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A Study of the Impact of Mental Contrasting and Implementation Intentions on Academic Performance

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A STUDY OF THE IMPACT OF MENTAL CONTRASTING

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by

Suzanne Velasquez-Sheehy

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ABSTRACT

According to the U.S. Department of Education, the national high school graduation rate is 81%

and only 59% of college enrolled students in 2006 obtained a college degree within ten years of

entering 9th grade (U. S. Department of Education, Institute of Education Sciences, 2014).

Studies conclude that high school grades predicted academic performance no matter what type of

high school the students attended and that students who had good grades went on to graduate

from college as a result of self-efficacy, motivation, and academic goals (Bowen, Chingos, &

McPherson, 2011). Limited research suggests that using mental contrasting and implementation

intentions (MCII) positively impacts short-term goal attainment in educational settings. The

purpose of this experimental study was to investigate the effects of high school students using

these strategies prior to setting academic goals for a ten week marking period. One-hundred and

eighteen students attending an urban charter school located in the United States participated in

the study. Participants were randomly assigned to a treatment group or a control group. Prior to

setting their English course academic goals, students in the treatment group learned how to use

mental contrasting and created implementation intentions. Results indicate a positive correlation

between the MCII intervention and academic performance since there was a significant effect on

end-of-quarter grades for students assigned to the experimental group ($p = .025$). This study

supports the recommendation to develop curricula that includes teaching goal setting strategies,

as well as other noncognitive skills and metacognitive strategies, with the aim of improving

academic performance.

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CHAPTER 1

INTRODUCTION

Only 69.4% of Chicago Public Schools' (CPS) high school students graduated in 2014

(Chicago Public Schools, 2014), and a mere 14% are estimated to earn a college degree within

ten years of entering 9th grade (Healey, Nagaoka, & Michelman, 2014). While the national high

school graduation rate is 81%, only 59% of college enrolled students in 2006 obtained a

bachelor's degree within six years and the rates were even lower for minority groups (U. S.

Department of Education, Institute of Education Sciences, 2014). In 2012, only 23% of African

American and 12% of Latino adults between the ages of 25 and 29 held a bachelor's degree

(Healey et al., 2014).

The level of student engagement has a significant impact on achievement and social and

cognitive development and therefore, students are more likely to graduate high school and pursue

higher education when they are engaged in learning (Finn, 1993; Newmann, 1993).

Disengagement in schools has contributed to the dropout rates and absenteeism for secondary

school students. New ways of teaching and learning must be implemented to ensure that students

are more engaged in the learning process and that they have meaningful opportunities for

developing 2lst century skills necessary for becoming active participants in today's global society

(Tough, 2012; Unites States Department of Education, 2013).

In order to increase the graduation rate and the number of high school graduates who are

prepared to earn a four year degree, K-12 schools must not only focus on high academic

standards, but they must also teach non-academic skills, also known as *noncognitive skills*, as

part of the curriculum if they are to increase the level of student performance (Gutman &

Schoon, 2013). Noncognitive skills include academic behaviors, strategies, and attitudes that

impact motivation, perseverance and academic performance (Farrington et al., 2012). With the

increase of promising research on noncognitive skills and their impact on academic performance,

it becomes important to understand how teaching noncognitive skills will influence teaching

methods, student learning, and educational programs. The central questions surrounding this

study will seek to provide insight on the effects of teaching two self-regulatory learning

strategies for setting academic goals that may or may not impact academic performance.

Purpose of the Study

The United States college graduation rate has continued to decline during the past

decade; it is ranked only ahead of Italy among thirty-four other countries affiliated with the

Organization for Economic Co-Cooperation and Development (Bowen, Chingos, & McPherson,

2011). According to Bowen et al. (2011), in 2006, only 56% of students entering 4 year colleges

attained their degrees. Their research concluded that high school grades predicted academic

performance regardless of the type of high school the students attended and that students who

had good grades went on to graduate from college as a result of self-efficacy, motivation, and

meeting academic goals:

> They [*high school grades*] reveal qualities of motivation and perseverance—as well as
> the presence of good study habits and time management skills—that tell us a great deal
> about the chances that a student will complete a college program. They are one measure
> of coping skills and whether a student is likely to "stay the course." They often reflect
> qualities such as the ability to accept criticism and benefit from it and the capacity to take
> a reasonably good piece of one's work and reject it as not good enough. Getting good

grades in high school, however demanding (or not) the high school, is evidence that a student consistently met a certain standard of performance (p. 124).

If earning high grades is associated with possessing perseverance, intrinsic motivation, time management skills, and other noncognitive skills, then educators need to understand which non-academic skills increase or enhance academic performance, as well as, how to include them alongside the academic content within the curriculum. The United States Department of Education (2013) recognizes that supportive school cultures which promote beliefs about competence, relevant values and goals, and social connectedness and belonging have the most success in serving the nations' most at-risk students.

According to Dweck (2002), students are more engaged in their learning when they understand that their achievement correlates with their effort rather than their intelligence; thus leading students to take purposeful steps in order to improve their performance. Farrington, et al, (2012) note that when students use learning strategies in the classroom, they improve their performance by persevering through challenging situations, which in turn leads to increased self-efficacy. This study will investigate if students experience successful goal attainment after implementing two self-regulatory learning strategies while setting their academic goals.

Research Questions

The purpose of the study is to explore if learning two specific goal setting strategies, m*ental contrasting* and *implementation intention*, will have an impact on academic performance over a ten-week period. The following research questions will be investigated:

l. Does teaching two self-regulatory learning strategies, mental contrasting and implementation intentions, have an impact on academic performance as measured by end-of-quarter grades?

2. Does teaching two self-regulatory learning strategies, mental contrasting and implementation intentions, have an impact on academic performance as measured by homework completion?

It is anticipated that the students who include mental contrasting and implementation intention learning strategies during their goal setting process will perform better than those who did not receive the treatment.

Assumptions

This study makes the following assumptions:

1. Students in both the control and experimental groups recognize that they want to be successful in school and have a desire to earn a high grade in their English course.

2. Students in the experimental group will revisit their if/then plans (a component of the MCII intervention) occasionally.

3. Students will try their best to reach their desired goal for the course and one's behavior is influenced by goal setting.

Limitations

This study was bound by the following limitations:

1. The participants for this study were limited to an urban charter high school located in the Midwest region of the United States with a predominantly Latino student population. Students with diverse needs assigned to self-contained classrooms for their English course were not included. The school's designation as a charter school may have impacted the results.

2. The length of time devoted to teaching the intervention was limited to a single forty-minute session, leaving no additional time for providing feedback to students on the

quality of their if/then plans or following up with students regarding their level of success in overcoming their obstacles throughout the study.

3. The researcher developed the student surveys used in this study. Additional administration of these instruments would be required to establish their reliability and validity.

4. The design of this study does not include baseline data for academic performance.

Delimitations

A delimitation of this study is associated with the research design. Although the participants in the experimental group were treated to the MCII intervention prior to creating their action plans, the participants assigned to the control group also completed an action plan for obtaining their desired grade for their English course. Therefore, participants in both groups participated in the goal setting process which may have impacted the findings.

Definition of Key Terms

For the purpose of this study, the following definitions will apply:

Academic performance is the teachers' evaluation of a student's success in school as indicated by course grades and homework completion.

Noncognitive skills and factors include academic behaviors, strategies, and attitudes that impact motivation, perseverance, and academic performance. Noncognitive factors that are important to academic success include, but are not limited to the following: "persistence, resilience, grit, goal setting, help-seeking, cooperation, conscientiousness, self-efficacy, self-regulation, self-control, self-discipline, motivation, mindsets, effort, work habits, organization, homework completion, learning strategies, and study skills (Farrington, et al., 2012, p. 8).

Academic Goals are intentions or plans to help students obtain desired educational achievements or outcomes.

Goal setting is a creative process that evolves from being discontent with one's present condition and having the desire to change it by attaining an object or outcome in the future (Locke and Latham 1994, 2006).

Mental contrasting is the process of imagining the positive benefits of attaining one's goals, while also recognizing all of the obstacles that may negatively impact goal attainment.

Implementation intentions are plans created to deal with situations that may impede an individual in reaching one's goals.

Metacognition is an individual's knowledge of how to monitor one's own thinking and learning; including an awareness of knowing which strategies will work best under certain conditions.

Self-regulated learning is a multi-phase process that involves a number of distinct cognitive tactics or strategies which may facilitate performance (Farrington, et al., 2012).

Chapter Summary

This chapter introduced the purpose of this study and the need to continue to research the effect of noncognitive skills on learning and academic performance. Previous studies on the inclusion of noncognitive skills in the curriculum suggest that they may increase the level of student engagement which leads to an improvement in high school and college graduation rates (Farrington, et al., 2012). The following chapters present a review of the literature on noncognitive skills and goal setting, the methodology used for this study, results and key findings, implications for practice, and suggestions for future research.

CHAPTER 2

REVIEW OF LITERATURE

Our goals can only be reached through a vehicle of a plan, in which we must fervently

believe, and upon which we must vigorously act. There is no other route for success.

-Stephen A. Brennan
(Source: Quotationbooks.com, 2014)

The purpose of this study is to examine the impact of using two noncognitive learning

strategies, *mental contrasting* and *implementation intentions*, during the goal setting phase for

academic goal pursuit. This literature review highlights the key concepts, theoretical

frameworks, and empirical evidence related to intelligence and noncognitive skills,

metacognition and self-regulation in goal pursuit, and mental contrasting and implementation

intention intervention strategies. The information presented is from a variety of sources,

including previous literature reviews, journal articles, and books relevant to the topics of

noncognitive skills in academics and goal pursuit (e.g., Farrington, C.A.; Roderick, M.;

Allensworth, E.; Nagaoka, J.; Keyes, T.S.; Johnson, D.W., et al., 2012; Gutman & Schoon, 2013;

Tough, 2012; US Department of Education, 2013).

Overview of the History of Intelligence and Noncognitive Skills in Education

It has long been established throughout the past century that intelligence, as measured by

IQ tests, has been a predictor of academic achievement and success (Gardner, 1983; Duckworth,

A, Quinn P., Tsukayam, E., 2011; Duckworth & Seligman, 2005). Neisser, et al., (1996)

confirms, "They *(IQ tests)* do in fact predict school performance fairly well; the correlation

between IQ scores and grades is about .50. They also predict scores on achievement tests,

designed to measure knowledge of the curriculum" (p. 81). Although there exists a myriad of

definitions that describe the term *intelligence* (Sternberg R. J., 1997; Legg & Hutter, 2007), most of the descriptions include the following features:

- Intelligence is a property that an individual agent has as it interacts with its environment or environments.

