which may inhibit them from thinking about the future at all (Argyle, 1994; Day & Newburger, 2002; Kohn, 1969; Kohn & Schooler, 1983; Kusserow, 2005; Lareau, 2003; Rossi, 2001).

**Regulatory Focus.** While students may seek encouragement from the experience of accomplished others (Aspinwall, 1997; Buunk, Collins, Taylor, Van Yperen, & Dakof, 1990; Collins, 1996; Taylor & Lobel, 1989; Taylor, Wayment, & Carillo, 1996; Wood, 1989), some may also be motivated by an example set by an unsuccessful other, by showing the path that they should not take in the future (Buunk et al., 1990; Lockwood, Jordan, & Kunda, 2002; Shah, Higgins, & Friedman, 1998; Wood & VanderZee, 1997). Whether a person is motivated by a successful or an unsuccessful other depends on their *regulatory focus*, whether they have a promotion or a prevention focus (Higgins, 1997). A promotion-focused individual aims to succeed, whereas a prevention-focused individual aims not to fail; however, both focuses may be equally motivating. Regulatory focus also increases the tendency to notice and recall information relevant to the success or failure of others (Higgins & Tykocinski, 1992), attunement to emotions related to

pursuit of positive outcomes (e.g., happiness) or to emotions related to failure (e.g., dejection; Higgins, Shah, & Friedman, 1997), and focus on interpersonal strategies geared toward promoting desired outcomes and preventing undesirable outcomes (Higgins et al., 1994).

While promotion focus has been previously explored as a predictor of academic motivation, few researchers have investigated use of a prevention focus to avoid feared possible identities (Higgins et al., 1994). Oyserman and colleagues (2006) posit that this is because attainment of goals in middle class contexts, such as the university environment, is more likely to involve a promotion focus. For example, college students are more likely to be promotion- than prevention-focused (Lockwood, Sadler, Fyman, & Tuck, 2004). However, FGC students may be more likely to adopt a prevention focus to avoid feared possible identities, rather than a promotion focus to attain a hoped-for possible self (Oyserman, Gant, & Ager, 1995; Oyserman, Bybee, & Terry, 2006).

The tendency toward prevention orientation has also been demonstrated among traditionally interdependent cultural groups including Asian Canadian college students (Lockwood, Marshall, & Sadler, 2005) and Hong Kong Chinese college students (Lee, Aaker, & Gardner, 2000). Because FGC contexts tend to be similarly rooted in obligation, they may be more likely to adopt a prevention orientation. For example, ethnographic evidence from low-income high school students demonstrates the salience of feared possible selves; these students were more motivated by the fear of becoming unemployed, homeless, and destitute than by hoped-for possible selves (Steinitz & Solomon, 1986; Kaiser Foundation, 2002).

## **The Present Study**

While substantial research and theoretically based interventions have focused on increasing FTP, they might not apply to FGC students, who may envision a future with fewer opportunities than a CGC student. Additionally, there is a lack of understanding about the content of future time perspectives for FGC and CGC students, thereby overlooking differences that may be especially important in crafting interventions for students from diverse backgrounds. The present research seeks to further understand the differences in future time perspectives for first- and continuing-generation college students by asking whether the effects of envisioning one's future with a college degree on task performance varies by college generation status and regulatory focus and whether the effect of envisioning a future with a college degree on task performance is mediated by academic motivation and academic delay of gratification.

### **Aims and Hypotheses**

The present study has four main aims. First, I examine the effects of various presentations of future opportunities on academic motivation, academic delay of gratification, and anagram performance, such that participants are asked to envision the likelihood of reaching outcomes with a college degree (degree condition), the likelihood of reaching outcomes with and without a college degree (contrast condition), the likelihood of reaching outcomes without and with a college degree (reverse contrast condition), or a no-prime control condition for first- versus continuing-generation college students. Second, I explore potential mediation of the effect of the future opportunities prime on anagram performance by academic motivation and ADOG. Third, I examine the relationship between CGS and regulatory focus. Finally, I assess whether there is a

conditional indirect effect (e.g., moderated mediation) of future opportunities prime on anagram performance via academic motivation and ADOG such that the indirect effects are larger among students who are FGC and prevention focused or CGC and promotion focused.

My first hypothesis is that, compared to FGC students in the degree or control conditions, FGC students primed to think about future opportunities with and without a college degree (e.g., contrast and reverse contrast conditions) would have increased academic motivation, ADOG, and anagram performance. Continuing generation college students in the degree condition should experience increased academic motivation, ADOG, and anagram performance relative to CGC in the contrast, reverse contrast, or control conditions. In the control condition, I expect FGC participants to have lower academic motivation, ADOG, and anagram performance compared to CGC participants.

My second hypothesis is that the effect of the future opportunities prime on anagram performance would be partially mediated by academic motivation and ADOG, such that participants' academic motivation or ADOG explain the effect of the future opportunities prime on anagram performance. Specifically, FGC participants in the contrast and reverse contrast conditions and CGC in the degree condition should have higher academic motivation and ADOG relative to the control condition and, in turn, should perform better on the anagram task.

My third hypothesis is that regulatory focus would vary by CGS, whereby FGC students have greater prevention focus compared to CGC students and CGC students have greater promotion focus compared to FGC students. This would explain the effect of the future opportunities prime on academic motivation, ADOG, and anagram

performance, such that prevention-focused FGC students would be most motivated by the contrast or reverse contrast conditions, while promotion-focused CGC students would be most motivated by the degree condition. Finally, I propose a moderated mediation of the effect of the future opportunities prime on academic motivation and ADOG by college generation status and regulatory focus.

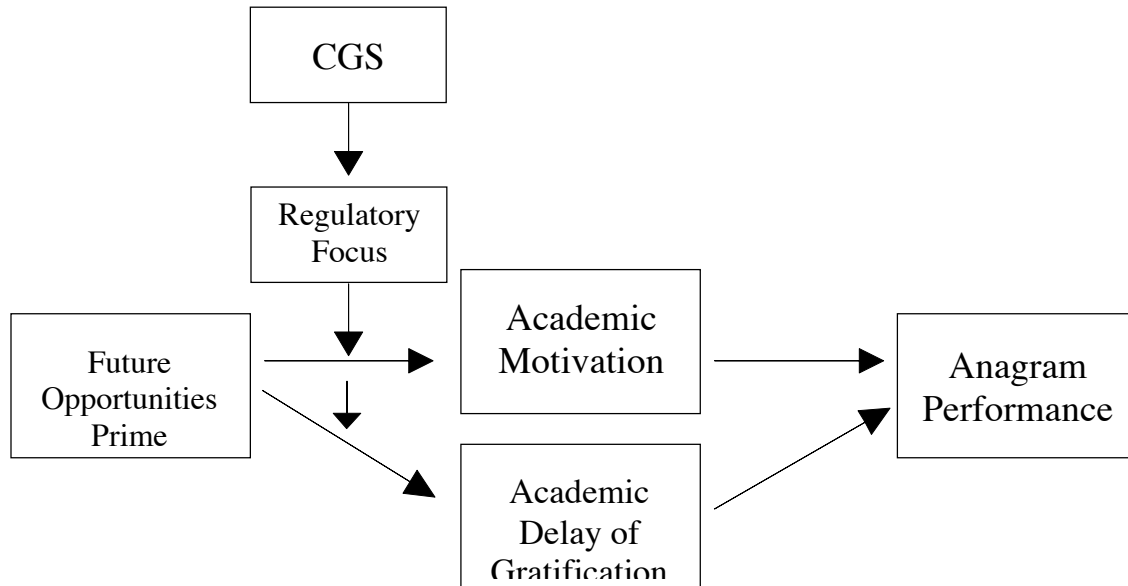


Figure 1. Proposed Model

## Methods

### Participants

The study was conducted with students enrolled in a section of Introductory Psychology at a large, southwestern university. Students received an e-mail from their professor inviting them to participate in the study for one point extra credit. Of the 450 students e-mailed, 330 participated in the study (73.33% response rate). A sample size of 324 was needed, according to a power analysis using G\*Power, estimating a medium effect size ( $f = .25$ ). Participant gender was 49.1% male and 50.1% female. The average

age was 19.83 ( $SD = 6.28$ ). College generation status breakdown was 34.8% FGC students and 64.2% CGC students (5 students did not report parental education levels and were excluded from analyses). The ethnic breakdown of participants was 47.3% European American, 25.8% Asian or Asian American, 3.6% African or African American, 0.9% Native American, 7.9% Latino/a, 2.7% Middle Eastern, 3.0% South Asian or Indian, and 8.8% Multiracial or Other.

## Design

The study consisted of a 4 x 2 between-subjects design with two factors: future opportunities prime and CGS. The future opportunities prime included four levels: degree, contrast, reverse contrast, and control. College generation status consisted of two levels: FGC students, for whom neither parent has attained a bachelor’s degree, and CGC students, for whom at least one parent has attained a bachelor’s degree. Table 1 provides a breakdown of participants by condition and CGS.

Table 1

*Breakdown of Participants by Condition and College Generation Status*

	<b>FGC</b>	<b>CGC</b>	<b>TOTAL</b>
<b>Degree</b>	31	62	93
<b>Contrast</b>	29	50	79
<b>Reverse Contrast</b>	26	55	81
<b>Control</b>	29	43	72
<b>TOTAL</b>	115	210	325

## Experimental Manipulations

**Future Opportunities Prime Conditions.** Participants were randomly assigned to one of four future opportunities primes. Participants in the *Degree* condition received a prompt directing them to think about the probability of reaching a number of outcomes if

they attain a college degree. Specifically, participants rated the likelihood that they would be able to achieve twelve future positive outcomes with a college degree from 0%-100%: secure a job, have a fulfilling and interesting career, can help and support my family, be a respected member of my community, go on vacation, have leisure time, afford healthy foods, have a less stressful life, afford my own house and a nice car, be financially stable, be able to make choices for my own life, and accomplish something meaningful in my life. These outcomes, adapted from a scale by De Volder and Lens (1982), were designed to reflect a variety of positive outcomes associated with attainment of a college degree (e.g., career, lifestyle, respect, meaning). By completing this scale, participants were primed to think of the positive outcomes that their degree will bring them in the future.

In the *Contrast* condition directions were identical to the Degree condition except that participants repeated the scale a second time, rating the probability of reaching each of the outcomes if they do not attain a college degree, from 0% to 100%. This primed participants to think of the benefits their degree will bring them, but also about the risks of not achieving positive outcomes. This condition emphasizes contrasting their futures with and without a college degree.

In the *Reverse Contrast* condition directions were identical to the Contrast condition except that participants completed the scale examining opportunities without a degree first and then completed the scale assessing opportunities with a college degree. This condition was included so that we could examine order effects for the contrast conditions.

In the *Control* condition, participants received no prompt, and clicked a button to continue to the next page.



## Measures

Appendix A includes the materials that were provided to the participants. Participants completed the survey using Qualtrics online survey software. The study was described as an examination of temporal perspective and behavior. Completion of the survey took 30 minutes or less. Participants read a consent form, submission of which was considered consent to participate (Appendix B).

**Regulatory Focus Scales.** The Regulatory Focus scales were completed prior to the experimental intervention (Lockwood, Jordan, & Kunda, 2002). The scale consisted of 18 items and two subscales that assessed the extent to which participants have a promotion focus, or motivation to achieve desirable outcomes ( $\alpha = .922$ ,  $M = 7.11$ ,  $SD = 1.36$ ), and prevention focus, or motivation to avoid undesired outcomes ( $\alpha = .827$ ,  $M = 5.89$ ,  $SD = 1.4$ ). Example items include, “In general, I am focused on preventing negative events in my life” and “I typically focus on the success I hope to achieve in the future.” Each item was ranked on a 7-point Likert type scale, ranging from *Strongly Disagree* (1), to *Strongly Agree* (7).

**Academic Motivation Scale.** After the experimental manipulation, academic motivation was assessed using the Academic Motivation Scale (Jordan, Lockwood, & Kunda, 2002). Participants rated themselves on a set of 14 items ( $\alpha = .932$ ,  $M = 8.278$ ,  $SD = 1.73$ ). Example items include, “I plan to study harder for tests and exams,” “I plan to keep up with reading assignments,” and “I plan to procrastinate less.” Participants rated each item on an 11-point scale, with endpoints labeled 1 (*Not at all true*) to 11 (*Very true*). Seven items involved engaging in additional activities, such as studying, and 7 items involved abstaining from activities, such as procrastinating. In past studies, the

engaging and abstaining items did not load onto separate factors, so they were collapsed as a single measure of motivation (Lockwood, Jordan, & Kunda, 2002, p. 857). The mean of these items indicated academic motivation, such that higher numbers indicate higher academic motivation.

**Academic Delay of Gratification Scale (ADOG).** After the experimental manipulation, participants also completed the ADOG scale (Bembenutty & Karabenick, 1998). It consisted of 10 items that reflect students' academic experience, including meeting deadlines, use of campus resources, studying, and relationships with classmates and professors ( $\alpha = .604$ ,  $M = 28.22$ ,  $SD = 4.08$ ). The scale paired academic alternatives with non-academic alternatives, such as going out, going on a trip, or skipping classes. For example, an alternative is "A. Go to a favorite concert, play, or sporting event and study less for this course even though it may mean getting a lower grade on the exam you will take tomorrow" or "B. Stay home and study to increase your chances of getting a higher grade." Students rated each alternative on a four-point scale: "Definitely choose A," "Probably choose A," "Probably choose B," and "Definitely choose B." Higher scores indicated greater delay of gratification for academic goals. Scores on each item of academic delay of gratification were summed for an overall ADOG score, such that higher numbers indicate higher academic delay of gratification.

**Performance Task.** After completing the prime, participants were directed to complete a performance task adapted from Stephens and colleagues (2012). Participants were directed to complete 15 anagrams, ranging from 4 letters to 7 letters, 3 of which were unsolvable. The instructions indicated that participants could proceed to the next page at any time, but to try to complete as many puzzles as they could. Each puzzle was a

word and the participants were instructed to rearrange it to make another word and, when they had an answer, to type it into the space provided. For example, if presented with the word SELVES, the correct answer would be VESSEL. If they attempted to solve a puzzle, regardless of whether or not they correctly solved it, they checked a box labeled “Attempted.” The number of anagrams solved correctly was summed as a measure of performance ( $M = 3.39$ ,  $SD = 2.73$ ).

**Demographics.** Participants were directed to a demographics page, which asked for their student ID number, year in school, major, gender, race/ethnicity, whether and they or their family immigrated to the United States, whether they were an international student, number of hours worked per week at an on-campus job, number of hours worked per week at an off-campus job, highest level of education attained by mother and father, socioeconomic status (working class-upper class), estimated annual household income, multiple choice annual household income (less than \$11,000 to More than \$250,000), and subjective socioeconomic status (ladder measure, Adler et al., 2000).

### **Procedure**

At the outset of the semester, as a part of the Introductory Psychology prescreening battery, participants completed an anagram pretest (4 items) as a covariate for anagram ability in the final analyses. Additionally, participants completed a brief demographics questionnaire assessing their age, gender, year in school, CGS, subjective SES, and family income (Appendix A). Participants were then recruited via an e-mail from their PSY 101 professor and received 1 point extra credit for participating (Appendix C).

After reading an informed consent, receipt of which was considered consent to

participate, participants completed a regulatory focus scale, so that regulatory focus would not be affected by the future opportunity prime (Lockwood, Jordan, & Kunda, 2002). Then, participants were randomly assigned to one of four future opportunity primes. Future opportunities were manipulated by prompting participants to think about the likelihood of attaining future outcomes with a college degree (degree condition), likelihood of attaining future outcomes with and without a college degree (contrast condition), likelihood of attaining future outcomes without and with a college degree (reverse contrast condition), or a no-prime control condition.