- Intelligence is related to the agent's ability to succeed or profit with respect to some goal or objective.

- Intelligence depends on how able the agent is to adapt to different objectives and environments. (Legg & Hutter, 2007, p. 9).

Today's elements of the definitions for intelligence differ from those identified in the early 1920's. According to a 1921 survey on intelligence (Sternberg R. J., 1997), three common elements existed among the various definitions: "(a) higher level abilities (such as abstract reasoning, mental representation, problem solving, and decision making, (b) ability to learn, and (c) adaptation to meet the demands of the environment effectively." (p. 1030). During the 1980's, Gardner (1983) proposed a theory of multiple intelligences that are unique from one another. He believes that individuals and cultures can use these intelligences in combination to adapt in multiple ways, thus challenging the classical view of intelligence as being a single capacity one is born with. For the purpose of this dissertation, the definition of *intelligence* to be used *"comprises the mental abilities necessary for adaptation to, as well as shaping and selection of, any environmental context"* (Sternberg, R. J., 1997, p. 1030).

According to Sternberg and Grigorenko (2006), conceptual problem solving, verbal ability, and social competence comprise the people of the United States views of intelligence; however, an overall view of the concept of intelligence does not exist. For example, Sternberg

explains how different ethnic groups from San Jose, California, form their own views in regard to intelligence:

> Latino parents of schoolchildren tended to emphasize the importance of social-competence skills in their conceptions of intelligence, whereas Asian parents tended rather heavily to emphasize the importance of cognitive skills. White parents also emphasized cognitive skills. Teachers, representing the dominant culture, emphasized cognitive more than they did social-competence skills. The rank order of children of various groups' performance (including subgroups within the Latino and Asian groups) could be perfectly predicted by the extent to which their parents shared the teachers' conception of intelligence (pp. 29-30).

Although intelligence has long been associated with cognitive skills associated with academics, early researchers in the field of intelligence testing agree that other factors contribute to the performance in school (Duckworth & Carlson, 2013; Gardner, 1983). Psychologist Alfred Binet (1916), inventor of the Binet-Simon Scale Intelligence Test, recognized that other factors outside of intelligence impact academic performance and in order to be successful "one must have qualities which depend on attention, will, and character; for example, a certain docility, a regulatory of habits, and especially continuity and effort" (Binet & Simon, p. 254). In the early 1940's, Wechsler (1943) advocated the use of non-intellective factors (e.g., drive, persistence, and interest) in determining global intelligence since they influence behavior. He believed that non-intellective traits accounted for the variances in one's capacity to function; based on the evidence cited in his studies comparing two individuals with the same IQ scores and how they adapted differently to their environments.

In 1973, McClelland published a paper, *'Testing for Competence Rather than Intelligence'*, in support of using non-traditional competencies (such as initiative, empathy, and self-discipline) in predicting how successful one would be in their job and/or in life. McClelland argued that grades, academic ability, and advanced qualifications did not predict job performance or success in life (Goleman, 1998). McClelland's work led to new methods for measuring job performance by assessing one's competencies or personal traits. During the 1980's, Gardner's theory of multiple intelligences expanded upon the narrow concept of intelligence by including eight different types of intelligences: musical, visual-spatial, verbal-linguistic, logical-mathematical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic (Gardner, 1983). Gardner's theory of multiple intelligences challenged the widespread practice of using IQ tests for measuring one's intelligence because they were not "sufficiently well honed to allow assessment of an individual's potential or achievements in navigating by the stars, mastering a foreign tongue, or composing with a computer" (Gardner, 1983, p. 4).

Social emotional learning (SEL) became widespread during the mid-1990s after Daniel Goleman's publication on the impact of SEL. SEL encompasses the process for teaching students how to develop self-awareness, set and attain goals, maintain positive relationships, and to be responsible decision-makers [it includes all necessary skills for being successful in school and life] (Bar-On, Maree, & Elias, 2007). It is believed that teaching social emotional skills increases emotional competence which affects how students go about learning and building positive relationships in the classroom (Bar-On, Maree, & Elias, 2007; Farrington, et al., 2012; Goleman, 1998; Tough, 2012). Today, some speculate that the growing interest in noncognitive skills is in response to the nation's No Child Left Behind Act of 2001 due to its main emphasis on academic achievement while failing to address social emotional learning (Heller, 2013).

According to Velasquez-Sheehy (2013), previous literature (Snowman, McKown & Bieler, 2009; Supovitz, 2009; Urrieta, 2004) documented the negative impact of the No Child Left Behind Act (NCLB) of 2001 as it relates to the exclusion of noncognitive skills in the classroom. At the end of the 20th century, there was a national concern about the achievement gap among students; especially between ethnic groups, socio-economic disadvantaged students, and special education students as compared to their non-minority and socio-economic advantaged peers. In response to this crisis, the No Child Left Behind Act (NCLB) of 2001, was signed into law replacing the Elementary and Secondary Education Act (ESEA) of 1965. The purpose of the law as stated by the U.S. Department of Education, 2013, Section 1001, was for "improving and strengthening accountability, teaching, and learning by using state assessment systems designed to ensure that students are meeting challenging State academic achievement and content standards and increasing achievement overall, but especially for the disadvantaged" (p.6). NCLB required states to administer tests annually for all students in grades 3-8 and for one year in high school. States were also mandated to design an accountability system that defined proficiency and adequate yearly progress (AYP) in order to ensure that all students were proficient by 2014. Schools that did not meet their annual yearly progress targets for two consecutive years were sanctioned by being labeled as underperforming and subjected to more serious consequences when failing to meet their targets for three or more consecutive years. The research suggested that the assessments were narrow in scope. Therefore, teachers spent more time teaching reading and math and less time on teaching science, social studies, and fine arts. Furthermore, Hokanson and Karlson (2013) believe that the NCLB requirements have contributed "to the detriment or exclusion of the other noncognitive skills" (p. 108) in the curriculum as the result of a narrow focus on increasing standardized test scores.

In today's educational arena, there is a growing realization that intelligence is not the sole predictor of academic performance (Duckworth & Seligman, 2005; Dweck, 2002; Goleman, 1998; Seider, 2012; Tough, 2012; United States Department of Education, 2013). Scholarly evidence supports a strong correlation between academic achievement and character traits such as "perseverance, self-discipline, and grit" (Seider, 2012, p. 4), as well as "resilience, initiative, optimism, and adaptability" (Goleman, 1998, p. 11). As a result, there is a movement among educators and policy makers to support the inclusion of noncognitive skills in the curriculum in order to help students reach their academic potential. Noncognitive skills include academic behaviors, strategies, and attitudes that impact motivation, perseverance, and academic performance (Farrington, et al., 2012). Unlike academic skills, such as literacy and numeracy, noncognitive skills refers to "a set of attitudes, behaviors, and strategies that are thought to underpin success in school and at work, such as motivation, perseverance, and self-control" (Gutman & Schoon, 2013, p. 1). Farrington, et al., (2012), establishes the need to expand the terminology from noncognitive skills to *noncognitive factors* since these skills involve how students are engaged in the learning process as well as impact their academic performance, motivation, and attitudes. Noncognitive factors that are important to academic success include, but are not limited to the following: "persistence, resilience, grit, goal setting, help-seeking, cooperation, conscientiousness, self-efficacy, self-regulation, self-control, self-discipline, motivation, mindsets, effort, work habits, organization, homework completion, learning strategies, and study skills" (Farrington, et al., 2012, p. 8).

A policy report published by the United States Department of Education (2013) recognizes the positive correlation between noncognitive skills and academic performance:

If students are to achieve their full potential, they must have opportunities to engage and develop a much richer set of skills. There is a growing movement to explore the potential of the "noncognitive" factors—attributes, dispositions, social skills, attitudes, and intrapersonal resources, independent of intellectual ability—that high-achieving individuals draw upon to accomplish success…In national policy, there is increasing attention to 21st century competencies (which encompass a range of noncognitive factors, including grit), and persistence is now part of the Common Core State Standards for Mathematics (p. v).

Private foundations (e.g., Bill & Melinda Gates Foundation, the Raikes Foundation, the MacArthur Foundation), are currently supporting various pilot programs that research how noncognitive skills impact learning and how to measure their impact on academic performance (United States Department of Education, 2013). The idea that noncognitive skills can be learned and are malleable is also creating some excitement in the field (Dweck, 2002; Farrington, et al., 2012; Gutman & Schoon, 2013; Hopkins, 2010; Tough, 2012). Tough (2012) offers his sentiments on the value of noncognitive skills in teaching and learning:

The reason that researchers who care about the gap between rich and poor are so excited about executive functions is that these skills are not only highly predictive of success; they are also quite malleable, much more so than other cognitive skills. The prefrontal cortex is more responsive to intervention that other parts of the brain, and it stays flexible well into adolescence and early adulthood. So if we can improve a child's environment in the specific ways that lead to better executive functioning, we can increase his prospects for success in a particularly efficient way (p. 21).

Although individuals possess varying abilities in the areas of cognitive skills, Hopkins (2010) believes that noncognitive skills should never be accepted as being fixed or unmodifiable, and therefore all learners have the capacity for gaining new knowledge. If this assumption is true, one may speculate that noncognitive skills can help to narrow the achievement gap for minority and low-income students. However, there is no empirical evidence proving which noncognitive skills may contribute to the academic performance of various ethnic, gender, and socio-economic groups (Farrington, et al., 2012).

Noncognitive Skills as Indicators for Academic Performance

Although most studies during the 20th century conclude that IQ is the most reliable predictor of academic performance (Duckworth, et. al., 2011; Gardner, 1983; Neisser, et al., 1996), recent studies have found that other indicators are stronger for predicting academic success than IQ scores including non-intellectual strengths such as motivation and self-discipline (Duckworth & Seligman, 2005). Despite the fact that there exists far fewer empirical findings to support these conclusions, earlier studies (e.g., Mischel & Mischel, 1983; Shoda & Peake, 1988; Shoda, Mischel, & Peake, 1990; and Wolfe & Johnson, 1995) indicate that delayed gratification and self-discipline are both indicators of academic performance (Duckworth & Seligman, 2005). Two separate studies involving pre-school and college age students both found self-discipline to be a predictor of academic success. Children at four years of age who were able to demonstrate skills in delayed gratification were predicted to be more successful both academically and socially a decade later (Mischel & Mischel, 1983). Tangney and his colleagues reported self-discipline as having a positive effect on self-reported grades and a range of personal and interpersonal strengths for two large groups of undergraduates (Tangney, Baumeister, & Boone, 2004 as cited in Duckworth and Seligman, 2005).

During their two-stage study, Duckworth and Seligman (2005) measured the self-discipline, IQ, and academic performance of a cohort of 8th grade students over the course of the school year. Participants who were measured as being self-disciplined as compared to their peers "earned higher GPA's and achievement test-scores, were more likely to gain admission to a selective enrollment high school, had fewer school absences, spent more time on their homework, watched less television, and started their homework earlier in the day" (p. 941). Furthermore, the results indicated that IQ was only half as likely in predicting final GPA; suggesting that intelligence does not have as big of impact on academic performance as does self-discipline. More recent studies suggested that high school GPA is a more reliable indicator than SAT or ACT for predicting college completion and cumulative GPA (Bowen, Chingos, & McPherson, 2009; Duckworth, A, Quinn P., Tsukayam, E., 2011).

A student's academic mindset is another area that positively correlates with academic performance. Dweck (2006) has spent the last twenty plus years researching the fixed and growth mindset theory. This theory is grounded in the belief that intelligence is either fixed or malleable. Those who have a fixed mindset believe that intelligence is a fixed trait and that one's cognitive ability will remain the same throughout one's lifetime and there is nothing one can do to change it. Those believing in a growth mindset understand that intelligence can be developed as a result of one's effort and experiences starting as a child and continuing through adulthood. Dweck's studies revealed how students' beliefs about their own intelligence affect how much effort they are willing to put forth, the tasks they choose to attempt, how they deal with obstacles, and their overall academic performance (Dweck, 2002).

Ricci (2013) stated that learners with a growth mindset "believe that they can learn just about anything. It might take some struggle and some failure but they understand that with effort

and perseverance, they can succeed. The focus of a growth mindset individual is on learning, not on being smart" (as cited in Dweck, 2002, p. 70-71). Students with a growth mindset are more willing to put forth the effort to complete an academic challenge whether or not they have the fixed capacity to be successful. They have a greater sense of self-confidence and are motivated to work hard even though they may make mistakes along the way. Unlike students with a growth mindset, those with a fixed mindset would rather withdraw from completing a difficult task rather than risk learning that they don't have the ability to be successful. Furthermore, they believe that if one has to work hard to overcome an academic setback then he/she is not considered as being smart (Dweck, 2002). Various studies (e.g., Aronson, 1998; Jourden, Bandura & Banfield, 1991; Tabernero & Wood, 1999; Wood & Bandura, 1989) have found that students can be taught a different mindset. Students who were oriented towards a growth mindset established more challenging goals, maintained their confidence, and persisted through academic challenges; they also outperformed their peers who temporarily adopted the fixed mindset view (Dweck, 2002).

Gutman and Schoon (2013) conducted a meta-analysis on experimental and quasi-experimental studies for 8 noncognitive skills: self-perceptions (including self-efficacy), motivation (including achievement goal theory), perseverance, self-control, metacognition, social competencies, resilience and coping, and creativity. Their findings provide a summary on each of the noncognitive skill's quality of measurement, malleability, effect on other outcomes, and strength of evidence. The ratings for the noncognitive skills related to this study include the following: metacognition was rated as *medium* for quality of measurement, *medium to high* for malleability, *medium to high* for effect on other outcomes, and *high* for strength of evidence; self-efficacy was rated *high* across the first three categories and rated *medium* for strength of

evidence; achievement goal theory scored *high* for quality of measurement, *medium* for malleability, *low to medium* for effect on other outcomes, and *medium* for strength of evidence; and self-control rated *medium* for quality of measurement, *low to medium* for malleability, *low* for effect on other outcomes, and *medium* for strength of evidence. Other noncognitive skills not related to this study (e.g., grit, creativity, and social competencies) were found to be lacking in evidence with a rating of *not available* for malleability and *no evidence* for effect on other outcomes. Although the empirical evidence involving the effects of noncognitive skills and academic performance is relatively new, the results are promising, and therefore have implications for future use in the classroom. The next section of this literature review will focus on the noncognitive skills directly related to this study; *self-regulatory learning strategies* and *goal setting*.

Metacognition, Self-Regulation, and Learning Goals

Students face a variety of challenges that impact whether or not they will be successful in pursuing their academic goals so they need to be able to plan how to meet these obstacles. Lack of tactical knowledge, intrinsic motivation, and resources are just a few of the many obstacles that students will encounter through the goal attainment process, and therefore they would benefit from learning how to set clear academic achievement goals (Tough, 2012; United States Department of Education, 2013). Ames (1992) affirms that an achievement goal drives achievement behavior and cites the following definition:

> It [*achievement goal*] defines an integrated pattern of beliefs, attributions, and affect that
> produces the intentions of behavior (Weiner, 1986) and that is represented by different
> ways of approaching, engaging in, and responding to achievement-type activities (Ames,
> 1922b; Dweck & Leggett, 1988). Elliott and Dweck (1988) defined an achievement goal

as involving a "program" of cognitive processes that have "cognitive, affective, and behavioral consequences" (p. 261).

Self-regulation has been associated with impacting and predicting grades, high school completion, and standardized achievement tests (Duckworth & Carlson, 2013). A longitudinal study by Bandura, et al., (2008) concluded that one's perceived self-efficacy for self-regulated learning is correlated to an individual's academic success; a decline in self-efficacy in high school students was associated with a decline in grades and high school completion. When metacognition and self-regulatory learning are used in the academic setting, students' self-efficacy is strengthened, which in turn increases motivation and perseverance when tasks become difficult (Farrington, et al., 2012; Hirsh, Morisano, Peterson, Pihl, & Shore, 2010). Thus, learning how to use these two noncognitive skills in the goal setting and goal striving stages of academic goal pursuit are effective strategies for successful goal attainment (Achtziger et. al , 2012; Ames, 1992; Duckworth, 2011, 2013; Gawrillow, 2012; Gollwitzer, 2011; Lennon, 2010; Oettingen, 2010).

As stated earlier, academic behaviors and learning strategies are recognized as two noncognitive skills that are critical to academic success. Since learning goals have an impact on academic behaviors, it is important to study their effects on academic performance (Achtziger, et al., 2012; Ames, 1992; Gawrilow, et al., 2012; Oettingen, et al., 2013). There exists a vast body of literature on how goals guide people's actions in all areas of life. Research surrounding various sub-topics include: monitoring of goal pursuit, evaluation of goal attainment, importance of goal content, goal framing, and the role of self-regulatory strategies in goal pursuit. However, research in the area of strong and weak goal commitment and one's ability to develop binding

action goals did not emerge until the 1990's (Oettingen G. , 1999), and has just recently started

to gain momentum in the academic setting (Gollwitzer A. O., et al., 2011).

Goal pursuit is dependent on both goal setting and goal implementation, a distinction

offered by German psychologist, Kurt Lewin during the 1940's (Gollwitzer, Oettingen, &

Gawrilow, 2010). Strong goal commitment during the goal striving process is not only critical

for challenging goals, but is also required for pursuing goals considered to be feasible and

desirable (Lock and Latham, 1990; Oettingen and Gollwitzer, 2001, 2011). Gollwitzer and

Oettingen (2009) define desirability as one's belief about the short and long-term consequences

of attaining one's goals, whereas feasibility is based on one's belief about what actions and

events will happen in the future. The more feasible and desirable the goal, the more attractive

the goal becomes. However, the researchers note that desirable and feasible goals do not always

lead to binding goal commitments and suggest that "the way people think about a desired future

outcome affects whether feasibility is indeed translated into strong goal commitments facilitating

subsequent goal striving and goal attainment" (p. 129). Consequently, successful goal

attainment is dependent on establishing strong goal commitment during the goal setting process.

Goal setting is a creative process that evolves from being discontent with one's present

condition and having the desire to change it by attaining an object or outcome in the future

(Locke and Latham 1994, 2006). Locke & Latham's goal setting theory is based on research

spanning over 25 years, involving over 400 task studies and 40,000 subjects. Their theory

assumes that all human beings have the volition to choose their own goals that lead to purposeful

actions and that there is a linear relationship between goal level and performance. Locke and

Latham (2006) conclude that there exists a positive correlation between high goals (i.e., clearly

stated goals) and higher-level task performance when a person is "committed to the goal, has the

requisite ability to attain it, and does not have conflicting goals" (p. 265). High goals that are more difficult to achieve result in better performance when sufficient ability and strong goal commitment exists. Their theory suggests that high goals motivate people to exert more effort or continue to persist through more challenging tasks so long as they possess the required skills and knowledge to accomplish the desired outcome. Conversely, performance levels remain constant or decrease when goals are vague or goal commitment is weak due to deficient skills and resources. As a result, pursuing and attaining high goals leads to greater personal satisfaction as compared with achieving easier goals or failing to attain goals due to low motivation or frustration. Once a goal is established, it provides direction towards goal-oriented actions and behaviors and away from non-goal related activities. Goal setting theory identifies four key elements for goal effects on performance: (1) feedback, (2) commitment to the goal, (3) task complexity, and (4) situational constraints. Feedback is necessary for monitoring one's progress during the goal striving stage for attaining the goal. Commitment to the goal creates a strong belief in the goal's importance as well as high self-efficacy for achieving the goal. An understanding of task complexity is necessary for knowing what knowledge is required and what information needs to be learned in order to reach the desired outcome. Finally, being prepared to put forth extra effort in situational constraints when resources are not available for accomplishing a task (Locke & Latham, 1994). Goal setting theory is still considered an open theory (accepting new discoveries) and psychologists continue to research goal setting and its effects on goal pursuit (Locke & Latham, 2006). Current research in this area continues to suggest that people set desirable and feasible goals based on the best outcome after they "weigh the incentive of reaching different goals with the expectancy of actually reaching these goals", (Achtziger, el. al, 2012, p. 123).