Participants were then directed to complete a series of questionnaires to assess potential mediating variables, including academic motivation and ADOG scales. Next, participants completed a series of anagrams. Participants were asked to complete as many anagrams as they could, and had a place to put their answer, and a place to mark whether they attempted to solve an anagram. Finally, participants completed a demographics questionnaire. Participants were then thanked for their participation and debriefed. When the study closed after one week, student IDs were sent to the instructor so that participants received extra credit.

## **Results**

Table 2 shows the inter-correlations among academic motivation, academic delay of gratification, promotion focus, prevention focus, and number of anagrams solved. Preliminary analyses of dependent variables reveal significant correlations between academic motivation, ADOG, prevention focus, promotion focus, and number of anagrams correct. Means of academic motivation, ADOG, prevention focus, promotion focus, and anagrams correct by CGS and condition can be found in Appendix D.

Table 2

*Correlations among Dependent Variables for All Participants*

Measure	1	2	3	4	5
1. Academic Motivation	—				
2. ADOG	.240**	—			
3. Prevention	.340**	.121*	—		
4. Promotion	.422**	.232**	.348**	—	
5. Anagrams Correct	.125*	.208**	.144**	.219**	—

† p < .1, \* p < .05, \*\* p < .01

**Hypotheses Related Analyses**

**Hypothesis 1. Contrasts of future opportunities prime and CGS on academic motivation, ADOG, and anagram performance.** I predicted that FGC students would have increased academic motivation, ADOG, and anagram performance in the contrast and reverse contrast conditions, compared to FGC participants in the control condition. I predicted that CGC participants in the degree condition, however, would have higher academic motivation, ADOG, and anagram performance compared to CGC participants in the contrast, reverse contrast, or control conditions. In the control condition, I posited that FGC participants would have lower academic motivation, ADOG, and anagram performance compared to CGC participants.

Because I hypothesized an explicit contrast, an independent samples t-test was conducted to assess the difference in academic motivation between the two contrast conditions versus the degree and control conditions among FGC students, which revealed no significant difference in academic motivation,  $t(95) = -1.339, p = .184, d = .275$ . When ADOG was the dependent variable, an independent samples t-test between contrast/reverse contrast versus degree and control conditions for FGC students revealed no significant difference,  $t(88) = -.05, p = .96, d = .011$ . Finally, I examined the effect of

the contrast and reverse contrast conditions versus the degree and control conditions on anagram performance. The effect of the contrast/reverse contrast condition versus the degree and control group on number of anagrams correct, controlling for prescreening anagram performance, for FGC participants was tested using a Poisson log-linear model for count data, under the assumption of a Poisson error structure. The effect was not significant,  $X^2(1, N = 97) = 10.748, p = .465$ . Thus, for FGC students, there was no effect of the contrast and reverse contrast conditions relative to the degree and control groups on academic motivation, ADOG, or anagram performance.

In order to examine the differences between the degree condition and the contrast, reverse contrast, and control conditions for CGC students on academic motivation, an independent samples t-test was conducted comparing the degree condition to the other three conditions combined. For CGC students, the results revealed no significant effect of the degree condition compared to the other conditions for (a) academic motivation,  $t(165) = .228, p = .820, d = .035$ , (b) ADOG,  $t(159) = -1.329, p = .186, d = .211$ ; and (c) anagram performance (controlling for prescreening performance),  $X^2(1, N = 167) = 1.055, p = .305$ . These findings suggest that, contrary to my hypotheses, the degree condition did not significantly increase academic engagement, ADOG, or anagram performance for CGC participants, compared to the contrast, reverse contrast, or control conditions.

Finally, I hypothesized that there would be significant differences between FGC and CGC students in the control group on academic motivation, ADOG, and anagram performance. There were no significant differences between FGC and CGC in academic motivation,  $t(56) = -.282, p = .779, d = .142$ , or in ADOG,  $t(54) = -.982, p = .331, d =$

.27. Finally, the effect of CGS on anagrams correct, controlling for prescreening performance, was tested using a Poisson log-linear model. The results revealed no significant effect of CGS on anagram performance,  $\chi^2(1, N = 58) = 2.017, p = .156$ . Contrary to my hypotheses, these results suggest that FGC and CGC students in the control group do not vary significantly in academic motivation, ADOG, or anagram performance.

**Hypothesis 2. Mediation of the effect of future opportunities prime on anagram performance by academic motivation and ADOG.** I hypothesized that the effect of the future opportunities prime on performance would be partially mediated by academic motivation and academic delay of gratification. However, because the hypothesized effects of the future opportunities prime on academic motivation, academic delay of gratification, and anagram performance were not significant, mediational analyses were not conducted.

**Hypothesis 3. Main effect of college generation status on regulatory focus.** Based on evidence from previous research on regulatory focus, I predicted that FGC students would have higher prevention orientation than CGC students, and that CGC students would have higher promotion orientation than FGC students. In order to test this hypothesis, an independent samples t-test was conducted with CGS as the independent variable, and prevention focus as the dependent variable. The groups were not significantly different,  $t(325) = 0.586, p = 0.558, d = .065$ . A second independent samples t-test revealed no significant difference in promotion focus by CGS,  $t(324) = 1.396, p = 0.164, d = .155$ . This suggests that, contrary to my hypotheses, there were no significant differences in prevention or promotion focus by CGS.

**Hypothesis 4. Moderated-mediation of the effect of future opportunities prime on academic motivation and ADOG by CGS and regulatory focus.** Finally, I hypothesized a moderated-mediation of the effect of the future opportunities prime on academic motivation and academic delay of gratification by CGS and regulatory focus. However, because CGS and regulatory focus were not related, tests of moderated-mediation on academic motivation and ADOG were not conducted.

### **Exploratory Analyses**

There were several important topics of interest that emerged during analysis. First, the future opportunities prime, completion of the scales assessing perceived likelihood of future opportunities with and without a college degree during the future opportunities primes, served as a useful source of information about participants' belief in what a college degree will afford them in the future. I conducted a factor analysis on the scales to assess underlying factor structure, analyzed differences by college generation status, and examined perceived likelihood of future opportunities scores as predictors of academic motivation, ADOG, and anagram performance. Second, while I initially predicted no differences between the contrast and reverse contrast conditions, to investigate order effects, I analyzed differences by condition and interactions with CGS. Third, while promotion and prevention focus have previously been examined as dichotomous variables, I tested their interaction effects, as well as interactions with CGS, on the dependent variables.

### **Perceived Likelihood of Future Opportunities with a College Degree**

*Factor analysis of Perceived Likelihood of Future Opportunities with a College Degree scale.* The items on the scale used to prime future opportunities were classified



into five a priori categories: career (e.g., secure a job, have a fulfilling and interesting career), ability to provide/give back (e.g., can help and support my family, be a respected member of my community), enhanced lifestyle (e.g., go on vacation, have leisure time, afford healthy foods, afford my own house and a nice car), reduced stress (e.g., have a less stressful life, be financially stable), and increased meaning (e.g., be able to make choices for my own life, accomplish something meaningful in my life). A principal components analysis was conducted with five factors as the method of extraction, tested with both varimax and oblimin rotations. One item was eliminated because it did not contribute to a simple factor structure; namely, “Have a less stressful life” had a primary factor loading of .519 on the fifth factor. However, this was the only item that was negatively worded, which may explain why it did not fit clearly in the factor structure.

The four-factor varimax rotation of the remaining 11 items provided the best factor structure, with four factors explaining 75% of the variance, where all items had primary loadings greater than .4. Three items had cross-loadings; in spite of high cross-loadings, I decided to use the highest loading as a decision for where to place the factors. The factor-loading matrix for the final solution is presented in Table 3. The Kaiser-Meyer-Olkin measure of sampling adequacy was .89, and the Bartlett’s test of sphericity was significant,  $X^2(36, N = 207) = 852.571, p < .001$ . Internal consistency for each of the scales was sufficient: Career (4 items;  $\alpha = .836$ ), Lifestyle (3 items;  $\alpha = .804$ ), Meaning (2 items;  $\alpha = .733$ ), and Respect (2 items;  $\alpha = .701$ ). No increases in alpha for any scale could have been achieved by eliminating more items. Composite scores were created for each scale based on the mean of the items that had their primary loadings on each factor, where higher scores indicated increased belief that college degree could ensure success in

that domain. Overall, the analyses indicated that four distinct factors (e.g., Career, Lifestyle, Meaning, and Respect) were underlying participants' responses to the perceived likelihood of future opportunities with a college degree.

Table 3

*Factor loadings and communalities based on a factor analysis with a varimax rotation for 12 items from the Perceived Likelihood of Future Opportunities with a College Degree Scale (N = 207)*

	1	2	3	4
Secure a job	.448			.444
Have a fulfilling and interesting career	.517			.562
Can help and support my family	.475			
Be a respected member of my community				.544
Go on vacation		.730		
Have leisure time		.667		
Afford healthy foods		.560		
Afford my own house and a nice car	.671			
Be financially stable	.877			
Be able to make choices for my own life	.416		.506	
Accomplish something meaningful in my life			.788	

Because CGC students may know more adults with a college degree than FGC students, they may also be more likely to believe in the likelihood of future possibilities with a college degree, than FGC students. Therefore, I examined whether there were CGS differences in likelihood of future opportunities with a college degree for the four scales. An independent samples t-test using participants in the degree, contrast, and reverse contrast conditions revealed no significant differences by CGS in belief in (a) future career success,  $t(207) = .301, p = .763, d = .042$ , (b) lifestyle,  $t(207) = 1.521, p = .130, d = .211$ , (c) meaning,  $t(207) = 1.441, p = .151, d = .200$ , or (d) respect,  $t(207) = -.520, p =$

.604,  $d = .072$ . This indicates that there were no significant differences between FGC and CGC students in the belief that a college degree will ensure them career success, improved lifestyle, increased meaning, or respect.

Differences in likelihood of future opportunities without a college degree by CGS was tested an independent samples t-test of participant responses from the contrast and reverse contrast conditions. There were significant differences by CGS in the belief that a life without a college degree would affect lifestyle,  $t(130) = 2.274, p = .025, d = .399$ , such that FGC participants rated the likelihood of a good lifestyle without a college degree higher ( $M = 158.182, SD = 75.059$ ) than CGC participants ( $M = 126.59, SD = 75.306$ ). Additionally, there was a marginal difference in the belief that life without a college degree could have meaning by CGS,  $t(133) = 1.885, p = .062, d = .327$ , whereby FGC students believed there was a greater likelihood of meaning without a college degree ( $M = 120.444, SD = 55.348$ ) compared to CGC students ( $M = 101.111, SD = 56.597$ ). There were no significant differences by CGS in career,  $t(135) = 1.024, p = .307, d = .176$ , or respect ratings,  $t(134) = 1.247, p = .214, d = .215$ . These analyses suggest that, as compared to CGS students, FGC students hold a more positive view of the future without a college degree in terms of lifestyle and meaning.

Table 4

*Perceived Likelihood of Future Opportunities with a College Degree by CGS (Degree, Contrast, and Reverse Contrast Conditions)*

	FGC			CGC		
	N	Mean	SD	N	Mean	SD
Career	72	305.278	67.050	137	302.190	72.098
Lifestyle	72	212.222	58.097	137	198.978	60.698
Meaning	72	162.500	40.412	137	154.161	39.419
Respect	72	141.389	39.049	137	144.379	39.758

†  $p < .1$ , \*  $p < .05$ , \*\*  $p < .01$

Table 5

*Perceived Likelihood of Future Opportunities without a College Degree by CGS (Contrast and Reverse Contrast Conditions)*

	FGC			CGC		
	N	Mean	SD	N	Mean	SD
Career	46	180.870	88.439	91	163.517	96.129
Lifestyle *	44	158.182	75.059	88	126.591	75.306
Meaning †	45	120.444	55.348	90	101.111	56.597
Respect	43	100.444	45.824	91	89.011	52.346
† $p < .1$ , * $p < .05$ , ** $p < .01$						

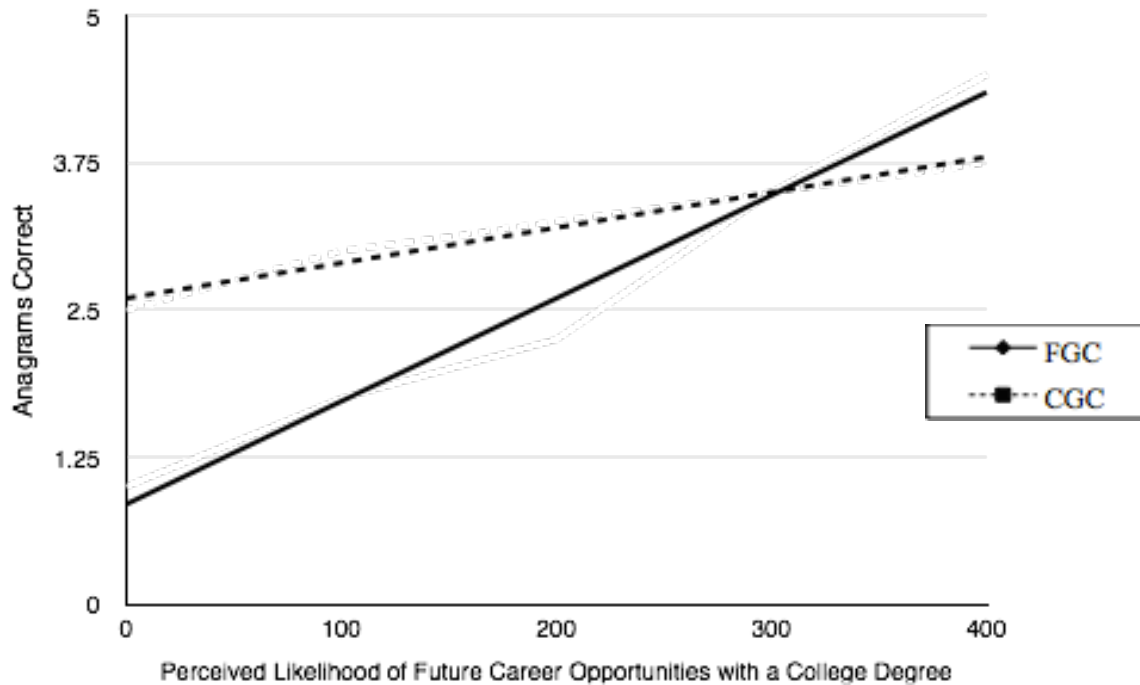
*Perceived Likelihood of Future Opportunities with a College Degree as a predictor.* In addition, I decided to examine perceived likelihood of future opportunities (e.g., career, lifestyle, meaning, and respect) with a college degree as predictors of (a) academic motivation, (b) ADOG, and (c) anagram performance. Hierarchical regression analyses demonstrated that academic motivation was significantly predicted by the career subscale,  $\beta = .378$ ,  $t(204) = 5.819$ ,  $p < .001$ ,  $d = .815$ , the lifestyle subscale,  $\beta = .246$ ,  $t(204) = 3.619$ ,  $p < .001$ ,  $d = .507$ , the meaning subscale,  $\beta = .217$ ,  $t(204) = 3.171$ ,  $p = .002$ ,  $d = .444$ , and the respect subscale,  $\beta = .316$ ,  $t(204) = 4.754$ ,  $p < .001$ ,  $d = .666$ . Similarly, ADOG scores were significantly predicted by the career subscale,  $\beta = .286$ ,  $t(194) = 4.152$ ,  $p < .001$ ,  $d = .596$ , the lifestyle subscale,  $\beta = .195$ ,  $t(194) = 2.759$ ,  $p = .006$ ,  $d = .396$ , the meaning subscale,  $\beta = .217$ ,  $t(194) = 3.171$ ,  $p = .002$ ,  $d = .455$ , and the respect subscale,  $\beta = .228$ ,  $t(194) = 3.248$ ,  $p = .001$ ,  $d = 0.466$ . This suggests that participants who believed that a college degree would bring them more success had higher academic motivation and ADOG scores than those who did not.

Perceived likelihood of future opportunities with a college degree also significantly predicted anagram performance. Anagram performance, controlling for prescreening performance, was significantly predicted by the career subscale,  $X^2(15, N = 205) = 350.697, p < .001$ , the lifestyle subscale,  $X^2(13, N = 205) = 324.372, p < .001$ , the meaning subscale,  $X^2(9, N = 205) = 22.596, p = .007$ , and the respect subscale,  $X^2(9, N = 205) = 85.934, p < .001$ . Thus, perceived likelihood of future opportunities with a college degree significantly predicted task performance on the anagram task.

Interactions of CGS and perceived likelihood of future opportunities with a college degree on academic motivation and ADOG were tested using univariate analysis of variance tests. There were no significant interactions of CGS and perceived likelihood of future opportunities with a college degree on academic motivation; interactions of CGS and perceived likelihood of future opportunities subscales were all non-significant. The same was true of interactions between CGS and all perceived likelihood of future opportunities subscales on ADOG. This suggests that participants with increased perceived likelihood of future opportunities had higher academic motivation and ADOG regardless of CGS.

Finally, I examined the interactions of CGS and the perceived likelihood of future opportunities subscales on anagram performance, controlling for prescreening performance. A Poisson log-linear regression model revealed a significant interaction of CGS and perceived likelihood of future career opportunities with a college degree (e.g., career subscale) on anagram performance,  $X^2(15, N = 187) = 22.818, p = .029$ , such that CGC students performed better on the anagram task compared to FGC students when beliefs about future career opportunities were low, but not when career opportunities

were high (see Figure 2). All other interactions (e.g., lifestyle, meaning, and respect subscales) on anagram performance were not significant.



*Figure 2.* Interaction of CGS and Perceived Likelihood of Future Career Opportunities with a College Degree on Anagram Performance

**Comparing Contrast and Reverse Contrast Conditions.** As indicated previously, I wanted to see whether there was an order effect of the primes between the contrast and reverse contrast conditions. In the contrast condition, participants completed the perceived likelihood of future opportunities with a college degree scale, followed by the perceived likelihood of future opportunities without a college degree scale. In the reverse contrast condition, it was the opposite order. I originally predicted that there would be no difference between the contrast and reverse contrast conditions, which I included for proper counterbalancing. In order to examine whether this was the case, I tested whether there were differences between contrast and reverse contrast conditions on

the perceived likelihood of future opportunities scales with and without a college degree, academic motivation, ADOG, and anagram performance.

Differences by condition (contrast/reverse contrast) on perceived likelihood of future opportunities subscales were assessed using an independent samples t-test. There were significant differences on the lifestyle,  $t(143) = -2.353, p = .02, d = .394$ , and respect subscales,  $t(143) = -2.174, p = .031, d = .364$ , such that participants in the reverse contrast condition rated future lifestyle ( $M = 219.167, SD = 50.956$ ) and respect ( $M = 155.000, SD = 33.859$ ) higher than participants in the contrast condition (Lifestyle  $M = 196.438, SD = 64.493$ ; Respect  $M = 141.643, SD = 39.826$ ). However, there were no significant differences between contrast and reverse contrast on the career or meaning subscales.

Additionally, interactions between condition (contrast/reverse contrast) and CGS were tested using univariate analysis of variance tests with each of the subscales. There was no interaction between CGS and condition on the career subscale,  $F(1,135) = 2.583, p = .110, d = .277$ . However, there were significant interactions of CGS and condition on the lifestyle subscale,  $F(1,135) = 4.492, p = .036, d = .364$ , where CGC students rated lifestyle opportunities with a college degree as more likely to occur in the reverse contrast condition than in the contrast condition,  $t(88) = -2.89, p = .005, d = .616$ , while FGC students' ratings of lifestyle opportunities with a college degree did not differ significantly in the two conditions,  $t(44) = .577, p = .567, d = .174$  (see Figure 3). The same was true of the interaction of CGS and condition on the meaning subscale,  $F(1,135) = 4.164, p = .04, d = 0.351$ , where the effect of condition is significant for CGC students,  $t(88) = -2.49, p = .015, d = 0.336$ , but not for FGC students,  $t(44) = .756, p = .453, d =$

.228 (Figure 4). Additionally, there was a significant interaction of condition (contrast/reverse contrast) and CGS on the respect subscale,  $F(1,135) = 5.377, p = .022, d = .399$ . Once again, CGC participants rated respect higher in the reverse contrast condition than in the contrast condition,  $t(88) = -3.00, p = .004, d = .640$ , while FGC did not differ,  $t(44) = .717, p = .477, d = .216$  (see Figure 5). This suggests that CGC students perceived future lifestyle, meaning, and respect opportunities with a college degree differently depending on the order of the primes. More specifically, CGC students rated their future possibilities more positively in the reverse contrast than in the contrast condition.

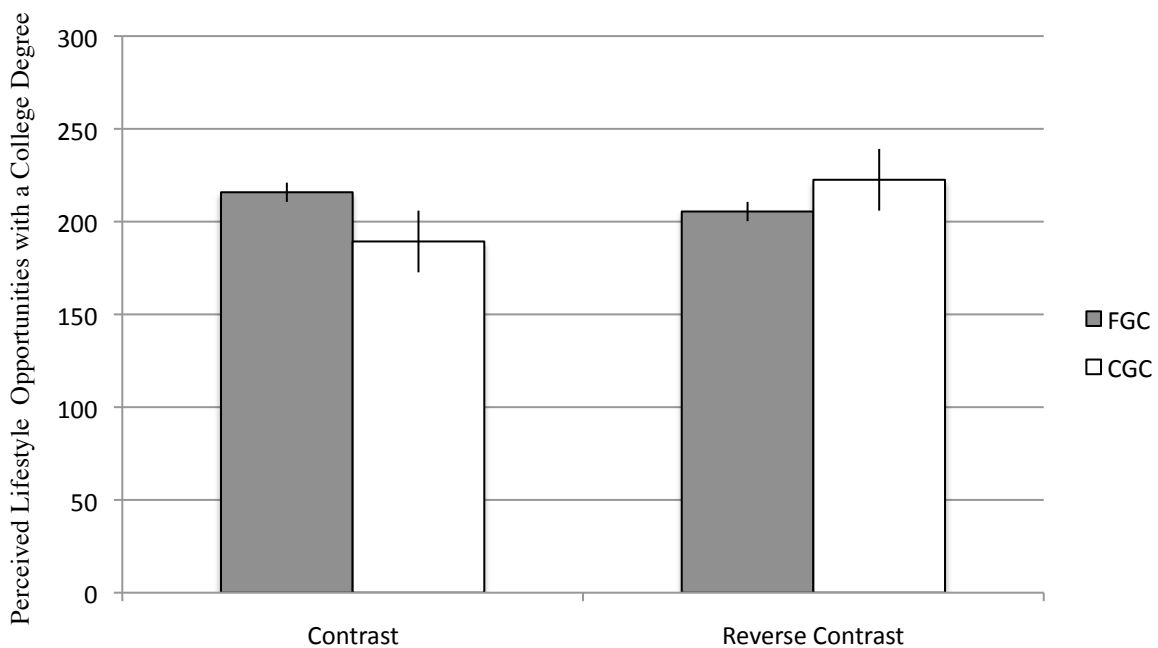


Figure 3. Interaction of CGS and Condition (Contrast/Reverse Contrast) on Lifestyle Subscale.



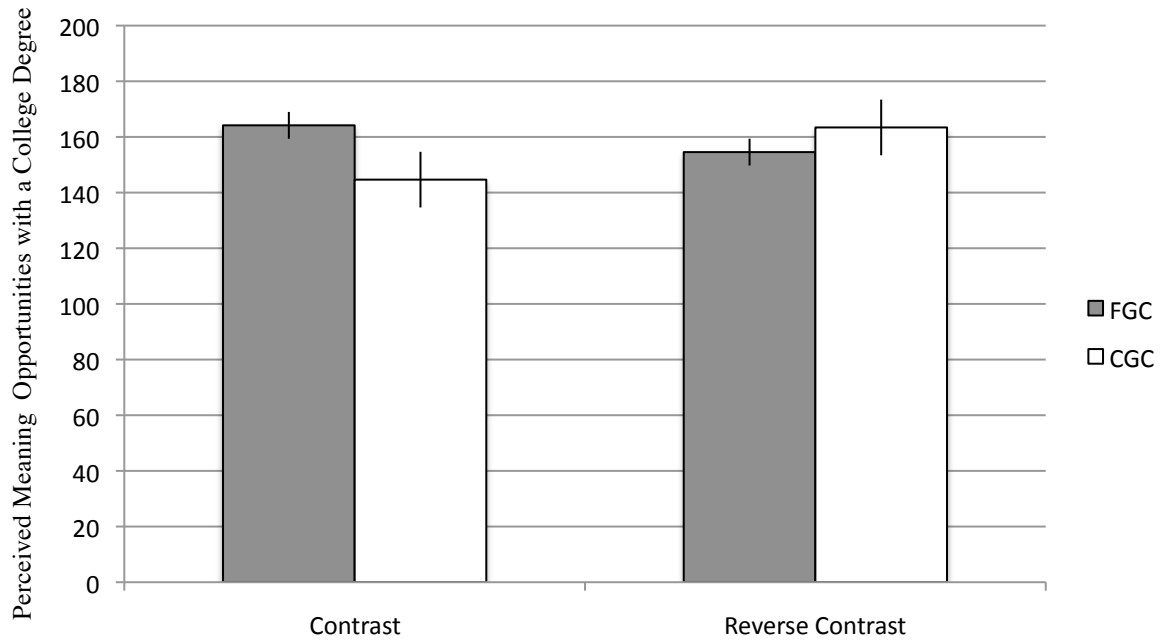


Figure 4. Interaction of CGS and Condition (Contrast/Reverse Contrast) on Meaning Subscale.

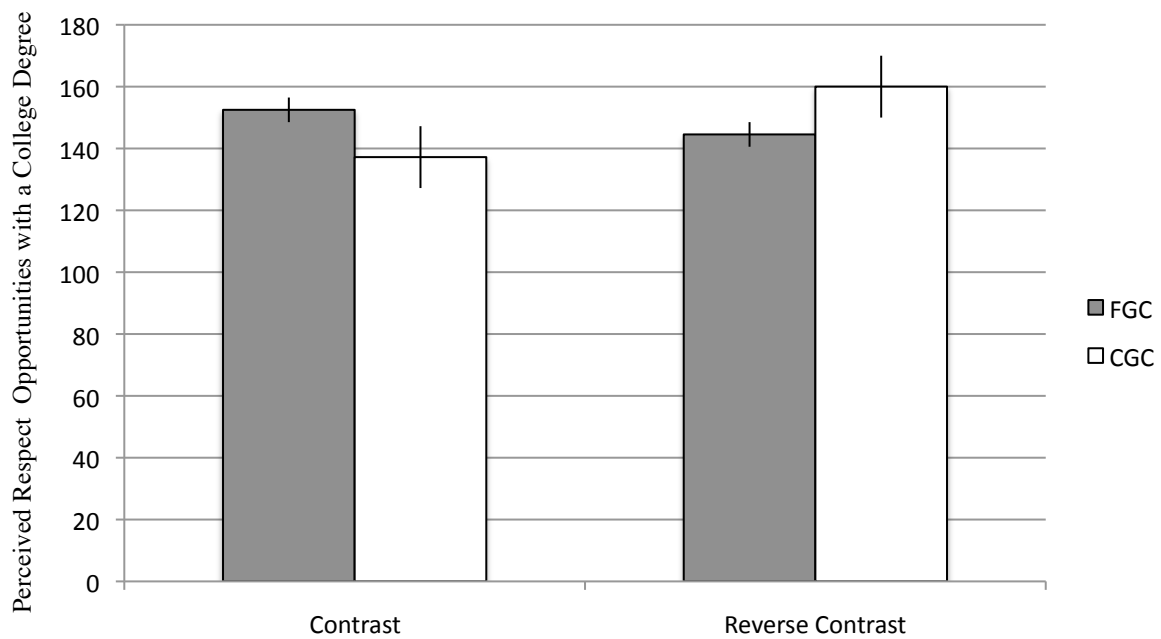


Figure 5. Interaction of CGS and Condition (Contrast/Reverse Contrast) on Respect Subscale.

There was a significant difference between contrast and reverse contrast

conditions in the number of anagrams correct,  $X^2(1, N = 146) = 5.277, p = .022$ , such that participants in the reverse contrast condition had more correct anagrams ( $M = 3.978, SD = 2.638$ ) than those in the contrast condition ( $M = 3.00, SD = 2.742$ ). There was no interaction of condition (contrast/reverse contrast) and CGS on anagram performance, after controlling for prescreening performance,  $F(1,136) = .003, p = .960, d = .009$ . This suggests that anagram performance did not vary by CGS.

There were no significant differences between the two contrast conditions,  $t(136) = .551, p = .582, d = .115$ , and no interaction of condition (contrast/reverse contrast) and CGS on academic motivation,  $F(1,136) = 2.620, p = .108, d = .278$ . There were also no significant differences between contrast and reverse contrast conditions,  $t(157) = -.842, p = .401, d = .134$ , and no interaction of condition and CGS on ADOG,  $F(1,128) = 2.497, p = .117, d = .441$ . This suggests that there were no order effects between the contrast conditions on academic motivation or academic delay of gratification. However, because there were significant differences in perceived likelihood of future opportunities with a college degree and anagram performance, I chose not collapse across contrast conditions.

**Interaction of Prevention and Promotion on Dependent Variables.** Academic motivation and performance may not be based merely on whether an individual is prevention or promotion focused; rather, a participant who scores highly on both prevention and promotion may be more engaged than someone who has low scores (e.g., is not motivated by hoped for success or fear of failure). In the present study, prevention and promotion were significantly correlated,  $r = .348, p < .01$ ; however, they shared only 12 percent of the variance. Thus, promotion focus and prevention focus may make independent or joint contributions to predicting academic motivation, ADOG, and

anagram performance.

I tested for three-way interactions of promotion, prevention, and CGS on academic motivation, ADOG, and anagram performance. Indeed, there was a significant three-way interaction of promotion, prevention, and CGS on academic motivation,  $\beta = -.171$ ,  $t(269) = -2.064$ ,  $p = .04$ ,  $d = .252$ . While interactions of prevention and promotion for FGC were not significant, promotion focus was a stronger predictor of FGC participants' academic motivation (see Figure 6). Interactions of prevention and promotion were also non-significant for CGC students, but prevention focus was a greater predictor of academic motivation (Figure 7). The three-way interaction of promotion, prevention, and CGS on ADOG was not significant,  $\beta = -.204$ ,  $t(257) = -.985$ ,  $p = .326$ ,  $d = .025$ . Similarly, the three-way interaction of promotion, prevention, and CGS on anagrams correct was not significant,  $X^2(1, N = 270) = .235$ ,  $p = .628$ .