Metacognition and self-regulatory strategies have led to strong goal pursuit when used to direct goal-oriented behaviors during the goal setting phase *prior* to goal implementation (Gollwitzer, 1999, Gollwitzer & Sheeran, 2006; Oettingen, 1999; Oettingen and Gollwitzer, 2009; Oettingen et al., 2001, 2005; Duckworth et al., 2013). Farrington, et al., (2012) defines metacognition as "an individual's knowledge of and control over his or her cognition (Flavell, 1979; Hacker et al., 2009) or knowing how to monitor one's own understanding."(p. 39). Metacognitive knowledge includes awareness of knowing which general strategies might be useful for various tasks; as well as knowing the conditions under which they may be effective. These strategies are useful in "planning, monitoring, and regulating their learning and thinking" (Pintrich, 2002, p. 220), making metacognition an effective tool for enhancing goal pursuit.

Gollwitzer's (2012) mind-set theory of action phases illustrates how metacognitive strategies are used during the goal setting phase since it consists of a series of different cognitive procedures that are activated during goal pursuit. This theory assumes that an individual goes through several cognitive tasks leading to goal attainment and argues "that becoming involved in these tasks leads to characteristic cognitive orientations (mindsets) that are beneficial for solving these tasks effectively" (Gollwitzer, 2012, p. 537). These different mindsets allow an individual to strategically process goal-related information during the early stages of goal pursuit.

The 'deliberate mindset' occurs during the pre-decisional phase. It is characterized by an individual's ability to impartially analyze the pros and cons of various relevant information and past experiences in order to identify desirable and feasible goals. The deliberate mindset allows a person to make informed decisions about pursuing chosen goals as a result of analyzing the negative and positive consequences (Gollwitzer, 2012). After going through the deliberation process, the person moves into the 'implemental mindset'. The implemental mindset takes place

during the *pre-actional* phase. The implemental mindset enables a person to process optimistic thoughts about the desired future, while planning the action steps required for goal realization. Studies have found that the deliberate mindset enhances goal commitment and that the implemental mindset leads to an increase in persistence while participating in goal-directed behaviors (Gollwitzer, 2012). The mindset theory of action phases include the following stages:

> **Phase 1: Pre-decisional phase**- *the process during the goal setting phase when one considers the possibilities of whether or not the desired outcome is feasible before deciding to make it a goal*
>
> **Phase 2: Pre-actional phase**-*the process of planning what action steps to take in order to attain the goal*
>
> **Phase 3: Actional phase**-*the process of implementing the plan and taking action towards realizing the goal*
>
> **Phase 4: Post-actional phase**- *the process of evaluating the results of pursing the goal to determine if the goal was attained and if it met or exceeded the expected value*
>
> (Achtziger, et al., 2012; Gollwitzer, 2012).

The mindset theory of action phases concludes that the decision-making involved in goal pursuit leads to "a certain mind-set that affects cognition and behavior" (Achtziger, et al., 2012, p. 124), and therefore it is worthwhile to explore how metacognitive strategies can be applied within these mindsets with the aim of strengthening both goal commitment and goal striving. Figure 1 illustrates the mindset theory action phases.
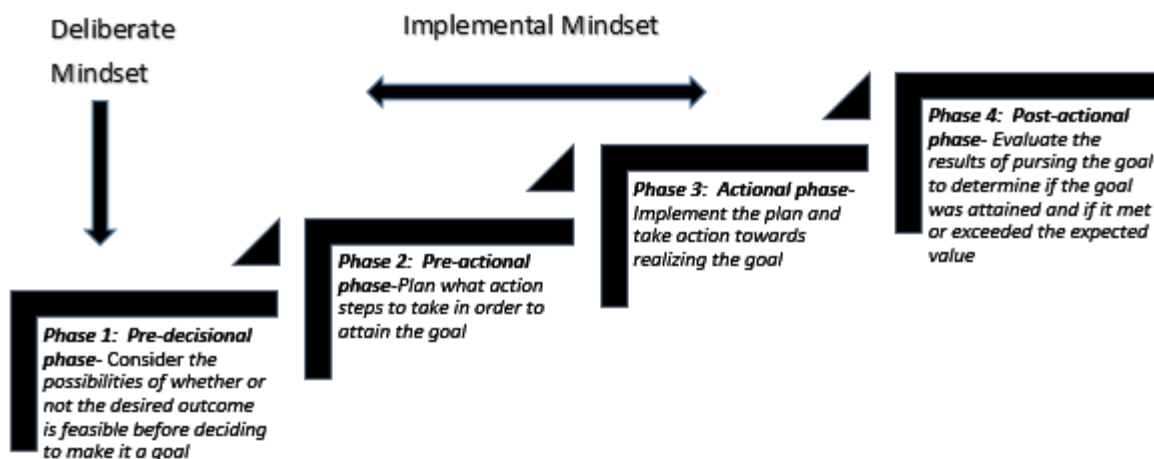
Figure 1. Mindset Theory of Action Phases

Self-regulated learning (SRL) is known as "proactive processes that students use to acquire academic skill, such as setting goals, selecting and deploying strategies, and self-monitoring one's effectiveness, rather than as a reactive event that happens to students due to impersonal forces", (Zimmerman, 2008, pp. 166-167, as cited in Lennon, 2010). Self-regulated learning has been associated with the process of goal pursuit since "these goals become the criteria toward which regulation aims. In essence, SRL mediates the relations between learner characteristics, context, and performance" (Green & Azevedo, 2007, p. 335). Self-regulated learning was conceptualized during the 1980's, but the boundaries remain unclear since it is associated with "cognitive, emotional, or behavioral control, including metacognitive strategies, such as comprehension monitoring; effort management strategies, such as persistence and diligence; and behavioral strategies, such as controlling the impulse to talk during class" (Lennon, 2010, p. 70). In order to regulate itself, the self uses "cognitive, metacognitive, affective and volitional processes" that involve monitoring and changing one's "thoughts, emotions, impulses, and performance (Achtziger, et al., 2012, p. 121).

Several models exist for constructing how self-regulated learning influences the learning process. Regardless of their differences, all of them conclude that students must possess the motivation required to monitor the effective use of strategies using their own 'feedback loops' in order to improve their academic achievements (Lennon, 2010). In addition to being motivated, Duckworth believes one must also possess the volition required to carry out goal related activities and to avoid non-related goal actions (Duckworth et al., 2011; Tough, 2012). Consequently, if one lacks motivation, then having self-control will be of no use in terms of pursuing goal attainment; while the same holds true if one is deficient in self-control. Winne and Hadwin's Self-Regulated Learning Model provides a construct illustrating how self-regulated learning is applied in goal pursuit. Within each of these phases, the learner undergoes a cognitive process that involves "a person's conditions, operations, products, evaluations, and standards" (Green & Azevedo, 2007, p. 335). These components, also known as COPES, are types of information that contribute to or are generated within each stage of the self-regulated learning process. The four phases of Winne and Hadwin's Self-Regulated Learning Model include:

- Phase 1 (*task definition*) begins with the process of identifying the initial task, determining its level of difficulty, and all other relevant criteria.

- Phase 2 (*goal setting and planning)* involves the process of selecting the learning goal and determining a plan for mastery.

- Phase 3 (*studying tactics*) entails the process for implementing various strategies to master the task.

- Phase 4 (*adaptations to metacognition*) is the final process that evaluates whether or not the final product meets the standard in order to determine if additional action is required

to master the task (Green & Azevedo, 2007). Table 1 describes a list of learning

strategies used during goal pursuit.

Table 1

List of Learning Strategies Used in Goal Pursuit

Exhibit 6. A general model of learning strategies to support persistence in the face of challenge

Phase	Name	Examples of types of strategies and tactics
1	Definition of Task	Construct full definition of the task. Consider what is known and unknown about it. Consider how difficult it will be and potential challenges.
2	Goals and Plans	Set specific goal(s). Set specific criteria for knowing when goal(s) are achieved. Formulate specific actionable plans to achieve goal(s). Formulate tactics for dealing with challenges.
3	Enactment and Monitoring	Structure the environment so that it is favorable for executing plans. Execute plans. Manage time. Seek new information. Organize information and resources. Seek assistance from other people. Monitor progress relative to criteria for meeting goal(s). Adjust course of actions as necessary.
4	Deliberation and Adaptation	Deliberate on effectiveness of plans and strategies. Reformulate task, goals, conditions, strategies, plans.

Source: Adapted from Winne, P. H., & Hadwin, A. F. (1998). Studying as self-regulated learning. In D. J. Hacker, J. Dunlosky & A. C. Graesser (Eds.), *Metacognition in educational theory and practice* (pp. 277–304). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Source: Adapted from United States Department of Education. (2013). *Promoting grit, tenacity, and perseverance.* Washington, D.C.: Center for Technology in Learning, SRI International.

When students intentionally use their metacognitive and self-regulated learning

strategies, they begin to self-monitor their learning processes and adjust their behaviors and

efforts more effectively in order to meet the challenge at hand, thus influencing their academic

performance. However, researchers note that the level of effort a student puts forth correlates

with his/her ability to use the available self-regulatory strategies he/she possesses. Therefore, it is necessary for the student to learn about self-regulatory strategies and how to use them in order to make use of them throughout the learning process (Grant & Dweck, 2003).

Learning goals are associated with academic performance and motivation. Such goals, also known as mastery goals, are characterized by the willingness of the learner to put forth the effort necessary to learn new skills and content in order to master the goal. Students focused on learning goals demonstrate an intrinsic interest in learning by spending more time on tasks and are also more persistent in applying problem-solving strategies when faced with more challenging material. Furthermore, students experience pride and satisfaction in the learning process as a result of their effort as they master their learning goals (Ames, 1992, Grant & Dweck, 2003). Some researchers, however, believe that academic goals only increase intrinsic motivation and are not directly responsible for improved achievement. In order to show that learning goals contribute to both academic performance and motivation, Grant and Dweck (2003) reviewed several studies and found that learning goals predicted a wide range of positive, mastery-orientated indicators, including sustained intrinsic motivation, planning, and persistence; and found that participants with strong learning goals reported a history of having used more mastery-oriented coping methods (e.g., active coping, planning) in response to setbacks. In addition, learning goals predicted better processing of course material, higher intrinsic motivation, higher grades, and greater improvement over time. Since learning goals have a causal effect on academic performance, Ames (1992) suggests including them as part of the daily classroom routines throughout all curricular areas.

Several studies support the use of self-regulation learning and goal setting in the classroom. Pintrich and DeGroot (1990) studied the correlation between self-regulated learning,

motivational orientation, and the academic performance of 173 seventh-graders. They concluded that students who used metacognitive strategies and had high self-efficacy were more self-regulating and performed better on academic measures (semester grades, tests, quizzes, and essays) than those students with low self-efficacy. As cited in Hirsh, et al., (2010), "As a student experiences successful goal attainment, self-efficacy increases; this in turn enhances goal commitment and mobilizes the self-regulation of cognitive and motivational resources to facilitate subsequent achievement" (p. 256). The researchers found that struggling students who participated in a goal setting program consisting of both online and written activities showed significant improvement in academic performance after a 4 month period as compared to those students who did not receive the goal setting intervention. They reported that "Individuals with clear goals appear more able to direct attention and effort toward goal-relevant activities and away from goal-irrelevant activities, demonstrating a greater capacity for self-regulation" (p. 256).

Locke and Latham's goal setting theory, Gollwitzer's mind-set theory of action phases, and Winne and Hadwin's Self-Regulated Learning Model all include the use of noncognitive skills for goal setting and implementation within their respective frameworks. The remainder of this literature review will discuss two specific self-regulatory/metacognitive strategies proven to positively affect goal attainment; Mental Contrasting (MC) and Implementation Intention (II).

Mental Contrasting and Implementation Intention for Goal Pursuit

Mental contrasting is an intervention used during the goal setting stage and implementation intention is used prior to goal implementation. Although the two strategies have been used successfully as separate interventions, they have recently been combined into a strategy known as Mental Contrasting/Implementation Intentions (MCII). Studies indicate that the union of these two strategies have an even greater impact facilitating binding goal

commitments and has shown to be a time and cost-effective intervention for goal setting (Achtziger, et al, 2012; Adriaanse, et al., 2010; Duckworth, et al., 2011; Gawrillow, et al., 2012; Gollwitzer, et al., 2011; Kirk, Oettingen, & Gollwitzer, 2013; Oettingen & Gollwitzer, 2010; Oettingen, Wittchen, & Gollwitzer, 2013 Oettingen, et al., 2010 & 2013).

Mental contrasting is a metacognitive, self-regulation strategy proven to be an effective means for improving goal attainment as a result of increasing goal commitment during the goal setting process (Achtziger, et al., 2012; Duckworth, Kirby, Gollwitzer, & Oettigen, 2013; Gawrillow, Morgenroth, Schultz, Oettingen, & Gollwitzer, 2012; Gollwitzer & Oettingen, 2009; Kirk, Oettingen, & Gollwitzer, 2013; Oettingen & Gollwitzer, 2010; Oettingen, et al., 2010; Oettingen, et al., 2013). Researchers have measured the effects of mental contrasting across various life domains by conducting studies using the following indicators of goal commitment: "cognitive (e.g. making plans), affective (e.g. feelings of anticipated disappointment in case of failure), motivational (e.g. feelings of energization, systolic blood pressure), and behavioral (e.g. invested effort and actual achievement)" (Kirk, Oettingen, & Gollwitzer, 2013, p. 150). Mental contrasting proved to be an effective intervention strategy for the following situations as cited by Gollwitzer (2011):

> Mental contrasting helped adolescents improve their grades in math (Oettingen et al. 2001), young adults to get to know an attractive stranger (Oettingen 2000), students to enroll in a program to improve their personality (Oettingen et al. 2005), middle-aged health-care providers to give higher quality of help (Oettingen et al. 2010b), college-aged women to reduce their cigarette consumption (Oettingen et al. 2010a), and university students to successfully cope with acute stress (Oettingen et al. 2009, p. 404).

Mental contrasting originated from psychologist Gabriele Oettingen's theory of fantasy realization. The theory of fantasy realization consists of three self-regulatory strategies for thinking about the future. This theory claims that 'expectations' and 'free fantasies' are two means to thinking about the future of a desired outcome (Oettingen G. , 1999). Expectations are one's conclusion for how likely or unlikely a future outcome will be obtained based upon his/her past experiences and performance history. Free fantasies are "thoughts and images that depict the future outcomes or behaviors in the mind's eye, independent of the likelihood that these events will actually occur" (Oettingen G. , p. 317). As a result, free fantasies do not consider the level of expectation for success or the obstacles that may impede attaining the desired future. For example, "adolescents may fantasize about becoming brilliant college students, middle-aged adults may see themselves reaching financial security, or the elderly may imagine improving their family relationships" (Oettingen, 2012, p. 3) without thinking about any related information pertaining to the desired outcome.

Fantasy realization theory identifies three self-regulation strategies people tend to use during the goal setting phase: *indulging, dwelling, and mental contrasting*. Two of these processes lead to behaviors that are independent of a person's expectations for attaining the desired outcome, while the third leads to an expectancy-based readiness to act upon a goal (Gollwitzer & Oettingen, 2009). *Indulging* is the process of imagining and visualizing all of the positive events and outcomes that will result from obtaining one's goals (e.g., "imagining getting an A in math, being praised by parents, feeling proud" (Duckworth, et al., 2013, p. 6). *Dwelling consists* of listing all of the negative obstacles and challenges that will make it difficult to accomplish one's goals (e.g. "a distracting classmate" (Duckworth, et al., 2013, p. 6). *Mental contrasting* involves imagining the positive benefits of attaining one's goals (e.g., "winning a

soccer match" (Achtziger, et al., 2012, p. 125); "becoming a clinical psychologist or giving a good talk" (Gollwitzer & Oettingen, 2009, p. 129); while also recognizing all of the obstacles that may negatively impact goal attainment (e.g., "having little time for preparation" (Achtziger et al., 2012, p. 125), "the GRE yet to be taken, evaluation anxiety" (Gollwitzer & Oettingen, 2009, p. 129).

Indulging and dwelling are not very effective strategies when used alone. Imagining only positive outcomes and not realizing the reality of reaching the goal leads to inconsistent goal commitment; while dwelling on only the negative reality without imagining any fantasies about the future fails to activate any level of goal commitment (Oettingen, et. al., 1999). In both situations, the need to act on the current plan to make the future a realty is never realized because the level of goal commitment is not based on whether or not the goal is feasible to attain (Achtziger, et al., 2012).

Research by Duckworth, et al., (2013) noted that combining the processes for indulging and dwelling "creates a strong association between future and reality that signals the need to overcome the obstacles in order to attain the desired future" (p. 746). Oettingen, et al., (2001) offers that imagining the desired future first and then recognizing the negative reality of the present leads to "a necessity to act to attain the desired positive future" and that mental contrasting "energizes the individual to take action, thus leading to strong goal commitment" (Oettingen & Gollwitzer, 2009, p. 1211). The model of fantasy realization theory also recognizes mental contrasting as a problem-solving strategy that one uses to determine if a goal is feasible or not. If the perceived expectation for goal attainment is high, the person will engage in goal oriented behaviors in order to reach the desired outcome. When expectations for successful goal attainment are low, the person will abandon the goal. As a result, mental

contrasting protects people from setting unrealistic goals by helping them realize the necessary actions required during the goal pursuit process (Gollwitzer & Oettingen, 2009). Mental contrasting can therefore be a useful strategy within the earlier mentioned theoretical frameworks: during phase 1 of the mindset theory of action phases (the pre-decisional phase prior to making a goal); in phase 2 of Winne and Hadwin's Self-Regulated Learning Model (the process of selecting a learning goal during goal setting and planning); and for enhancing goal commitment (a necessary component of goal setting theory).

Researchers have tested the effects of using indulging, dwelling, and mental contrasting in various situations including "studying abroad (Oettingen et al., 2001, Study 1) acquiring a second language abroad (Oettingen et al., 2000, Study 1), getting to know an attractive stranger abroad (Oettingen 2001, Study 1), finding a balance between work and family life (Oettingen, 2000, Study 2), improving oneself (Oettingen et al., 2005, Study 1), and idiosyncratic interpersonal wishes of great importance abroad (Oettingen et al., 2001, Study 1 and 3)" (Gollwitzer & Oettingen, 2009, p. 131). In one particular study (Oettingen et al., 2001, Study 4), researchers had participants indicate their expectations for excelling in mathematics by assigning them to one of three testing conditions; mental contrasting, indulging, or dwelling. Participants assigned to the mental contrasting condition documented two positive aspects of the future and two aspects of reality. The group assigned to the indulging condition had to list 4 positive aspects of the desired future, while those assigned to the dwelling condition had to reflect upon 4 negative aspects of reality. All of the participants documented how energized they felt about excelling in mathematics as a dependent variable. After two weeks, the teacher documented the amount of effort and energy exerted for each participant and their earned grades during the period. Findings indicated that the participants assigned to the mental contrasting condition

exerted more effort, felt more energized, and earned grades as expected when expectations were high; as well as exerted low effort, felt less energized, and earned lower grades when expectations were low. The participants assigned to the indulging and dwelling conditions exerted only moderate effort, felt moderately energized, and earned moderate grades that were independent of their expectations (Gollwitzer & Oettingen, 2009). Findings across the various studies mentioned above illustrated the same effects.

Although there are only a few studies documenting the use of mental contrasting in an academic setting, there is empirical evidence that supports students having a better chance of improving their academic performance when they use mental contrasting when setting academic goals. Examples include the following:

Study 1: Mental contrasting and learning English vocabulary in German elementary school children (Gollwitzer, et al., 2011)**:**

Participants included 49 low-income students attending 2nd and 3rd grade in an urban public elementary school in Germany. Students were assigned to a mental contrasting condition group or to positive-future control condition group to think about how successful they would be at learning English vocabulary words in order to win a prize. The researcher explained to both groups that they would win a bag of candy if they could learn a certain amount of English vocabulary words at the end of two weeks. Each student completed a three-part booklet answering the following questions on a five point scale ranging from *not at all* to *completely*: "How sure are you that you will correctly translate the English words and win a bag of candy?'' and ''How important is it for you to correctly translate the English words and win a bag of candy?'' (p. 405). All students wrote down what the best thing would be about winning the prize. Students in the mental contrasting group were asked to write down what behavior would

stand in their way of learning the correct amount of vocabulary words. The students assigned to

the indulging group wrote about the second best thing about winning the prize. All students

were given the packet of vocabulary words with pictures and were taught the material. At the

end of two weeks, the researcher administered the quiz to both groups. The findings indicate that

there was not a significant difference in the incentive value; however, there was significant effect

for expectation value. The participants in the mental-contrasting condition achieving higher quiz

scores than those in the indulging condition "(M = 4.42 vs. M = 3.27)", (p .406). The results

indicate that mental contrasting is more effective for strengthening goal commitment than just

fantasizing about the future.