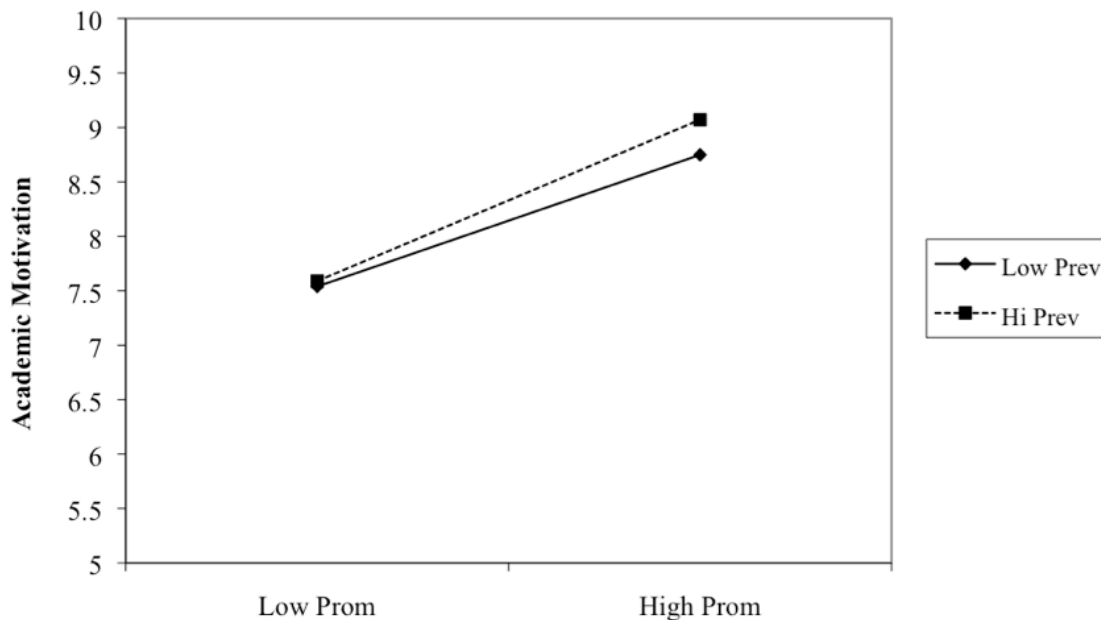


Figure 6. Interaction of Promotion and Prevention on Academic Motivation for FGC

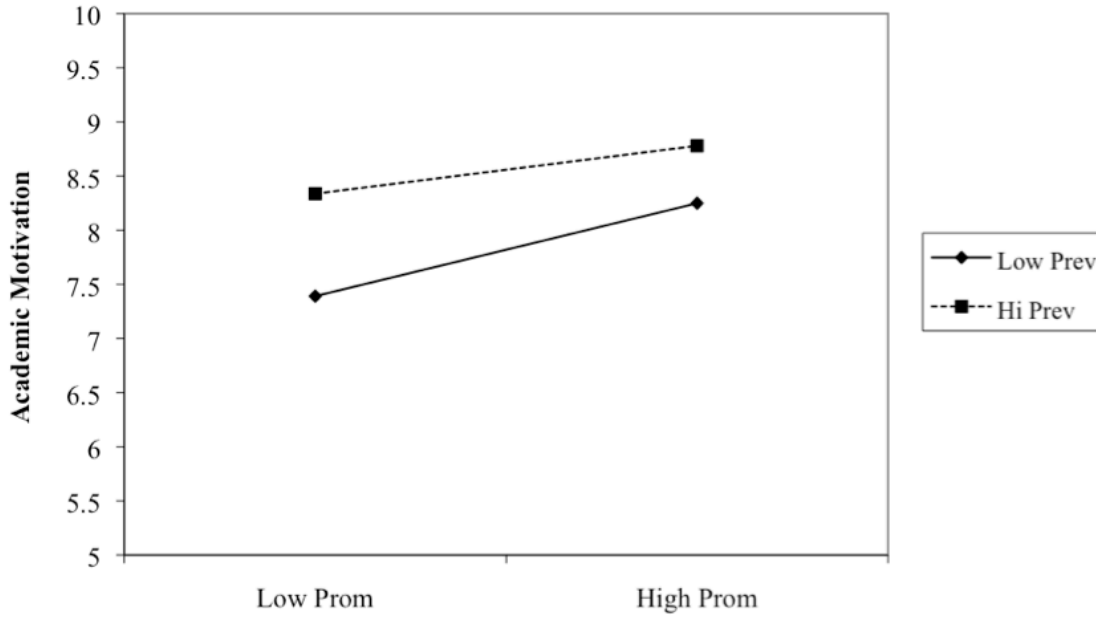


Figure 7. Interaction of Promotion and Prevention on Academic Motivation for CGC

Hierarchical regression analyses were conducted to test the two-way interaction between promotion and prevention focus on academic motivation, ADOG, and anagram performance. The interaction effect was a significant predictor of anagram performance,  $X^2(223, N = 270) = 272.788, p = .013$ , marginally predicted ADOG,  $\beta = -.178, t(257) = -1.923, p = .056, d = .240$ , and was a non-significant predictor of academic motivation, but in the predicted direction,  $\beta = -.062, t(269) = -1.543, p = .124, d = .188$ , such that participants highest on both prevention and promotion had the highest anagram performance, ADOG, and academic motivation (see Figures 8-10).

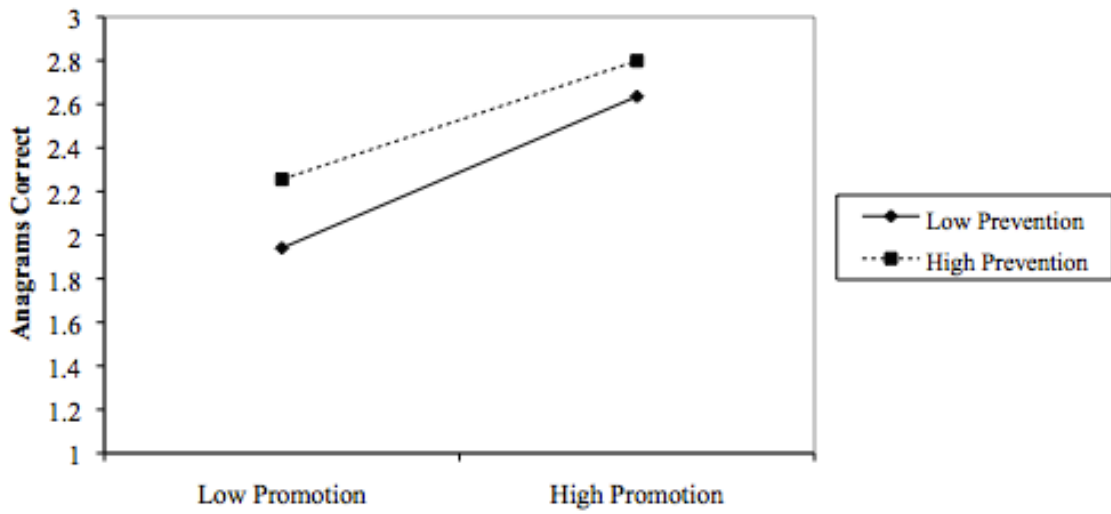


Figure 8. Interaction of Promotion and Prevention on Anagram Performance

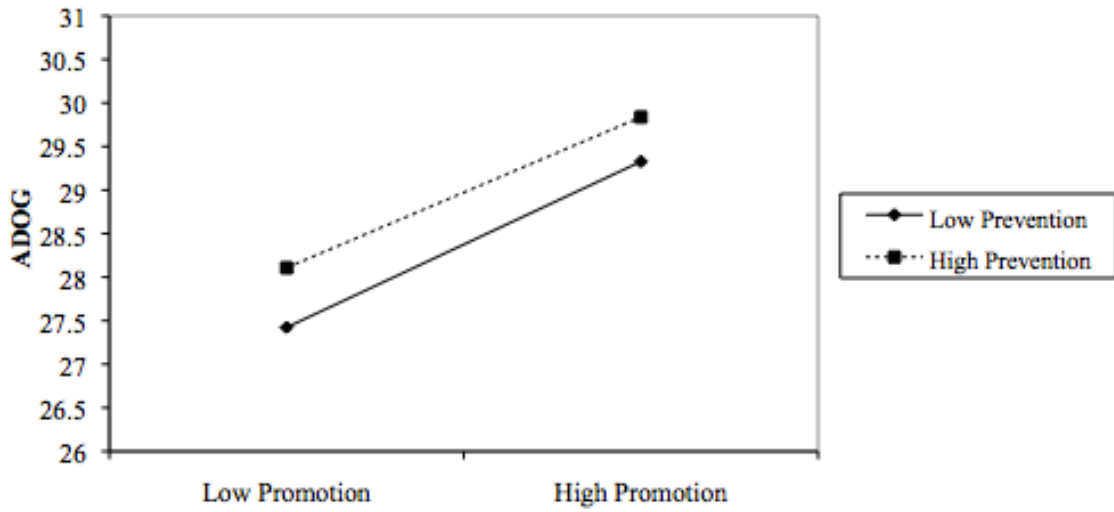


Figure 9. Interaction of Promotion and Prevention on ADOG

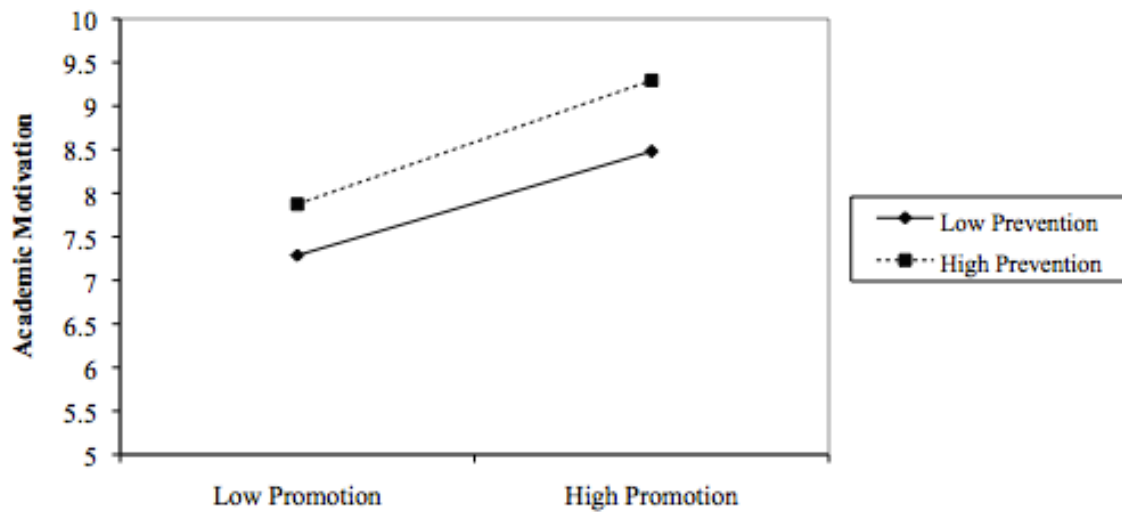


Figure 10. Interaction of Promotion and Prevention on Academic Motivation

### Discussion

Past research on increasing future time perspective has not examined the possibility that first-generation college students may envision a different future than continuing-generation students. This study sought to investigate the differences in future time perspectives for FGC and CGC students by examining whether the effects of envisioning a positive future, or contrasting a positive and negative future, would affect academic motivation, academic delay of gratification, or anagram performance, and whether the effect varied by college generation status or regulatory focus. Understanding differences in the future time perspectives of students from different backgrounds is important for constructing theoretically-based, effective interventions for students at risk of dropout. I will discuss the results of the study, including findings pertaining to hypotheses, findings related to exploratory analyses, limitations, future directions for research, and implications of the present study for helping first-generation students to succeed in college.

## **Findings Pertaining to Hypotheses**

The original hypotheses of the current study were not supported. According to my first hypothesis, there would be a significant difference on academic motivation, ADOG, and anagram performance between contrast/reverse contrast versus degree and control conditions for FGC, and between degree and all other conditions for CGC. Contrary to this hypothesis, there were no significant differences in academic motivation, ADOG, or anagram performance between the contrast/reverse contrast conditions and degree and control conditions for FGC students. Additionally, there were no significant differences in academic motivation, ADOG, or anagram performance between the degree and all other conditions for CGC students. The reason we may be observing these null effects is because the prime may not have acted as originally intended. Namely, the null results in the priming conditions may be due, in part, to the fact that participants did not react to the primes in a uniform way. Standard deviations reached up to 70 points in response to the future opportunities prime subscales, which suggests high variability in perceptions of future likelihood of opportunities with a college degree. Thus, rather than using the adapted De Volder and Lens (1982) scale as a prime, the results of the present study suggest that it may be more usefully employed as a mediator or as a dependent variable.

Additionally, I hypothesized that there would be significant differences between FGC and CGC students in academic motivation, ADOG, and anagram performance. However, no significant differences were observed between FGC and CGC students on the dependent variables. The lack of differences between FGC and CGC students indicates that the lower grades and higher dropout rate exhibited by the FGC students are due to factors other than academic motivation, ADOG, and task performance. Another

possibility is that because the sample was self-selected: only the more academically engaged students participated in the study. In contrast to past research that has demonstrated differences in academic engagement and performance by college generation status (Bowen et al., 2005; Housel & Harvey, 2009; Pascarella et al., 2004; Sirin, 2005; Terenzini et al., 1996), we measured different domains in the present study (e.g., academic motivation, ADOG) and used an anagram task rather than course grades. My second hypothesis, that the effect of the future opportunities prime on anagram performance would be partially mediated by academic motivation and ADOG, was not supported. Because there was no relationship between the future opportunities prime and anagram performance, mediation of the effect by academic motivation or ADOG was not possible.

My third hypothesis was that there would be significant differences in prevention and promotion by CGS; however, contrary to my hypothesis and to past research, there was no relationship between CGS and regulatory focus. Previous researchers have posited that FGC students should be more prevention focused than CGC students (Oyserman et al., 2006; Lockwood et al., 2002). However, our results indicate that this is not the case for the present sample. Once again, this may be attributable to self-selection on the part of the participants, such that more engaged participants have different regulatory focus profiles. Additionally, the present sample may be different from the previous studies that posited this relationship; namely, past studies were conducted at selective public colleges, which may attract different types of students than a large, public university like Arizona State University.

Finally, my fourth hypothesis was not supported; moderated mediation of the



effect of the future opportunities prime on academic motivation and ADOG was contingent upon finding significant relationships between CGS and regulatory focus.

### **Findings Pertaining to Exploratory Questions**

Exploratory analyses addressed the following three questions: (1) Does perceived likelihood of future opportunities predict academic motivation, ADOG, and anagram performance?; (2) Do order effects and college generation status affect perceived likelihood of future opportunities, academic motivation, ADOG, and anagram performance?; and (3) Does CGS interact with prevention and promotion regulator focus to predict academic motivation, ADOG, and anagram performance?

### **Perceived Likelihood of Future Opportunities Primes**

Exploratory analyses related to participant responses to the future opportunities prime revealed several important findings about perceptions of future opportunities with a college degree and how they affect performance for first- and continuing-generation college students. Factor analysis of the perceived likelihood of future opportunities scale revealed four underlying factors: career, lifestyle, meaning, and respect. There were no significant differences by CGS in perceived likelihood of each subscale with a college degree; however, there was a significant difference in perceived likelihood of a good lifestyle without a college degree by CGS, whereby FGC students believed that the likelihood of a good lifestyle (e.g., leisure time, go on vacation, have access to healthy food) was more likely without a college degree than CGC students. The same was true of being respected members of their community; FGC students rated the likelihood of being respected without a college degree higher than CGC students. There was a similar, but marginal, pattern for the meaning subscale. This suggests that while FGC students are as

hopeful as CGC students about their futures with a college degree, they are also more likely to believe that these goals are attainable without a college degree. This is not surprising, given students from diverse backgrounds likely have role models or representations of individuals who are respected and lead meaningful lives without a college degree. However, there were no significant differences on the career subscale, indicating that FGC students are aware that their career opportunities without a college degree are more limited.

Perceived likelihood of future opportunities with a college degree was a robust predictor of academic motivation ADOG scale and anagram performance. College generation status moderated only one relationship; in contrast to CGC participants, the anagram performance of FGC students was more strongly related to perceived likelihood of future career opportunities. This may indicate that perceived likelihood of future career opportunities with a college degree is more important for improving the cognitive performance of FGC than CGC students, although this finding will need to be replicated with performance variables such as grades and retention rate. This relationship may be observed only in the career domain because attaining a good career is a highly cited reason for FGC students to attend college, which may motivate them at present to perform better on an evaluative task.

### **College Generation Status and Order Effects**

The results of the study also generated several findings regarding differences by college generation status and order effects between the future opportunities with and without a college degree primes. While I initially predicted that there would be no differences between contrast and reverse contrast conditions, there were significant

differences on the perceived likelihood of future opportunities with a college degree lifestyle, meaning, and respect subscales, and also interactions with CGS on the lifestyle and respect subscales, where CGC students rated their opportunities as significantly more likely in the reverse contrast condition compared to the contrast condition. There were no significant differences for FGC students. This suggests that participants' ratings of future success with a college degree were susceptible to order effects, but only for CGC students. Part of the reason we may have observed this difference is that CGC participants are socialized that they will attend college and thus they do not think about a future without a college degree. In contrast, FGC participants are more likely to think about what their lives would look like with and without a college degree. Thus, CGC participants may be affected more by thinking about life without a college degree than FGC students.

Additionally, there was a significant difference between contrast and reverse contrast conditions on the number of anagrams correct regardless of CGS, such that participants in the reverse contrast condition had more correct anagrams than those in the contrast condition. Part of the reason the order effects on anagram performance may have emerged is that participants in the reverse contrast condition, who were made to think first about future opportunities without a college degree, may experience the future opportunities with a degree scale as more positive than those who are in the contrast condition, thereby impacting anagram performance. This may also reflect a recency effect, such that those in the reverse contrast condition, who completed the future opportunities with a degree scale second, had increased positive affect and, therefore, increased performance on the anagram task, compared to participants in the contrast

condition, who completed the future opportunities without a college degree scale second. Indeed, research on affect and performance has demonstrated that positive affect increases performance, a term dubbed the “happier-and-smarter” effect (Staw & Barsade, 1993).

Additionally, several studies have demonstrated that positive affect promotes creative, flexible, and holistic ways of thinking, where negative affect decreases these tendencies (Ashby, Isen, & Turken, 1999; Fiedler, 2001). Given that creative, flexible, and holistic thought patterns should increase performance on anagram tasks, this may explain the effects we observe on anagram performance. Finally, negative affect has been shown to increase test anxiety, which may have negatively impacted performance on the anagrams for participants in the contrast condition (Zeidner, 2007). Unfortunately, because we do not have any measures of affect in this sample, these possibilities cannot be tested with the data from the present study.

### **Regulatory Focus and College Generation Status**

The present study found interactions between prevention, promotion, and college generation status, demonstrating that students high on at least one regulatory focus (e.g., promotion focus) had the highest anagram performance, academic motivation, and ADOG, but results varied in terms of the most successful strategy by CGS, such that the scores of FGC students were more strongly related to promotion than prevention focus, whereas the scores of CGC students were more strongly related to prevention than promotion focus. This may be because FGC participants who are low in promotion focus, or who are not motivated by success, are already showing evidence of disengagement. Continuing-generation participants, however, may be unfamiliar with the setbacks that

occur in college classes; thus, prevention focused individuals would be more attuned to this possibility and focused on avoiding it. The interaction of prevention and promotion was a significant predictor of anagram performance, and a marginal predictor of ADOG, suggesting that students who are high on at least one regulatory focus have the highest performance, regardless of CGS. These findings are consistent with research on mental contrasting, which demonstrates that students who complete a task where they think about their future goals, as well as how to deal with challenges at present, outperform students who merely think about success (Gollwitzer et al., 2011).

### **Limitations**

The present study had several limitations that may have contributed to the non-significant or unexpected findings. First, I proposed academic motivation and ADOG as mediators of the effect of condition on anagram performance. However, these variables appear to tap into different constructs. Academic motivation (Lockwood, Jordan, & Kunda, 2002) was designed to assess motivation to change academic habits in the future (e.g., “I plan to study harder for tests and exams,” “I plan to procrastinate less”). Academic delay of gratification was defined as “the postponement of immediately available opportunities to satisfy impulses in favor of pursuing academic goals that are temporally remote but ostensibly more valuable” (Bembenutty & Karabenick, 2004, p. 39). An example item is the choice to “A. Go to a party the night before a test for this course and study only if you have time, OR B. Study first and party only if you have time.” This scale, unlike academic motivation, asks participants what course of action they are likely to choose. The instructions for this scale imply that this is what a participant would do given the choice at this moment, while the academic motivation

scale asks participants what they would do in the future. For that reason, ADOG is a better measure of behavior at present, while academic motivation may be a better measure for future behavioral intentions.

Another issue in the present study was the difficulty of the anagrams, which had been vetted in previous research with FGC students (e.g., Stephens et al., 2012). These differences in performance may be due to varying levels in the ability of the students, or may be affected by some other factors, such as interest in the anagram task. This problem can be resolved in future studies by adopting an easier anagram task or a task that may be more interesting or relevant, such as an evaluative task of verbal and math abilities. Alternately, the best course of action may be to measure academic outcome variables such as course attendance, performance, and GPA.

### **Future Directions**

In the present study, we used the perceived likelihood of future opportunities scale as a prime. However, the variation in responses suggests that participants were not uniformly primed. In the future, other manipulations that capture the message that a college degree will improve your future in a variety of ways should be used. For example, students could be provided with an account from an older student, or a newspaper article delineating the benefits of a college degree. Following the manipulation, the perceived likelihood of future opportunities scale could be used as a manipulation check. Furthermore, more research needs to be done to understand the effect of perceived likelihood of future opportunities with a college degree on academic performance.

In the present analyses, we do not observe any significant differences between

FGC and CGC students with respect to perceived likelihood of future opportunities with a college degree. However, how stable are these perceptions over time? As students progress through their college careers, they may see increased practical relevance of their area of study, and gain confidence that a degree will enable them to accomplish future goals. On the other hand, students may lose faith that their degree will bring them success in the real world, especially if their desired career requires additional education. As students have additional exposure to friends who graduate, they may also experience increased or decreased belief in the utility of a college degree to help fulfill some of the goals that were listed in the perceived likelihood of future opportunities with a college degree scale. If, indeed, these beliefs are unstable, what is the effect on motivation and performance?

Another logical extension of this study would be an analysis of participants with different “regulatory focus” profiles (see Figure 11). For example, I hypothesize that a participant with low prevention and low promotion orientation is exhibiting a disengaged profile, whereas a participant with high prevention and high promotion orientation is highly engaged. However, what type of student has a high prevention and low promotion orientation? Perhaps this is someone who is not confident in their ability to succeed, or has recently underperformed or performed below expectations, and are primarily focusing on not failing. A student with high promotion and low prevention orientation, on the other hand, may be one who has always performed well, for whom failure is not a consideration.

	Low Promotion	High Promotion
Low Prevention	Disengaged	Promotion?
High Prevention	Prevention?	Engaged

*Figure 11.* Regulatory Focus Profiles

A future study may classify students into regulatory focus classes and then examine whether type of regulatory focus varies with socio-demographic variables such as CGS, SES, ethnicity, and gender. In addition, it may be possible to manipulate the regulatory focus of students with a disengaged profile with bogus feedback in an evaluative context and then observe how it impacts academic motivation and performance. This line of research could help to explain some of our findings by providing a broader perspective on how regulatory focus influences proximal behaviors as compared to distal goals, as well as the ways that students perceive messages about the likelihood of future success with a college degree.

In future studies, we might observe that students who are low in both prevention and promotion orientation have the lowest success rate, such that these students are not motivated by either a negative or positive future. If one type of regulatory focus can compensate for the other type of regulatory focus, then students who are high on promotion and low on prevention, or vice versa, should experience more academic success than those who are low on both types of regulatory foci. It is important to



determine whether students who are high on one type of regulatory foci have comparable academic performance to students who are high on both types of regulatory foci. This is an important consideration for future research on regulatory focus, which assumes an orthogonal structure where individuals are predominantly motivated by either a prevention or promotion strategy.

Finally, while past research has demonstrated important differences between first- and continuing-generation college students' views of the future (Guthrie et al., 2009), as well as differences in academic engagement and performance, the results of the present study indicated few differences between FGC and CGC students (e.g., Bowen et al., 2005; Housel & Harvey, 2009). In future directions, it will be important to examine other dimensions of college generation status that may bear on academic motivation and performance, such as availability of role models, perceived utility of a college degree for future goals, or important cultural variables such as interdependence and family support that may create a cultural mismatch for FGC students in the independent collegiate environment (e.g., Stephens et al., 2012).

### **Implications for Helping FGC Students to be Academically Successful**

In conclusion, the present study demonstrated that perceived likelihood of future opportunities with a college degree is an important predictor of academic motivation, academic delay of gratification, and performance on an anagram task, especially for first-generation college students. Additionally, the results of the study revealed important differences in responses to the future opportunities prime by college generation status with respect to academic motivation and academic delay of gratification.

Several findings can help us understand the experience of first-generation college

students and how we might help them to be academically successful. First, our unexpected findings related to regulatory focus may help to reveal strategies for improving academic motivation for FGC students. Namely, promotion focus was a stronger predictor of academic motivation and academic delay of gratification than prevention focus for FGC students. While it is important that students strive to attain positive outcomes as well as to avoid negative ones, these findings may indicate that FGC students should be encouraged to focus more on attaining positive academic outcomes, as thinking too much about avoiding negative outcomes may be linked to doubt about their ability to succeed in college.

Additionally, FGC students were significantly more likely to believe that they could still attain respect and a meaningful life without a college degree compared to CGC students, but they shared the same belief that they could attain a good career or lifestyle with a college. Indeed, we observed the highest anagram performance among FGC participants who believed that a college degree would ensure them a good career in the future. Thus, advisors and teachers can stress the importance of a college degree for creating opportunities to attain a good career and lifestyle, which may improve academic motivation and performance.

## REFERENCES

- Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, White women. *Health Psychology, 19*, 586–592.
- Allan, G. (1979). *A sociology of friendship and kinship*. London: George Allen & Unwin.
- Argyle, M. (1994). *The psychology of social class*. New York: Routledge.
- Aspinwall, L. G., Richter, L., & Hoffmann, R. R. (2000). Understanding how optimism works. In E. C. Chang (Ed.), *Optimism and pessimism: Implications for theory, research, and practice* (pp. 2 17-238). Washington, DC: American Psychological Association.
- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social-Cognitive Theory*, Prentice-Hall, Englewood Cliffs, NJ.
- Bartels, D. M., & Rips, L. J. (2010). Psychological connectedness and intertemporal choice. *Journal of Experimental Psychology: General, 139*(1), 49-69.
- Bartels, D. M., & Urminsky, O. (2011). On intertemporal selfishness: How the perceived instability of identity underlies impatient consumption. *Journal of Consumer Research, 38*(1), 182-198.
- Bembenutty, H. (2002, April). *Academic Delay of Gratification and Self-Efficacy Enhance Academic Achievement Among Minority College Students*, Paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA.
- Bembenutty, H., & Karabenick S.A. (1996). Academic delay of gratification. *Learning and Individual Differences, 10*(4), 329-346.
- Bembenutty, H. & Karabenick, S.A. (2004). Inherent association between academic delay of gratification, future time perspective, and self-regulated learning. *Educational Psychology Review, 16*(1), 35-57.
- Bertrand, M., Mullainathan, S., & Shafir, E. (2006). Behavioral economics and marketing in aid of decision-making among the poor. *Journal of Public Policy and Marketing, 25*(1), 8-23.
- Blanton, H., Crocker, J., & Miller, D. T. (2000). The effects of in-group versus out-group social comparison on self-esteem in the context of a negative stereotype. *Journal of Experimental Social Psychology, 36*, 519-530.
- Bosma, H., van de Mheen, H. D., & Mackenbach, J. P. (1999). Social class in childhood

- and general health in adulthood: questionnaire study of contribution of psychological attributes. *British Medical Journal*, 318, 18–22.
- Bowen, W. G., Kurzweil, M. A., & Tobin, E. M. (2005). *Equity and excellence in American higher education*. Charlottesville, VA: University of Virginia Press.
- Bouffard, L., Bastin, E., & Lapierre, S. (1996). Future time perspective according to women's age and social role during adulthood. *Sex Roles*, 34, 253–285.
- Brickman, S., Miller, R. B., and Roedel, T. D. (1997, March). Goal valuing and future consequences as predictors of cognitive engagement. *Paper Presented at the Annual Meeting of the American Educational Research Association*, Chicago, IL.
- Cameron, P., Desai, K. G., Bahador, D., & Dremel, G. (1977). Temporality across the life-span. *International Journal of Aging and Human Development*, 8, 229-259.
- Carstensen, L. L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging*, 7, 331–338.
- Carstensen, L. L. (1993). Motivation for social contact across the life span: A theory of socioemotional selectivity. In J. E. Jacobs (Ed.), *Nebraska symposium on motivation, 1992: Developmental perspectives on motivation* (pp. 209 –254). Lincoln: University of Nebraska Press.
- Carstensen, L. L. (1995). Evidence for a life-span theory of socioemotional selectivity theory. *Current Directions in Psychological Science*, 4, 151–156.
- Carstensen, L. L., Fung, H. H., & Charles, S. T. (2003). Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and Emotion*, 27, 103–123.
- Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist*, 54, 165–181.
- Cate, R.A., & John, O.P. (2007). Testing models of the structure and development of future time perspective: Maintaining a focus on opportunities in middle age. *Psychology and Aging*, 22(1), 186-201.
- Chemers, M. M., Hu, L., & Garcia, B. F. (2001). Academic self-efficacy and first-year college student performance and adjustment. *Journal of Educational Psychology*, 93, 55–64.
- Cohen, R. M. (1998). Class consciousness and its consequences: The impact of an elite education on mature, working-class women. *American Educational Research Journal*, 35, 353–375.