Study 2: Mental contrasting and learning multi-lingual vocabulary in US middle school children

(Gollwitzer, et al., 2011)**:**

Participants in this study included 63 fifth-grade students enrolled in a middle school

located in an urban area in the United States. Teachers were asked to assess each student's

classroom behavior on a 13-point scale ranging from A to F as well as respond to a series of

questions about their behavior on a 5-point scale ranging from *not at all true* to *completely true.*

Students were randomly assigned to a mental-contrasting or a positive-future control condition.

All students were told they would win $5 if they could recall 5 out of 10 ways to say 'thank-you'

in various languages at the end of 4 days. Each student completed a three-part booklet

answering the following questions on a five point scale ranging from *not at all* to *completely*:

''How sure are you that you will learn 5 or more ways to say 'thank you' and win $5?'' and

''How important is it for you to learn 5 or more ways to say 'thank you' and win $5?'' (p. 408).

All students wrote down what the best thing would be about winning the prize. Students in the

mental contrasting group were asked to write down what behavior would stand in their way of

learning the correct amount of ways to 'thank you' and what may get in their way of studying them. The students assigned to the indulging group wrote about the second best thing about winning the prize. All students were taught the 10 ways to say 'thank you' in various languages. After 4 days, the researcher administered the quiz to both groups. The researchers observed that children with higher reading levels, better classroom behavior, and higher incentive value scores performed better overall. Although the was no effect for expectation across the two groups, the participants assigned to the mental-contrasting condition achieved better quiz scores than those in the positive-future control condition "(M = 6.29 vs. M = 5.13)", (p. 409). These results were similar to the first study. The researchers also discussed that mental contrasting is more effective than indulging in the positive-future and that the intervention can be used with both younger and older students as well as across cultural settings. Although the research does not explain why mental contrasting is a more effective method, they assume that mental contrasting might lead students to discover that more effort and implementing other learning strategies can improve their chances for academic success as they engage in the learning process (Gollwitzer, et al., 2011).

Although mental contrasting can lead to stronger goal commitment, further action can be taken to increase successful goal attainment. For a variety of reasons, people neglect to take the necessary actions required to achieve their goals even if they are strongly committed (Stadler, Oettingen, & Gollwitzer, 2010). According to Gawrilow, et al., (2010), several internal and external stimuli may interfere with goal attainment, and therefore "are not conducive to goal realization but instead generate interferences that could potentially derail the ongoing goal pursuit" (p. 281). Therefore, pre-planning prior to goal-implementation has the potential to postively affect goal pursuit. Implementation intention is a metacognitive, self-regulartory

strategy that can be used to assist people with their goal pursuits by helping them to face

challenging situations that may arise during the goal-implementation phase. The strategy is

based on a two part plan: (Part 1) identifying anticipated situations that may impede goal-

striving and (Part 2) creating a plan of action that will facilitate goal-oriented behaviors for each

critical situation. Kirk, et al., (2013) defines implementation intention as "a plan of action,

which takes the form of an if/then plan; "If I encounter situation X, then I will perform behavior

Y!" (p. 150). The 'if' part of the plan identifies the anticipated critical situation and the 'then'

part describes the goal-oriented behavior one plans to initiate when faced with a specific

challenge. For example, if someone wants to develop better eating habits, she may form the

following if/then plans: "If I open my refrigerator, then I will grab a piece of fruit" (p. 150) or "If

the waiter asks me about dessert then I will order a fruit salad" (Stadler, et al., 2010, p. 275).

Duckworth cites an if/then plan example from the academic setting for a student who wants to to

improve his math grade: "*If* my friend begins chatting to me during math class, *then* I will ask

him that we talk after class instead!" (Duckworth, et al., 2013, p. 746).

Implementation intention is a strategy that encourages people to anticipate all of the

obstacles that may arise during the goal-implementation phase in order to create a plan of action

for each anticipated situation. If/then plans are "a mental link between a critical situation and a

goal-directed behavior, which in turn engenders a behavioral readiness to respond: when the

situation is encountered, the appropriate behavior becomes initiated automatically" (Kirk, et al.,

2013, p. 150). Studies have shown that implementation intentions are responsible for the

immediate initiation of goal-directed behaviors and researchers have found that if/then plans

"shield participants from distracting stimuli (Achtizer, et al, 2008); remember proactive behavior

(McDaniel, et al., 2008); conserve self-regulatory capacity (Webb and Sheeran, 2003); or switch

to more effective goal-striving behavior (Henderson, et al., 2006)" (p. 151). Individuals using implementation intentions are better prepared to face their challenges throughout the goal-implementation phase since they are more likely to practice self-control and regulate their goal-striving actions as soon as they face an anticipated situation (Gawrilow, et. al, 2010). A meta-analysis study (Gollwitzer and Sheeran, 2006) consisting of 94 studies representing over 8,000 participants, reported an effect size of d=65 for facilitating goal achievement for participants who added implementation intentions to their goal intentions (Maglio, Gollwitzer, & Oettingen, 2013). Implementation intentions have been proven effective in overcoming the following problem areas that negatively impact goal realization (Gawrilow, et. al, 2010). A few examples include:

- Getting started on a goal or initiating a goal that involves unpleasant goal-directed behavior (e.g., goal to perform regular breast examinations (Orbell, Hodgkins, & Sheeran, 1997) or goal to regularly practice math problems at 10 a.m. in the morning every Wednesday over a four week period (Oettingen, Honig, and Gollwitzer (2000)

- Staying on track by protecting the goal pursuits from negative influences (e.g., temptations and distractions) and disruptive inner states (e.g., tiredness, inappropriate moods, or anxiousness)

- Switching to a different strategy to achieve a goal or to abandon a faulty goal (e.g., "If I receive disappointing feedback then I will switch my strategy" (Gollwitzer, et. al., 2010, p. 282)

- Not overextending one's self since behavior is self-regulated and therefore one's resources won't be depleted for future tasks

- Increases willpower when people find themselves in difficult goal-striving situations (e.g., using self-efficacy-strengthening goal intentions such as "And if I start a new task, then I will tell myself: I can solve this task!" (Gollwitzer, et al., 2010, p. 283)

In addition to assisting people to overcome the obstacles of goal striving, studies involving students with Attention-Deficit/Hyperactivity-Disorder (ADHD) have found that implementation intentions are also useful even when goal-striving is challenged due to lack of relevant skills. Students with ADHD tend to have more challenges in school as a result of being "inattentive, hyperactive, and particularly impulsive" (Gawrilow, et al., 2010, p. 289). When students with ADHD added implementation intentions to their goal intentions, they achieved higher scores on a delay of gratification game (Gawrilow, Gollwitzer, & Oettingen, 2009), improved inhibition of an unwanted response on a Go/NoGo task (Gawrilow & Gollwitzer, 2008), and achieved higher scores on tests that measure executive functioning skills including multi-tasking (Gawrilow, Oettingen, & Gollwitzer, 2009b), cognitive set-shifting, and working memory (Gawrilow, Oettingen, & Gollwitzer, 2009a, Study 2). The results of these studies found that if/then plans effectively aid students with ADHD to increase their performance by helping them to cope with distractions and to increase their concentration on the task. The researchers offer that implementation intentions can be used to compensate for self-regulatory behavior when there is a lack of executive functioning skills such as shifting and resistance to distractions (Gawrilow, et al., 2011).

Mental contrasting and implementation intentions are both proven stategies for improving goal commitment and goal striving when used independently. However, when the two strategies are combined, they become an even more effective self-regulation tool for facilitating goal attainment (Duckworth & Carlson, 2013; Gawrilow, et al., 2012; Gawrilow,

Morgenroth, Schultz, Oettingen, & Gollwitzer, 2012; Gollwitzer & Oettingen, 2010). The

combined intervention is known as mental contrasting with implementation intentions, also

known as MCII. Mental contrasting and implementation intention compliment one another since

mental contrasting identifies potential obstacles that can readily be used as critical situations

required for the if-part of implementation intention plans. Oettingen et al., (2013) suggest that

the MCII strategy is useful for a variety of goal pursuits, "People can turn to MCII when the

desired outcomes themselves and/or the ways to achieve these outcomes are unclear, when

conflicting goals or habits have to be dealt with, and when the current workload is high" (p. 538).

Early studies testing the MCII condition involved patients with chronic back problems, middle-

aged women wanting to exercise regularly, and college students coping with stress. Based on the

varied studies, researchers find MCII to be an effective strategy for enhancing goal pursuit across

varying life domains (Oettingen & Gollwitzer, 2010).

 The first study involving patients with chronic back problems found MCII to be a

beneficial strategy for attaining therapeutic goals since it facilitates long-tem goal striving which

is a necessary component for successful rehabilitation. It is known that pain sufferers are less

likely to learn how they can manage their pain through physical activity, especially when they

believe that short-term treatments (e.g., surgery and massage) can improve their condition

without much effort on their part (Oettingen & Gollwitzer, 2010). However, it is still necessary

for patients to engage in physical activity over the long-term if they hope for a full recovery. In

order to increase the the chances of self-regulating and maintaining their behavior changes over

the long term, chronic back pain patients were taught to use the MCII intervention (Christiansen,

Oettingen, Dahme, & Klinger (2010). Measurements taken prior to the intervention, at 10 days,

and again 3 months post-intervention, indicated that physical mobility improved in the patients

assigned to the standard plus MCII condition as compared to those who received only the

standard treatment. MCII intervention "integrates cognitive-behavioral intervention components

that previous models of health behavior have identified as crucial for behavior change (e.g.,

intention formation, self-efficacy, finding benefits and barriers, planning, and relapse

prevention)" (Stadler, et al., 2010, p. 275).

The second study focused on testing if the MCII intervention could be taught as a

metacognitive strategy used to meet a variety of everyday life goals across various domains. To

test this idea, middle-aged women were recruited to participate in a study focused on healthy

lifestyles and were assigned to an information-only control group or to a MCII intervention

group (Stadler, et al., 2009). The women assigned to the MCII intervention group learned the

MCII technique in addition to the information about the benefits of regular exercise. MCII

participants mentally contrasted the goal of exercising regularly and then formed three separate

implementation intentions for overcoming an obstacle, preventing an obstacle from occuring,

and identifying an opportunity to exercise. The results showed that the MCII intervention group

exercised nearly twice as much as the control group and the effect remained constant throughout

a 16 week period. The researchers found the MCII intervention to be an effective tool for

everyday goal pursuits since it is a content free strategy and can be used for a variety of goal

pursuits (Oettingen & Gollwitzer, 2010).

A third study was conducted to test the MCII intervention effects on self-discipline and

self-esteem. College students were assigned to a control group or to a MCII intervention group.

The MCII intervention group learned the MCII strategy and mentally contrasted studying

effectively for an upcoming test and then created two if/then plans for overcoming and

preventing the obstacle and another for planning how to attain the desired outcome. Based on

self-discipline and self-esteem ratings taken prior to the intervention and one week post-intervention, the MCII intervention group had higher ratings after one week, while the control group showed no improvement. The researchers conclude that the MCII intervention helped college students "to recognize and realize their potential and feel a sense of self-discipline and self-esteem in their everyday lives" (Oettingen & Gollwitzer, 2010, p. 130) thus influencing their self-regulatory behavior.

Although the effects are positive for using the MCII intervention for initiating new behaviors, further research was conducted to determine whether or not the strategy would have an impact on changing unwanted behaviors since "changing existing behaviors is arguably more difficult than initiating new behaviors" (Adriaanse, DeRidder, DeWit, Gollwitzer, Hennes, & Oettingen, 2010, p. 1278). Anriaanse, et al., (2010) recruited 52 female participants who were interested in decreasing their consumption of unhealthy snacks and randomly assigned them to a control group or a MCII intervention group (Study 1). The participants in the MCII intervention group mentally contrasted an unhealthy snacking habit they wanted to change and wrote if/then plans for eating a fruit of their choice whenever they encountered their obstacle for eating an unhealthy snack. They were also asked to visualize implementing their plans for two minutes. The control group was asked to list ten healthy snack options to eat. After one week, the participants in the MCII intervention group consumed fewer calories from unwanted snacks compared to those in the control group, leading to conclusion that the MCII intervention can be useful in changing behavior that lead to unwanted habits. In a subsequent study (Study 2), the researchers conducted a similar study to test if the MCII intervention was more effective than using either MC or II interventions independently. Their results indicate that the MCII intervention strategy was more effective than the MC or II interventions alone. The research

proposes that targeting both goal commitment and goal implementation together will lead to more effective results.

Researchers are finding MCII to be an effective intervention with adolescents in the academic setting. Since most adolescents are not intrinsically motivated to do well in school, their academic performance is dependent on their effort and self-discipline (Duckworth, Grant, Loew, Oettingen, & Gollwitzer, 2011). Therefore, students would benefit from learning self-regulatory strategies that enhance goal-directed behavior as a means for increasing their academic performance. Duckworth et al., (2010) conducted a study to determine the effects of MCII on a group of high school students preparing to take the Preliminary SAT (PSAT) exam. The Preliminary Scholastic Aptitude Test (PSAT) serves as a practice exam for the SAT, the test used by most colleges for admission purposes, and to qualify students for the National Merit Scholarship Program. To prepare for the exam, students are encouraged to use self-directed time over the summer to complete a study workbook and take practice tests. The study involved 66 students attending a selective enrollment high school in the Northeastern region of the United States. Participants were assigned to a MCII treatment group or a placebo control group. All participants completed surveys to measure expectations of success (perceived likelihood of completing the workbook) and incentive valence (importance of workbook completion). In addition, all were asked to write down two positive outcomes associated with completing the practice workbook and two obstacles that may impede this task. The MCII treatment group rewrote their positive outcomes and obstacles using more elaborate details and then completed three if/then plans; one for each obstacle and one specifying when and where they would complete the workbook. The placebo control group wrote a short essay about an influential person in their life. All of the participants received their workbooks in July and returned them in

October. The results indicate that the two groups did not differ on the expectations of success or incentive valence measures. After controlling for gender and those attending a PSAT Prep Course, students in the MCII intervention group completed significantly more practice questions than the placebo control group ($\beta=0.27$, p= 0.04). The MCII intervention group averaged 140 completed questions as compared to 84 for the placebo control group. These results indicate that MCII can be used as an effective self-regulatory strategy for adolescents to achieve academic goals and can be easily taught in the classroom (e.g., using MCII intervention prior to the completion of a long-term project).

A second study involved using the MCII intervention strategy with students at risk for ADHD. As mentioned earlier, using implementation intentions has already been proven to be a successful intervention for students diagnosed with ADHD. Researchers found that combining mental contrasting with implementation intentions was successful with helping students at risk of having ADHD manage their school related activities. The study involved 6th and 7th grade students both at risk and not at risk for ADHD. Students were assigned to a learning style strategy condition group (n=56) or a learning style + MCII intervention condition group (n=60). The participants in the learning style condition group went through a process to identify their learning style and then were asked to apply what they learned about their learning style to their school life over a two week period. The participants in the learning style + MCII intervention condition group went through the learning style intervention and then were taught how to use the MCII intervention. Then they were asked to apply the MCII intervention to their most pressing academic concern. They were asked to write about the most positive outcome in detail for resolving their concern and one anticipated obstacle. Then they wrote an if/then plan and were asked to repeat their if/then sentences 3 times. Participants were asked to apply the MCII

intervention to their school related activities over a two week period. The findings reported that students with more ADHD symptoms had stronger management over their school related activities than those with fewer or no symptoms of ADHD in the learning style + MCII intervention condition group. Since the MCII intervention increases the self-regulation levels in children at risk with ADHD and takes very little time to learn, researchers suggested that it should be considered as a cost-effective intervention used in the classroom.

Mental contrasting with implementation intentions is a powerful metacognitive strategy for enhancing goal setting and goal implementation across various domains, including the academic setting. Both younger and older students can benefit from using the MCII intervention for setting academic goals in any content area. In addition, the MCII intervention strategy is a cost-effective and time-saving strategy that can help students lacking executive functioning skills increase their academic performance by improving self-regulatory behavior (Duckworth & Carlson, 2013; Garilow, et al., 2012).

Summary

The literature and research regarding the benefits of noncognitive skills and their effect on academic performance continues to draw attention in the educational arena. Although there exists far more empirical evidence supporting cognitive skills as being the main predictor for academic success, noncognitive skills are now starting to be recognized as a valid and reliable measurement used to predict grades, high school completion and standardized achievement scores (Duckworth & Carlson, 2013; Farrington, et al., 2013; Rosen, Glennie, & Dalton, 2010). Noncognitive skills are associated with having a positive impact on school success and are also known to improve the academic outcomes for students with cognitive deficiencies (Duckworth, 2010; Gawrilow, et al., 2011; Gutman & Schoon, 2013). Furthermore, unlike a person's IQ

which is widely accepted as a fixed-trait one is born with, noncognitive skills are believed to be malleable and can be learned and therefore worthwhile to investigate (Dweck, 2002; Farrington, et al., 2012; Gutman & Schoon, 2013; Hopkins, 2010; Gawrilow, et al, 2012; Tough, 2012). As a result, educators, policy makers, and researchers are interested in finding out which noncognitive skills are most beneficial for improving learning as well as how to implement them in the classroom in order to maximize their effects on academic achievement. Since current research is mostly limited to a single noncognitive skill's short-term impact on performance, future research is necessary for understanding how these skills, attitudes, and beliefs can be used in combination over the long-term for improving academic performance and enhancing the learning process for students (Gutman & Schoon, 2013). Frameworks for practice, effective strategies, and measurement tools need to be further developed so that practitioners can effectively implement the use of noncognitive skills as part of the regular curriculum.

This literature review also focused on self-regulatory learning strategies and goal setting. Empirical evidence suggests that when students are focused on learning goals they are more persistent and put forth more effort when faced with challenging situations and are therefore more likely to master their goals; resulting in an increase in academic performance (Ames, 1992; Grant & Dweck, 2003; Hirsh, et al., 2010). Self-regulatory learning strategies and goal setting can increase academic performance by improving students' academic goals, self-efficacy, and self-discipline. However, since students must be aware of metacognitive and self-regulatory strategies in order to know when and how to use them during the learning process, it is necessary that they be included in the curriculum (Ames, 1992; Garilow, et al., 2011; Hirsh, et al., 2010; Grant & Dweck, 2013; Rosen, et al., 2010; United States Department of Education, 2013).

Mental contrasting and implementation intentions are two specific metacognitive, self-regulatory strategies that can be used during the goal setting stage to facilitate successful goal attainment. When these two strategies are combined and utilized, people choose more feasible goals as a result of mental contrasting their desired outcome with the reality of realizing one's goal. In addition, they are better prepared to deal with any forseen obstacles by means of using implementation intentions, thus increasing the chances for successful goal attainment (Achtziger, et al., Duckworth et al., 2011; Gawrilow, et al., 2011; Oettingen & Gollwitzer, 2010). Since mental contrasting and implementation intention interventions are not content specific, are cost-effective, and can be learned in one or two sessions, they should be considered a valuable, time-saving instructional tool for impacting the effectiveness of academic goals.

CHAPTER 3

METHODOLOGY

The purpose of this study was to investigate if two learning strategies, *mental contrasting* and *implementation intentions*, impact academic performance. The intervention for this study was adapted from previous studies that used these two self-regulating strategies as low-cost and time-effective strategies to enhance an individual's goal commitment and goal striving as part of the goal setting process. Mental contrasting is a strategy used prior to goal setting that allows an individual to visualize the benefits of one's desired future, as well as the negative aspects or obstacles that may arise due to the person's present reality (Oettingen G. , 1999). Implementation intentions, also known as if/then plans, are a tool to help a person with goal-directed behavior. By creating implementation intentions, a person is better prepared to control his/her behavior when placed in a critical situation (Oettingen & Gollwitzer, 2010). As mentioned earlier in the literature review, there is empirical evidence that shows that combining these two strategies is an effective intervention for increasing the chances of goal attainment in various life domains. However, few studies (e.g., Duckworth, et al., 2011; Gawrilow, et al., 2012) exist that use the combined MCII intervention with adolescents in the area of academics.