- Collins, R. L. (1996). For better or worse: The impact of upward social comparisons on self-evaluation. *Psychological Bulletin*, *119*, 51-69.
- Dasgupta, N., & Asgari, S. (2004). Seeing is believing: Exposure to counterstereotypic women leaders and its effect on the malleability of automatic gender stereotyping. *Journal of Experimental Social Psychology*, *40*, 642–658.
- Davies, P. G., Spencer, S. J., Quinn, D. M., & Gerhardstein, R. (2002). Consuming images: How television commercials that elicit stereotype threat can restrain women academically and professionally. *Personality and Social Psychology Bulletin*, *28*, 1615–1628.
- Day, J.C., & Newburger, E.C. (2002). The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings. (Current Population Reports, Special Studies, P23-210). Washington, DC: Commerce Dept., Economics and Statistics Administration, Census Bureau. Available: <http://www.census.gov/prod/2002pubs/p23-210.pdf>
- De Volder, M., and Lens, W. (1982). Academic achievement and future time perspective as a cognitive-motivational concept. *Journal of Personality and Social Psychology*. *42*, 566–571.
- Destin, M., & Oyserman, D. (2009). Incentivizing education: Seeing schoolwork as an investment, not a chore. *Journal of Experimental Social Psychology*, *46*, 846-849.
- Dews, C. L. B., & Law, C. L. (Eds.). (1995). This fine place so far from home: Voices of academics from the working class. Philadelphia: Temple University Press.
- Drentea, P. (2000). Age, debt, and anxiety. *Journal of Health and Social Behavior*, *41*, 437–450.
- Duckworth, A. L., Kirby, T. A., Gollwitzer, A., & Oettingen, G. (2013). From fantasy to action: Mental Contrasting with Implementation Intentions (MCII) improves academic performance in children. *Social Psychological and Personality Science*, *4*, 745-753.
- Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, *53*, 109-132.
- Engle, J. & Tinto, V. (2008). *Moving beyond access: College success for low-income, first generation students*. Washington, D.C: The Pell Institute for the Study of Opportunity in Higher Education.
- Ersner-Hershfield, H., Garton, M. T., Ballard, K., Samanez-Larkin, G., & Knutson, B. (2009). Don't stop thinking about tomorrow: Individual differences in future self-continuity account for saving. *Judgment and Decision Making*, *4*(4), 280-286.
- Feather, N. T. (1990). *The Psychological Impact of Unemployment*, Springer, New York.

- Feather, N. T. (1992). Values, valences, expectations, and actions. *Journal of Social Issues*, 48, 109–124.
- Floyd, C. (1997). Achieving despite the odds: A study of resilience among a group of African American high school seniors. *Journal Negro Education*, 65, 181-188.
- Fraisse, P. (1963). *The psychology of time*. New York: Harper & Row.
- Frederick, S., Loewenstein, G., & O' Donoghue, T. (2002) Time discounting and time preference: a critical review. *Journal of Economic Literature*. 40, pp. 350-401.
- Fredrickson, B. L., & Carstensen, L. L. (1990). Choosing social partners: How old age and anticipated endings make people more selective. *Psychology and Aging*, 5, 335–347.
- Freire, E., Gorman, B., & Wessman, A. E. (1980). Temporal span, delay of gratification, and children's socioeconomic status. *Journal of Genetic Psychology*, 137, 247-255.
- Fung, H. H., Carstensen, L. L., & Lutz, M. A. (1999). The influence of time on social preferences: Implications for life span development. *Psychology and Aging*, 14, 595–604.
- Fung, H. H., Lai, P., & Ng, R. (2001). Age differences in social preferences among Taiwanese and mainland Chinese: The role of perceived time. *Psychology and Aging*, 16, 351–356.
- Gofen, A. (2009). Family capital: How first-generation higher education students break the intergenerational cycle. *Family Relations*, 58(1), 104-120.
- Gollwitzer, A., Oettingen, G., Kirby, T., Duckworth, A. L., & Mayer, D. (2011). Mental contrasting facilitates academic performance in school children. *Motivation and Emotion*, 35(4), 403-412.
- Gonzalez A. & Zimbardo P.G. (1985). Time in perspective: a psychology today survey report. *Psychology Today*, 21–26.
- Guthrie, L.C., Butler, S.C., & Ward, M.M. (2009). Time perspective and socioeconomic status: a link to socioeconomic disparities in health? *Social Science & Medicine*, 68(12), 2145-2151.
- Heckhausen, H. (1963). *Hoffnung und Furcht in der Leistungsmotivation [Hope and fear in achievement motivation]*. Meisenheim: Hain.
- Heckhausen, H. (1967). *The anatomy of achievement motivation* (K. F. Butler, R. C. Birney, & D. C. McClelland, translators.). New York: Academic Press.

- Heinonen, K., Raikkonen, K., Matthews, K.A., Scheier, M.F., Raitakari, O.I., Pukki, L., & Keltikangas-Jarvinen, L. (2006). Socioeconomic status in childhood and adulthood: Associations with dispositional optimism and pessimism over a 21-year follow up. *Journal of Personality*, *74*, 1111-1126.
- Hershfield, H. E. (2011). Future self-continuity: How conceptions of the future self transform intertemporal choice. *Annals of the New York Academy of Sciences*, *1235*, 30-43. doi:10.1111/j.1749-6632.2011.06201.x
- Hershfield, H. E., Cohen, T. R., & Thompson, L. (2012). Short horizons and tempting situations: Lack of continuity to our future selves leads to unethical decision making and behavior. *Organizational Behavior and Human Decision Processes*, *117*(2), 298-310.
- Hershfield, H.E & Galinsky, A.D. (2011). *Respect for the Elderly Predicts National Savings and Individual Saving Decisions*. Northwestern University. Evanston, IL.
- Hershfield, H.E., Goldstein, D.G., Sharpe, W.F., Fox, J., Yeykelvis, L., Carstensen, L.L., & Bailenson, J. (2011). Increasing saving behavior through age-progressed renderings of the future self. *Journal of Marketing Research*, *48*, S23-S27.
- Holman, E. A., and Silver, R. C. (1998). Getting “Stuck” in the past temporal orientation and coping with trauma. *Journal of Personality and Social Psychology*. *74*, 1146–1163.
- hooks, b. (2000). *Where we stand: Class matters*. New York: Routledge.
- Horn, L., & Nunez, A. (2000). *Mapping the road to college: First-generation students’ math track, planning strategies, and context of support* (Report No. NCES 2000–153). Washington, DC: National Center for Education Statistics, U.S. Government Printing Office.
- Hossler, D., Schmit, J., & Vesper, N. (1999). *Going to college: How social, economic, and educational factors influence the decisions students make*. Baltimore, MD: Johns Hopkins University Press.
- Housel, T. H., & Harvey, V. L. (2009). *The invisibility factor: Administrators and faculty reach out to first-generation college students*. Boca Raton, FL: Brown Walker Press.
- Husman, J. (1998). The effect of perceptions of the future on intrinsic motivation. *Dissertation. Abstract. International Section A: Humanities and Social Sciences*, *59*(6-A): 1905.
- Husman, J., and Lens, W. (1999). The role of the future in student motivation. *Educational Psychology*, *34*, 113–125.

- Jamieson, J., Mendes, W. B., Blackstock, E., & Schmader, T. (2009). Turning the knots in your stomach into bows: Reappraising arousal improves performance on the GRE. *Journal of Experimental Social Psychology, 46*, 208–212.
- Jensen, B. (2004). Across the great divide: Crossing classes and clashing cultures. In M. Zweig (Ed.), *What's class got to do with it? American society in the twenty-first century* (pp. 168–183). Ithaca, NY: Cornell University Press.
- Johnson, S. E., Richeson, J. A., & Finkel, E. J. (2011). Middle class and marginal? Socioeconomic status, stigma, and self-regulation at an elite university. *Journal of Personality and Social Psychology, 100*, 838–852.
- Jones, J. M., Banicky, L., Lasane, T., & Pomare, M. (1996). *The Temporal Orientation Scale*. Unpublished manuscript, University of Delaware.
- Kao, G., & Tienda, M. (1995). Optimism and achievement: The educational performance of immigrant youth. *Social Science Quarterly, 76*, 1-19.
- Kenny, D. A., Kashy, D. A., & Bolger, N. (1998). Data analysis in social psychology. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 1, 4th ed., pp. 233-265). Boston, MA: McGraw-Hill.
- Klineberg, S.L. (1968). Future time perspective and preference for delay of gratification. *Journal of Personality and Social Psychology, 8*, 253-257.
- Kohn, M. (1969). *Class and conformity: A study in values*. Homewood, IL: Dorsey Press.
- Kohn, M., & Schooler, C. (1983). *Work and personality: An inquiry into the impact of social stratification*. Norwood, NJ: Ablex Publishing Company.
- Kraus, M. W., Piff, P. K., & Keltner, D. (2011). Social class as culture: The convergence of resources and rank in the social realm. *Current Directions in Psychological Science, 20*, 246–250.
- Kusserow, A. S. (2004). *American Individualism: Child Rearing and Social Class in Three Neighborhoods*. New York, NY: Palgrave MacMillan.
- Lamm, H., Schmidt, R. W., & Trommsdorff, G. (1976). Sex and social class as determinants of future orientation (time perspective) in adolescents. *Journal of Personality and Social Psychology, 34*(3), 317-326.
- Lang, F. R. (2000). Endings and continuity of social relationships: Maximizing intrinsic benefits within personal networks when feeling near to death. *Journal of Social and Personal Relationships, 17*, 155–182.
- Lang, F. R., & Carstensen, L. L. (2002). Time counts: Future time perspective, goals, and social relationships. *Psychology and Aging, 17*, 125–139.



- Lareau, A. (2003). *Unequal childhoods: Class, race, and family life*. Berkeley, CA: University of California Press.
- Lasane, T. P., & Jones, J. M. (1999). Temporal orientation and academic goal-setting: The mediating properties of a motivational self. *Journal of Social and Behavioral Personality*, *14*, 31–44.
- Lennings, C. J. (1991). Motivation and future temporal orientation: A test of the self-handicapping hypothesis. *Psychological Reports*, *84*, 1070–1072.
- Leonardi, A., Syngollitou, E., & Kiosseoglou, G. (1998). Academic achievement, motivation and possible selves. *Journal of Adolescence*, *21*, 219–222.
- Leonhardt, D. (2005, May 24). Class Matters: The college dropout boom. *The New York Times*. Retrieved from <http://www.nytimes.com/2005/05/24/national/class/EDUCATION-FINAL.html>
- LeShan, L.L. (1952). Time orientation and social class. *Journal of Abnormal and Social Psychology*, *47*, 589-92.
- Lessing, E.E. (1968). Demographic, developmental, and personality correlates of length of future time perspective (FTP). *Journal of Personality*, *36*, 183-201.
- Levine, A., & Nidiffer, J. (1996). *Beating the odds: How the poor get to college*. San Francisco: Jossey-Bass.
- Lewis, O. (1959). *Five families: Mexican case studies in the culture of poverty*. New York, NY: Basic Books.
- Lewis, O. (1966). *La vida: A Puerto Rican family in the culture of poverty-San Juan and New York*.
- Lockwood, P. (2006). “Someone like me can be successful”: Do college students need same-gender role models? *Psychology of Women Quarterly*, *30*, 36–46.
- Lockwood, P., Jordan, C.H., & Kunda, Z. (2002). Motivation by positive or negative role models: Regulatory focus determines who will best inspire us. *Journal of Personality and Social Psychology*, *83*(4), 854-864.
- Lockwood, P., & Kunda, Z. (1997). Superstars and me: Predicting the impact of role models on the self. *Journal of Personality and Social Psychology*, *73*, 91–103.
- Lubrano, A. (2003). *Limbo: Blue-collar roots, white-collar dreams*. New York, NY: Wiley.
- Mani, A., Mullainathan, S., Shafir, E., Zhao, J. (2013). Poverty impedes cognitive function. *Science*, *341*, 976-980.

- Markus, H. R., & Kitayama, S. (2003). Culture, self, and the reality of the social. *Psychological Inquiry, 14*, 277-283.
- Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist, 41*, 954-969.
- Markus, H.R., Ryff, C.D., Curhan, K.B., & Palmersheim, K.A. (2004). In their own words: Well-being at midlife among high school educated and college-educated adults. In O.G. Brim, C.D. Ryff, & R.C. Kessler (Eds.), *How healthy are we? A national study of well-being at midlife* (pp. 273-319). Chicago: University of Chicago Press.
- Marx, D. M., & Goff, P. A. (2005). Clearing the air: The effect of experimenter race on target's test performance and subjective experience. *British Journal of Social Psychology, 44*, 645-657.
- Marx, D. M., & Roman, J. S. (2002). Female role models: Protecting women's math test performance. *Personality and Social Psychology Bulletin, 28*, 1183-1193.
- Marx, D. M., Stapel, D. A., & Muller, D. (2005). We can do it: The interplay of construal orientation and social comparisons under threat. *Journal of Personality and Social Psychology, 88*, 432-446.
- McFarland, D.A., & Thomas, R.J. (2006). Bowling young: How youth voluntary associations influence adult political participation. *American Sociological Review, 71*, 401-425.
- McIntyre, R. B., Paulson, R. N., & Lord, C. G. (2003). Alleviating women's mathematics stereotype threat through salience of group achievements. *Journal of Experimental Social Psychology, 39*, 83-90.
- Miller, R. B., DeBacker, T. K., and Greene, B. A. (1999). Perceived instrumentality and academics: The links to task valuing. *Journal of Instructional Psychology, 26*, 250-260.
- Mischel, W. (1974). Processes in delay of gratification. In Berkowitz, L. (Series ed.), *Advances in Experimental Social Psychology, Vol. 7*, Academic Press, San Diego, CA, pp. 249-292.
- Mischel, W. (1981). Objective and subjective rules for delay of gratification. In d'Ydewalle, G., and Lens, W. (eds.), *Cognition in Human Motivation and Learning*, Leuven University Press and Erlbaum, Leuven, Belgium and Hillsdale, NJ, pp. 33-58.
- Mischel, W., & Ayduk, O. (2011). Willpower in a Cognitive-Affective Processing System: The dynamics of delay of gratification. In K. D. Vohs & R. F. Baumeister (Eds.), *Handbook of self-regulation: Research, Theory, and*

- Applications* (2<sup>nd</sup> ed., pp. 83-105). New York: Guilford.
- Mullainathan, S., & Shafir, E. (2009). Savings policy & decision-making in low-income households. In Michael Barr and Rebecca Blank (Eds.), *Insufficient Funds: Savings, Assets, Credit and Banking Among Low-Income Households* (pp. 121-145). New York: Russell Sage Foundation Press.
- Murphy, M. C., Steele, C. M., & Gross, J. J. (2007). Signaling threat: How situational cues affect women in math, science, and engineering settings. *Psychological Science*, *18*, 879 – 885.
- Muthén, L.K. and Muthén, B.O. (1998-2012). *Mplus User's Guide. Seventh Edition*. Los Angeles, CA: Muthén & Muthén.
- The National Center for Higher Education Management Systems. (2009). *Graduation Rates: Four-Year and Six-Year Graduation Rates of Bachelor's Students – 2009*. Retrieved from <http://www.higheredinfo.org/dbrowser/?level=nation&mode=map&state=0&submeasure=27>
- Nelson, M. L., Englar-Carlson, M., Tierney, S. C., & Hau, J. M. (2006). Class jumping into academia: Multiple identities for counseling academics. *Journal of Counseling Psychology*, *53*, 1–14.
- Nes, L.S., Evans, D.R., Segerstrom, S.C., (2009). Optimism and college retention: Mediation by motivation, performance, and adjustment. *Journal of Applied Social Psychology*, *39*, 1887-1912.
- Nonis, S. A., & Wright, D. (2003). Moderating effects of achievement striving and situational optimism on the relationship between ability and performance outcomes of college students. *Research in Higher Education*, *44*, 327–346.
- Nurmi, J-E. (1991). How do adolescents see their future? A review of the development of future orientation and planning. *Developmental Review*, *11*, 1-59.
- Oettingen, G. (2012). Future thought and behaviour change. *European Review of Social Psychology*, *23*, 1-63.
- Oettingen, G., & Mayer, D. (2002). The motivating function of thinking about the future: Expectations versus fantasies. *Journal of Personality and Social Psychology*, *83*, 1198-1212.
- Okun, M.A., Goegan, B., & Mitric, N. (2009) Quality of alternatives, institutional preferences, and institutional commitment among first-year college students. *Educational Psychology*, *29*, 371-383.
- O’Rand, A., & Ellis, R. A. (1974). Social class and social time perspective. *Social*

- Forces*, 53, 5362.
- Ostrove, J. M., & Long, S. M. (2007). Social class and belonging: Implications for college adjustment. *The Review of Higher Education*, 30, 363–389.
- Oyserman, D. (2009a). Identity-based motivation: Implications for action-readiness, procedural-readiness, and consumer behavior. *Journal of Consumer Psychology*, 19, 250-260.
- Oyserman, D. (2009b). Identity-based motivation and consumer behavior. Response to commentary. *Journal of Consumer Psychology*, 19, 276–279.
- Oyserman, D., Bybee, D., & Terry, K. (2006). Possible selves and academic outcomes: How and when possible selves impel action. *Journal of Personality and Social Psychology*, 91, 188-204.
- Oyserman, D., Bybee, D., Terry, K., & Hart-Johnson, T. (2004). Possible selves as roadmaps. *Journal of Research in Personality*, 38, 130–149.
- Oyserman, D., & Destin, M. (2010). Identity-based motivation: Implications for intervention. *The Counseling Psychologist*, 38, 1001-1043.
- Oyserman, D., Gant, L., & Ager, J. (1995). A socially contextualized model of African American identity: Possible selves and school persistence. *Journal of Personality and Social Psychology*, 69, 1216–1232.
- Oyserman, D., Johnson, E. & James, L. (2011). Seeing the destination but not the path: Effects of socioeconomic disadvantage on school-focused possible self content and linked behavioral strategies. *Self and Identity*, 10, 474-492.
- Oyserman, D. & Markus, H. (1990a). Possible selves and delinquency. *Journal of Personality and Social Psychology*, 59, 112–125.
- Oyserman, D. & Saltz, E. (1993). Competence, delinquency, and attempts to attain possible selves. *Journal of Personality and Social Psychology*, 65, 360–374.
- Oyserman, D., Terry, K., & Bybee, D. (2002). A possible selves intervention to enhance school involvement. *Journal of Adolescence*, 24, 313–326.
- Pascarella, E., Pierson, C., Wolniak, G., & Terenzini, P. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *Journal of Higher Education*, 75(3), 249-284.
- Peterson, C. (2000). The future of optimism. *American Psychologist*, 55,44-55.
- Poole, M.E., & Cooney, G. (1987). Orientations to the future: A comparison of adolescents in Australia and Singapore. *Journal of Youth and Adolescence*, 16(2), 129-151.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for

- assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879-891.
- Pronin, E., & Ross, L. (2006). Temporal differences in trait self ascription: When the self is seen as an other. *Journal of Personality and Social Psychology*, 90, 197–209.
- Pronin, E., Olivola, C. Y., & Kennedy, K. A. (2008). Doing unto future selves as you would do unto others: Psychological distance and decision making. *Personality and Social Psychology Bulletin*, 34, 224-236.
- Rakowski, W. (1979). Future time perspective in later adulthood: Review and research directions. *Experimental Aging Research*, 5, 43–88.
- Ramsey, K. & Peale, C. (2010, March 29). First-generation college students stay the course. *USA Today*. Retrieved from:  
[http://usatoday30.usatoday.com/news/education/2010-03-30-firstgendorm30\\_st\\_n.htm](http://usatoday30.usatoday.com/news/education/2010-03-30-firstgendorm30_st_n.htm)
- Roberts, J. S., & Rosenwald, G. C. (2001). Ever upward and no turning back: Social mobility and identity formation among first-generation college students. In D. P. McAdams, R. Josselson, & A. Lieblich (Eds.), *Turns in the road: Narrative studies of lives in transition* (pp. 91–119). Washington, DC: APA.
- Rossi, A. S. (2001). Domains and dimensions of social responsibility: A sociodemographic profile. In A. S. Rossi (Ed.), *Caring and doing for others: Social responsibility in the domains of family, work, and community* (pp. 97–134). Chicago: University of Chicago Press.
- Scheier, M. F., & Carver, C. S. (1987). Dispositional optimism and physical well-being: The influence of generalized outcome expectancies on health. *Journal of Personality*, 55, 169-210.
- Schwarz, N., Bless, H., Strack, F., Klumpp, G., Rittenauer-Schatka, H., & Simons, A. (1991). Ease of retrieval as information: Another look at the availability heuristic. *Journal of Personality and Social Psychology*, 61, 195-202.
- Schwarz, N. (1998). Accessible content and accessibility experiences: The interplay of declarative and experiential information in judgment. *Personality and Social Psychology Review*, 2, 87-99.
- Schmidt, R.W., Lamm, H., Trommsdorff, G. (1978). Social class and sex as determinants of future orientation (time perspective) in adults. *European Journal of Social Psychology*, 8, 71-90.
- Shah, A., Mullainathan, S., & Shafir, E. 2012. Some consequences of having too little. *Science*, 338(6107), 682-685.
- Shapiro, J.R., Williams, A.M., Hambarchyan, M. (2013). Are all interventions created

- equal? A multi-threat approach to tailoring stereotype threat interventions. *Journal of Personality and Social Psychology*, 104(2), 277-288.
- Sherman, S. J., & Corty, E. (1984). Cognitive heuristics. In R. S. Wyer & T. K. Sruli (Eds.), *Handbook of social cognition* (Vol. 1, pp. 189-286). Hillsdale, NJ: Erlbaum.
- Singh-Manoux, A., Adler, N. E., & Marmot, M. G. (2003). Subjective social status: Its determinants and its association with measures of ill-health in the Whitehall II study. *Social Science & Medicine*, 56, 1321–1333.
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, 75(3), 417-453.
- Snibbe, A. C., & Markus, H. R. (2005). You Can't Always Get What You Want: Educational Attainment, Agency, and Choice. *Journal of Personality and Social Psychology*, 88, 703-720.
- Stephens, N. M., Fryberg, S. A., & Markus, H. R. (2011). It's your choice: How the middle-class model of independence disadvantages working-class Americans. In S. T. Fiske & H. R. Markus (Eds.), *Facing social class: How societal rank influences interaction* (pp. 87-106), New York, NY: Russell Sage Foundation.
- Stephens, N.M., Fryberg, S.A., Markus, H.R., Johnson, C.S., & Covarrubias, R. (2012). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology*, 102(6), 1178-1197.
- Stewart, A. J., & Ostrove, J. M. (1993). Social class, social change, and gender. *Psychology of Women Quarterly*, 17, 475–497.
- Stout, J. G., Dasgupta, N., Hunsinger, M., & McManus, M. A. (2011). STEMing the tide: Using ingroup experts to inoculate women's self-concept in science, technology, engineering, and mathematics (STEM). *Journal of Personality and Social Psychology*, 100, 155-170.
- Strack, E (1985). Urteilsheuristiken [Judgmental heuristics]. In D. Frey & M. Irlle (Eds.), *Theorien der Sozialpsychologie* (Vol. 3, pp. 239-267). Bern, Switzerland: Huber.
- Stratham, A., & Joireman, J. (2005). *Understanding behavior in the context of time: Theory, research, and application*. Mahwah, NJ: Lawrence Erlbaum.
- Suddendorf, T., & Corballis, M. C. (1997). Mental time travel and the evolution of the human mind. *Genetic, Social, and General Psychology Monographs*, 123, 133-167.
- Tabachnick, S.E., Miller, R.B., & Relyea, G.E. (2008). The relationships among students' future-oriented goals and subgoals, perceived task instrumentality, and task

- oriented self-regulation strategies in an academic environment. *Journal of Educational Psychology*, 100(3), 629-642.
- Taylor, S. E., Pham, L. B., Rivkin, I. D., & Armor, D. A. (1998). Harnessing the imagination: Mental simulation, self-regulation, and coping. *American Psychologist*, 53, 429-439.
- Teahan, J. E. Future time perspective, optimism and academic achievement. *Journal of Abnormal and Social Psychology*, 1958, 57, 379-380.
- Terenzini, P. T., Springer, L., Yaeger, P. M., Pascarella, E. T., & Nora, A. (1996). First-generation college students: Characteristics, experiences, and cognitive development. *Research in Higher Education*, 37(1), 1-22.
- Tokarczyk, M. M. (2004). Promises to keep: Working-class students and higher education. In M. Zweig (Ed.), *What's class got to do with it? American society in the twenty-first century* (pp. 161-167). Ithaca, NY: Cornell University Press.
- Tokarczyk, M. M., & Fay, E. A. (Eds.). (1993). *Working-class women in the academy: Laborers in the knowledge factory*. Amherst: University of Massachusetts Press.
- Trommsdorff, G. (1983). Future orientation and socialization. *International Journal of Psychology*, 18, 381-406.
- Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, 5, 207-232.
- Van Calster, K., Lens, W., & Nuttin, J.R. (1987). Affective attitude toward the personal future: Impact on motivation in high school boys. *The American Journal of Psychology*, 100(1), 1-13.
- Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic role of intrinsic goals and autonomy-support. *Journal of Personality and Social Psychology*, 87, 246-260.
- Walker, C. O., Greene, B. A., & Mansell, R. A. (2006). Identification with academics, intrinsic/extrinsic motivation, and self-efficacy as predictors of cognitive engagement. *Learning and Individual Differences*, 16, 1-12.
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92, 82-96.
- Walton, G. M. & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331, 1447-1451.
- Wilson, T. D., & Linville, P. W. (1982). Improving the academic performance of college freshmen: Attribution therapy revisited. *Journal of Personality and Social Psychology*, 43, 101-110.

*Psychology*, 42, 367–376.

Wilson, T. D., & Linville, P. W. (1985). Improving the performance of college freshmen with attributional techniques. *Journal of Personality and Social Psychology*, 49, 287–293.

Zaleski, Z. (1987). Behavioral effects of self-set goals for different time ranges. *International Journal of Psychology*, 22, 17–38.

Zimbardo, P. G., and Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual differences metric. *Journal of Personality and Social Psychology*, 77: 1271–1288.



APPENDIX A  
STUDY MATERIALS

**Prescreening Questionnaire**

**A. Problem Solving Task: Word Puzzles**

Below are words that can be re-arranged to make other words. For instance, the letters in the word 'cone' can be rearranged to spell 'once'. For each word that appears below, try to re-arrange the letters to create a different word.

When you have an answer, please type it into the space provided next to each word. If you attempt to solve a word puzzle but do not solve it, please mark the box labeled 'attempted' to indicate that you tried to solve the puzzle.

	<b>Answer</b>	<b>Attempted</b>
<b>C O I N</b>		•
<b>C A U S E</b>		•
<b>S E L V E S</b>		•
<b>A L U M N A</b>		•

**B. Demographics**

1. How many adults do you know who have received a bachelor’s degree (B.A., B.S., B.F.A) from a four-year university? (Drop down box: 1-40)

2a. What was your high school GPA (0.0-4.0)?

2b. What is your college GPA (0.0-4.0)?

3. Are you the first in your family to go to college? \_\_\_\_\_ Yes \_\_\_\_\_ No

4. What is the highest level of education attained by your mother and father? (check one for each)

	Mother	Father
Less than high school	_____	_____
High school diploma	_____	_____
Some college or 2-year college degree (A.A.)	_____	_____
4-year college degree (B.A. or B.S.)	_____	_____
Graduate or professional degree (M.A., PhD, J.D., M.D.)	_____	_____

5. How would you describe your family’s social-economic class, in terms of household income?

- |                          |                          |
|--------------------------|--------------------------|
| _____ Upper class        | _____ Lower middle class |
| _____ Upper-middle class | _____ Working class      |
| _____ Middle class       |                          |

6. What was your family's yearly household income when you last lived with your parents/guardians? (If you still live with your family, please refer to income in the past year.)

\_\_\_ less than \$10,000

\_\_\_ \$10,000 to \$19,999

\_\_\_ \$20,000 to \$29,999

\_\_\_ \$30,000 to \$49,999

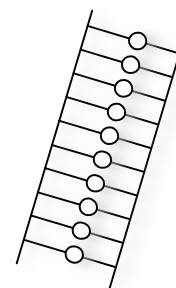
\_\_\_ \$50,000 to \$74,999

\_\_\_ \$75,000 to \$99,999

\_\_\_ \$100,000 to \$200,000

\_\_\_ More than \$200,000

7. Think of the ladder to the right as representing where people stand in American society. At the top of the ladder are the people who are the best off—those who have the most money, the most education, and the most respected jobs. At the bottom are the people who are the worst off—those who have the least money, least education, and least respected jobs or no job. Thinking about your family, fill in the circle on the line that best represents where your family is located on this ladder.



**Regulatory Focus Scale (Lockwood, Jordan, & Kunda, 2002)**

Read each statement and think about how much the statement is true of you. Choose the answer that seems best for you. There are no right or wrong answers. If you choose the leftmost point (1), you are saying “Not at all true of me.” if you choose the rightmost point (9), you are saying “Very true of me.”

- 1 In general, I am focused on preventing negative events in my life.
- 2 I am anxious that I will fall short of my responsibilities and obligations.
- 3 I frequently imagine how I will achieve my hopes and aspirations.
- 4 I often think about the person I am afraid I might become in the future.
- 5 I often think about the person I would ideally like to be in the future.
- 6 I typically focus on the success I hope to achieve in the future.
- 7 I often worry that I will fail to accomplish my academic goals.
- 8 I often think about how I will achieve academic success.
- 9 I often imagine myself experiencing bad things that I fear might happen to me.
- 10 I frequently think about how I can prevent failures in my life.
- 11 I am more oriented toward preventing losses than I am toward achieving gains.
- 12 My major goal in school right now is to achieve my academic ambitions.
- 13 My major goal in school right now is to avoid becoming an academic failure.
- 14 I see myself as someone who is primarily striving to reach my “ideal self”—to fulfill my hopes, wishes, and aspirations.
- 15 I see myself as someone who is primarily striving to become the self I “ought” to be—to fulfill my duties, responsibilities, and obligations.
- 16 In general, I am focused on achieving positive outcomes in my life.
- 17 I often imagine myself experiencing good things that I hope will happen to me.
- 18 Overall, I am more oriented toward achieving success than preventing failure

### **Perceived Likelihood of Future Opportunities Prime**

Previous research has demonstrated a significant link between attaining a college degree and certain life outcomes. Please read each outcome and think of the probability of attaining it with a college degree. In other words, in your opinion, what is the probability that a college degree can afford you each of these things? There are no right or wrong answers,

#### *A. Perceived Likelihood of Future Opportunities Prime (Degree Condition)*

1. What is the probability of reaching each of the following outcomes with a college degree, on a sliding scale from 0% (1, Not at all likely) to 100% (5, Certain).

If I graduate from college, I will...

1. Secure a job
2. Have a fulfilling and interesting career
3. Can help and support my family
4. Be a respected member of my community
5. Go on vacation
6. Have leisure time
7. Afford healthy foods
8. Have a less stressful life
9. Afford my own house and a nice car
10. Be financially stable
11. Be able to make choices for my own life
12. Accomplish something meaningful in my life

*B. Perceived Likelihood of Future Opportunities Prime (Contrast Condition)*

Previous research has demonstrated a significant link between attaining a college degree and certain life outcomes. Consider what your life will be like in the future with a college degree. Please read each outcome and think of the probability of attaining it WITH a college degree. In other words, in your opinion, what is the probability that WITH a college degree you can attain each of these things? There are no right or wrong answers,

2. What is the probability of reaching each of the following outcomes WITH a college degree, on a sliding scale from 0% (1, Not at all likely) to 100% (5, Certain).

If I graduate from college, I will...

- Secure a job
- Have a fulfilling and interesting career
- Can help and support my family
- Be a respected member of my community
- Go on vacation
- Have leisure time
- Afford healthy foods
- Have a less stressful life
- Afford my own house and a nice car
- Be financially stable
- Be able to make choices for my own life
- Accomplish something meaningful in my life

Now, consider what your life will be like in the future WITHOUT a college degree. Please read each outcome and think of the probability of attaining it WITHOUT a college degree. In other words, in your opinion, what is the probability that WITHOUT a college degree you can attain each of these things? There are no right or wrong answers,

3. What is the probability of reaching each of the following outcomes WITHOUT a college degree, on a sliding scale from 0% (1, Not at all likely) to 100% (5, Certain).

If I DO NOT graduate from college, I will...

- Secure a job
- Have a fulfilling and interesting career
- Can help and support my family
- Be a respected member of my community
- Go on vacation
- Have leisure time
- Afford healthy foods
- Have a less stressful life
- Afford my own house and a nice car
- Be financially stable
- Be able to make choices for my own life
- Accomplish something meaningful in my life

*B. Perceived Likelihood of Future Opportunities Prime (Reverse Contrast Condition)*

Previous research has demonstrated a significant link between attaining a college degree and certain life outcomes. Please read each outcome and think of the probability of attaining it **WITHOUT** a college degree. In other words, in your opinion, what is the probability that you can attain each of these things **WITHOUT** a college degree. There are no right or wrong answers,

4. What is the probability of reaching each of the following outcomes **WITHOUT** a college degree, on a sliding scale from 0% (1, Not at all likely) to 100% (5, Certain).  
If I **DO NOT** graduate from college, I will...

- Secure a job
- Have a fulfilling and interesting career
- Can help and support my family
- Be a respected member of my community
- Go on vacation
- Have leisure time
- Afford healthy foods
- Have a less stressful life
- Afford my own house and a nice car
- Be financially stable
- Be able to make choices for my own life
- Accomplish something meaningful in my life

Now, consider what your life will be like in the future **WITH** a college degree. Please read each outcome and think of the probability of attaining it **WITH** a college degree. In other words, in your opinion, what is the probability that **WITH** a college degree you can attain each of these things? There are no right or wrong answers,

5. What is the probability of reaching each of the following outcomes **WITH** a college degree, on a sliding scale from 0% (1, Not at all likely) to 100% (5, Certain).  
If I graduate from college, I will...

- Secure a job
- Have a fulfilling and interesting career
- Can help and support my family
- Be a respected member of my community
- Go on vacation
- Have leisure time
- Afford healthy foods
- Have a less stressful life
- Afford my own house and a nice car
- Be financially stable
- Be able to make choices for my own life
- Accomplish something meaningful in my life

*C. Control Condition*

Please press the button below to continue to the next page.

### **Academic Motivation Scale (Lockwood, Jordan, & Kunda, 2002)**

Read each statement and think about how much the statement is true. Choose the answer that seems best for you. There are no right or wrong answers. If you choose the leftmost point (1), you are saying "Not at all true." if you choose the rightmost point (11), you are saying "Very true."

1. I plan to put more time into my schoolwork.
2. I plan to study harder for tests and exams.
3. I plan to spend less time partying with friends.
4. I plan to put extra effort into the rest of my term papers.
5. I plan to keep up with reading assignments.
6. I plan to procrastinate less.
7. I plan to start studying for finals before the term ends.
8. I plan to spend more time at the library.
9. I plan to stop engaging in social activities that interfere with schoolwork.
10. I plan to avoid wasting time.
11. I plan to be more organized.
12. I plan to avoid missing work deadlines.
13. I plan to be less casual about schoolwork.
14. I plan to focus more on my studies.

### **Academic Delay of Gratification Scale (Bembenutty & Karabenick, 1996)**

Below is a series of choices between two alternative courses of action. Please read each set of statements carefully, and related each statement to this (introductory psychology) course. Then tell which course of action you would be more likely to choose and the strength of that choice. There are no right or wrong answers. Please respond with your true beliefs rather than the way you think you should respond. That is, tell us what you really would do under the conditions described in the statements. Do this by using the scale below:

- Definitely choose A
- Probably choose A
- Probably choose B
- Definitely choose B

1. A. Go to a favorite concert, play, or sporting event and study less for this course even though it may mean getting a lower grade on an exam you will take tomorrow, OR  
B. Stay home and study to increase your chances of getting a higher grade.
2. A study a little every day for an exam in this course and spend less time with your friends, OR  
B. Spend more time with your friends and cram just before the test.



3. A. Miss several classes to accept an invitation for a very interesting trip, OR  
B. Delay going on the trip until the course is over.
4. A. Go to a party the night before a test for this course and study only if you have time,  
OR  
B. Study first and party only if you have time.
5. A. Spend most of your time studying just the interesting material in this course even  
though it may mean not doing so well, OR  
B. Study all the material that is assigned to increase your chances of doing well in the  
course.
6. A. Skip this class when the weather is nice and try to get the notes from somebody  
later, OR  
B. Attend class to make certain that you do not miss something even though the  
weather is nice outside.
7. A. Stay in the library to make certain that you finish an assignment in this course that  
is due the next day, OR  
B. Leave to have fun with your friends and try to complete it when you get home later  
that night.
8. A. Study for this course in a place with a lot of pleasant distractions, OR  
B. Study in a place where there are fewer distractions to increase the likelihood that  
you will learn the material.
9. A. Leave right after class to do something you like even though it means possibly not  
understanding that material for the exam, OR  
B. Stay after class to ask your instructor to clarify some material for an exam that you  
do not understand.
10. A. Select an instructor for this course who is fun even though he/she does not a good  
job covering the course material, OR  
B. Select an instructor for this course who is not as much fun but who does a good job  
covering the course material.

**Performance Task (adapted from Stephens et al., 2012)**

Instructions: Below are words that can be re-arranged to make other words. For instance, the letters in the word 'cone' can be rearranged to spell 'once'. For each word that appears below, try to re-arrange the letters to create a different word.

At any point you can select the 'next' arrow to continue to the next page. Please note that you cannot go back once you move on to the next page.

When you have an answer, please type it into the space provided next to each word. If you attempt to solve a word puzzle but do not solve it, please mark the box labeled 'attempted' to indicate that you tried to solve the puzzle.

	<b>Answer (1)</b>	<b>Attempted (1)</b>
<b>CHIN (1)</b>		•
<b>MEAN (2)</b>		•
<b>EARTH (3)</b>		•
<b>FOUND (U1)</b>		•
<b>CANOE (4)</b>		•
<b>AMPLE (5)</b>		•
<b>FADES (U2)</b>		•
<b>CAPER (6)</b>		•
<b>FREED (7)</b>		•
<b>INSECT (8)</b>		•
<b>ATTIC (9)</b>		•
<b>LASHES (10)</b>		•
<b>IGNORE (11)</b>		•
<b>MANNERS (U3)</b>		•
<b>DISEASE (12)</b>		•

## Demographics

1. What is your student ID number? This will be used to give you appropriate credit for completing the survey.
2. How would you describe your family's social-economic class, in terms of household income?  
 Upper class  
 Upper-middle class  
 Middle class  
 Lower middle class  
 Working class
3. Think of the ladder to the right as representing where people stand in American society. At the top of the ladder are the people who are the best off—those who have the most money, the most education, and the most respected jobs. At the bottom are the people who are the worst off—those who have the least money, least education, and least respected jobs or no job. Thinking about your family, fill in the circle on the line that best represents where your family is located on this ladder.
4. Are you the first in your family to go to college?  Yes  No
5. What is the highest level of education attained by your **mother** and **father**? (check one for each)

	Mother	Father
Less than high school	<input type="checkbox"/>	<input type="checkbox"/>
High school diploma	<input type="checkbox"/>	<input type="checkbox"/>
Some college or 2-year college degree (A.A.)	<input type="checkbox"/>	<input type="checkbox"/>
4-year college degree (B.A. or B.S.)	<input type="checkbox"/>	<input type="checkbox"/>
Graduate or professional degree (M.A.)	<input type="checkbox"/>	<input type="checkbox"/>
Graduate or professional degree (PhD, J.D., M.D.)	<input type="checkbox"/>	<input type="checkbox"/>
6. What was your family's yearly household income when you last lived with your parents/guardians? (If you still live with your family, please refer to income in the past year.)

<input type="checkbox"/> less than \$11,000	<input type="checkbox"/> \$75,000 to \$99,999
<input type="checkbox"/> \$11,000 to \$24,999	<input type="checkbox"/> \$100,000 to \$149,999
<input type="checkbox"/> \$25,000 to \$49,999	<input type="checkbox"/> \$150,000 to \$199,999
<input type="checkbox"/> \$50,000 to \$74,999	<input type="checkbox"/> More than \$200,000
7. What is your age?
8. What year are you in school?

- Freshman
- Sophomore
- Junior

- Senior
- 5th Year
- Other \_\_\_\_\_

9. What is your major?

10. What is your gender?

- Male
- Female

11. What is your race/ethnicity? (Check all that apply).

- African/African American/Black
- American Indian/Alaska Native
- Asian/Asian American/Pacific Islander
- Caucasian/European American
- Latino American/Hispanic/Chicano
- Middle Eastern/Arab American
- Other \_\_\_\_\_

12. Did you or your family immigrate to the United States?

- Yes
- No

If <yes> the following question will appear:

When did you or your family immigrate to the United States?

- I am a first-generation immigrant, I moved to the United States without my family.
- I am a first-generation immigrant, my family moved to the United States **after** I was born.
- I am a second-generation immigrant, my parents moved to the United States **before** I was born.
- I am a third-generation immigrant; at least one of my grandparents was foreign-born.

13. Are you an international student?

- Yes
- No

APPENDIX B  
DEBRIEFING

Dear participant,

Thank you for your participation in the study. This study examines whether the tendency to perceive future opportunities influences academic motivation, institutional and goal commitment, and performance and effort on an anagram task.

First-generation college (FGC) students are at increased risk for dropping out of college compared to their continuing generation college student (CGC) counterparts. Part of the reason for this discrepancy may be that students from different backgrounds vary in their future time perspective, which increases academic engagement. One component of temporal perspective that has yet to be considered is the tendency to view the future in terms of opportunities (Cate & John, 2007).

In the first part of the study, you completed a perceived opportunities manipulation where you were asked to think about future opportunities with a degree (degree condition), future opportunities with and without a degree (contrast condition), or a no-prime control condition. After this, you completed a performance and effort task (e.g., anagrams), and several scales assessing prevention/promotion focus, academic delay of gratification, academic motivation, and SI intention.

I predict that FGC participants will benefit most from the contrast condition, because they will be more motivated by a prevention focus, the desire to avoid negative outcomes, compared to their CGC counterparts. When primed with the contrast of life with and without a degree, participants may experience increased academic motivation, academic delay of gratification, and performance and effort on the anagram task. CGC students, who may be more motivated by a promotion focus, the desire to achieve positive outcomes, may benefit most from the degree condition.

The findings will have implications for the understanding of social class, temporal perspective, and academic engagement and performance. I aim to use these findings to develop an intervention for at-risk students, where students are encouraged to think about a few role models who can motivate them.

If you have any questions concerning the research study, please contact the research team at [sarah.herrmann@asu.edu](mailto:sarah.herrmann@asu.edu).

Sincerely,  
Sarah Herrmann

APPENDIX C

RECRUITMENT E-MAIL

Subject: Extra credit opportunity!

Hello, students,

Please consider this extra credit opportunity:

Currently, a team of researchers at ASU is conducting research on how students can improve their grades - (link below). If you take the survey, you will receive **one extra credit point** toward your grade in this class. The survey is voluntary and will take only 15 minutes to complete. At the end of the semester, your SID will be used to link your responses from the study with archival information from the ASU Institutional Analysis (e.g., demographic information, GPA). At that time, we will eliminate the file that connects your SID from our files and the data will no longer be able to be connected with you. The results of this study may be used in reports, presentations, or publications, but your name will not be known.

To participate, visit <https://asuclas.qualtrics.com/SE/...>

Sincerely,

Virginia Kwan, Ph.D.

Morris A. Okun, Ph.D.



APPENDIX D  
SUPPLEMENTARY TABLES

Table 6

*Table of means for Academic Motivation by Condition and CGS*

	<b>Degree</b>	<b>Contrast</b>	<b>Reverse</b>	<b>Control</b>	<b>Total</b>
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
<b>CGS</b>					
<b>FGC</b>	8.359 (1.884)	9.122 (1.591)	8.383 (2.078)	8.131 (1.938)	8.497 (1.887)
<b>CGC</b>	8.192 (1.437)	7.877 (1.662)	8.132 (1.776)	8.296 (1.723)	8.100 (1.653)
<b>Total</b>	8.192 (1.437)	7.894 (1.687)	8.184 (1.755)	8.147 (1.772)	8.242 (1.748)

Table 7

*Table of means for Academic Delay of Gratification by Condition and CGS*

	<b>Degree</b>	<b>Contrast</b>	<b>Reverse</b>	<b>Control</b>	<b>Total</b>
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
<b>CGS</b>					
<b>FGC</b>	29.440 (2.709)	28.917 (3.229)	27.947 (5.749)	27.318 (3.772)	28.467 (3.927)
<b>CGC</b>	27.727 (3.985)	27.950 (4.420)	29.435 (3.468)	28.333 (4.256)	28.357 (4.029)
<b>Total</b>	28.348 (3.649)	28.312 (4.015)	29.000 (4.268)	27.948 (4.076)	28.395 (3.986)

Table 8

*Table of means for Prevention Focus by Condition and CGS*

	<b>Degree</b>	<b>Contrast</b>	<b>Reverse</b>	<b>Control</b>	<b>Total</b>
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
<b>CGS</b>					
<b>FGC</b>	5.782 (1.512)	6.026 (1.438)	5.749 (1.654)	6.463 (1.541)	6.003 (1.539)
<b>CGC</b>	5.841 (1.526)	5.821 (1.337)	5.981 (1.321)	5.809 (1.151)	5.874 (1.336)
<b>Total</b>	5.819 (1.510)	5.894 (1.367)	5.905 (1.431)	6.070 (1.348)	5.920 (1.411)

Table 9

*Table of means for Promotion Focus by Condition and CGS*

	<b>Degree</b>	<b>Contrast</b>	<b>Reverse</b>	<b>Control</b>	<b>Total</b>
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
<b>CGS</b>					
<b>FGC</b>	7.415 (1.383)	7.241 (1.498)	6.957 (1.763)	7.593 (1.059)	7.307 (1.439)
<b>CGC</b>	6.943 (1.297)	7.015 (1.221)	7.346 (1.036)	6.898 (1.479)	7.059 (1.267)
<b>Total</b>	7.113 (1.338)	7.097 (1.322)	7.218 (1.319)	7.176 (1.361)	7.148 (1.334)

Table 10

*Table of means for Anagrams Correct by Condition and CGS*

	<b>Degree</b>	<b>Contrast</b>	<b>Reverse</b>	<b>Control</b>	<b>Total</b>
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
<b>CGS</b>					
<b>FGC</b>	4.039 (2.793)	3.125 (2.365)	4.000 (2.256)	3.333 (2.408)	3.629 (2.468)
<b>CGC</b>	3.391 (2.662)	3.256 (2.691)	4.085 (2.569)	3.861 (2.789)	3.671 (2.668)
<b>Total</b>	3.625 (2.709)	3.209 (2.562)	4.057 (2.455)	3.650 (2.635)	3.650 (2.593)