The following research questions guided this study:

l. Does teaching two self-regulatory learning strategies, mental contrasting and implementation intentions, have an impact on academic performance as measured by end-of-quarter grades?

2. Does teaching two self-regulatory learning strategies, mental contrasting and implementation intentions, have an impact on academic performance as measured by homework completion?

To support this work, an ex post facto, posttest-only experiment was conducted. Participants were randomly assigned to a control group or to an experimental group for this two group design study. The participants in the experimental group were treated to an intervention prior to setting an academic goal for their 1st Quarter English course. The participants in the control group did not receive the intervention as part of their goal setting session.

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Site and Sample Selections

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This study was conducted at an urban charter school in Illinois. The site was selected based on the mission of the school which is to prepare students for 21st century post-secondary success and to cultivate independent, intellectually curious learners. The student demographics for the 2014-2015 school year is based on the 438 students enrolled in the First Quarter of the school year in 7th, 9th, and 10th grades. The student body was racially and ethnically identified as 74.2% Hispanic, 13.7% African American, 8.2% White, 2.7% Asian, .7% Multiracial, and .5% American Indian/Alaskan Native. Eighty-six percent qualify for free/reduced lunch and 15% are identified as students with diverse needs (Chicago Public Schools, 2014).

All ninth and tenth grade students enrolled for the 2014-15 academic year were invited to participate in the study. Parents were informed about the research project during Parent/Student Orientation Sessions held during the last week in August, prior to the opening of the 2014-15 school year. Sessions were held in both English and Spanish. Parents received a copy of the parental consent form and were allowed to turn them in following the meeting or return it to school the following week.

During the first week of school, the students attended an informational session about the study during their English class. The researcher introduced the purpose of the study, provided an overview of the contents outlined in the child assent form, and explained how their personal

information would remain confidential throughout the study. Students were informed that both the parent consent and the child assent forms needed to be submitted in order to participate in the study. Following the introduction of the study, the students received copies of the parent permission slips and child assent forms. Students who returned their parent consent (Appendix A) and child assent forms (Appendix B) were selected to participate in the study. A total of 127 out of 338 students elected, with the consent of their parents, to participate in the study. Students were then randomly assigned, by a computer generated program, to either the control condition or to an experimental condition for completing a goal setting template for their English course.

Of the 127 participants, only 118 were included in the study due to student absences and transfers. Sixty-nine students (58%) were enrolled in 9th grade and 49 students (42%) were enrolled in the 10th grade. Based on the total group's demographic information, 62 (53%) were females, 56 (47%) were males, and 96 students (81%) qualified for free/reduced lunch. Eighty-four students (71%) were Hispanic, 14 (12%) were African American, 13 (11%) were White, 5 (4%) were Asian, 1 (1%) was Multiracial, and 1 (1%) was American Indian/Alaskan Native. Fifty-six students were randomly assigned to the Experimental Group and 62 were assigned to the Control Group. See Tables 2, 3, 4, 5, and 6 for a breakdown of demographics across grade levels by group.

Table 2

Demographics by Group and Grade Level (n=118)

Group	Number of Participants
Control	62
9th Grade	36
10th Grade	26
Experimental	56
9th Grade	33
10th Grade	23
Total	118

Table 3

Demographics by Ethnicity, Grade Level, and Group (n=118)

Ethnicity	Control Group	Experimental Group	Total
9th Graders	30.51%	27.97%	58.47%
Asian	0.00%	4.24%	4.24%
African-American	3.39%	2.54%	5.93%
Hispanic	22.03%	19.49%	41.53%
Multiracial	0.85%	0.00%	0.85%
White	4.24%	1.69%	5.93%
10th Graders	22.03%	19.49%	41.53%
Amer. Indian/Alaskan Native	0.00%	0.85%	0.85%
African-American	3.39%	2.54%	5.93%
Hispanic	16.10%	13.56%	29.66%
White	2.54%	2.54%	5.08%
Total	52.54%	47.46%	100.00%

Table 4

Demographics by Gender, Grade Level, and Group (n=118)

Gender	Control Group	Experimental Group	Total
9th Grade	30.51%	27.97%	58.47%
Females	16.95%	16.10%	33.05%
Males	13.56%	11.86%	25.42%

Gender	Control Group	Experimental Group	Total
10th Grade	22.03%	19.49%	41.53%
Females	13.56%	5.93%	19.49%
Males	8.47%	13.56%	22.03%
Total	52.54%	47.46%	100.00%

Table 5

Family Income based on Free/Reduced Lunch Status by Grade Level and Group (n=118)

Family Income	Control Group	Experimental Group	Total
9th Grade	30.51%	27.97%	58.47%
Receives Free/Reduced Lunch	25.42%	21.19%	46.61%
Does not receive Free/Reduced Lunch	5.08%	6.78%	11.86%
10th Grade	22.03%	19.49%	41.53%
Receives Free/Reduced Lunch	17.80%	16.95%	34.75%
Does not receive Free/Reduced Lunch	4.24%	2.54%	6.78%
Total	52.54%	47.46%	100.00%

Table 6

Students with Diverse Needs by Grade Level and Group (n=118)

Students with Diverse Needs	Control Group	Experimental Group	Total
9th Grade Students with Special Needs	2.54%	3.39%	5.08%
10th Grade Students with Special Needs	2.54%	2.54%	5.93%

Instrumentation

The Measure of Incentive Valence Questionnaire was used to measure the students' beliefs about their academic performance (Appendix C). The six item questionnaire was designed using a 1 to 5 Likert Scale. The response scale ranged from 1 (*Unimportant*) to 5 (*Very Important*). Questions were related to how important they feel it is to complete assignments, revise an assignment for a better grade, attend classes daily, study for tests, show proficiency on assessments, and earn a higher grade in English than their last reporting period.

The second questionnaire, the Expectations of Success Questionnaire, was used to measure the students' perceptions about how they expect to perform in their English course (Appendix D). The questionnaire was designed using a 1 to 5 Likert Scale. The response scale ranged from 1 (*Not at all likely*) to 5 (*Very likely*). Questions related to how likely one feels about completing assignments, attending classes daily, revising assignments for a better grade, studying for tests, showing proficiency on assessments, and earning a higher grade in English than the last reporting period.

A separate goal setting template was used for the experimental group (Appendix E) and control group (Appendix F).

Procedures

This study consisted of administering the Incentive Valence Questionnaire and the Expectations of Success Questionnaire to all participants at the beginning of the 1st Quarter marking period and the week following the end of 1st Quarter. In addition to the questionnaires, the participants assigned to the experimental group attended an intervention session for goal setting. Figure 2 illustrates the experimental design used for this study:

GROUP	OBS	OBS	TREATMENT	OBS	OBS	OBS	OBS
Group 1 (n=62)	Incentive Valence Questionnaire	Expectations Of Success Questionnaire	Placebo	Goal Setting Template & End-of-Quarter Grades	End of Quarter Incentive Valence Questionnaire	End of Quarter Expectations of Success Questionnaire	Homework Completion Rate
Group 2 (n=56)	Incentive Valence Questionnaire	Expectations of Success Questionnaire	MCII Treatment	Goal Setting Template & End-of-Quarter Grades	End of Quarter Incentive Valence Questionnaire	End of Quarter Expectations of Success Questionnaire	Homework Completion Rate

Figure 2. Research Design.

The researcher administered the Measure of Incentive Valence and Expectations for Success questionnaires to the experimental and control groups using an on-line survey. Participants had two weeks at the beginning of the 1st Quarter marking period to complete the surveys. The same surveys were administered the following week after the 1st marking period. Participants had one week to complete the surveys.

The researcher designed a 40 minute lesson plan for the experimental group to introduce the benefits of setting goals and to teach the students how to use mental contrasting and implementation intentions as part of the goal setting process. The researcher spent approximately 20 minutes on each of these two strategies during lesson. The researcher delivered the lesson to three groups of 9th graders and three groups of 10th graders during their English classes, with an average of ten participants per group. During the intervention sessions, each participant set a goal for obtaining their desired grade for the First Quarter marking period, mentally contrasted their goal by visualizing both the benefits and obstacles, and then created implementation intentions for each of their obstacles. Appendix G provides a sample of the MCII lesson plan and protocols for group sessions.

Following the MCII intervention session, the participants in the experimental group joined the control group for a 20 minute goal setting session. The purpose of this session was for all participants to complete a goal setting template for their 1st Quarter English class. Before completing the template, the researcher provided a brief introduction of the goal setting process that included the following steps: setting a goal, coming up with action steps for attaining the goal, identifying the resources needed, and planning how to monitor and evaluate their progress along the way. Most students completed their action plans within the allotted 20 minute session.

Data Collection

The data collected during this study included the following: four online survey responses, End of Quarter English grades, homework completion rates, and goal setting action plans. Responses for the Measure of Incentive Valence and Expectations for Success questionnaires were collected two weeks after the start of the 1st Quarter marking period and again one week following the marking period. The responses were coded with student identification numbers and downloaded into an Excel file.

The English grades for the 1st Quarter marking period were collected to measure student achievement during this time period and to compare the participant's actual grade versus his/her desired grade. The data was also used to compare both groups.

The school's study hall log was used to obtain data for assignment completion. The log provides the number of occasions a student failed to complete an assignment for all classes during the 1st Quarter. For the purpose of this study, it is important to note that the number of incomplete assignments is not limited to the English course and included major subject areas including math and science.

Goal sheets were collected and coded to compare the responses listed in the participant's action plan for both the control and experimental groups.

Data Analysis

To analyze the results for this study, end-of-quarter grades, the number of missing homework assignments, and the demographics data for each participant were uploaded into Microsoft Excel. Descriptive statistics using linear regression analyses were performed for the end-of-quarter grades and the number of missing homework assignments using the experimental group as the explanatory variable along with the following indicators: Female, Hispanic, African-American, Free/Reduced Lunch Status, Special Ed, and Grade 9. A probability value (p-value) less than or equal to 0.05 was used to determine statistical significance.

Summary

In addition to the description of the research design, the information provided in this chapter included a description of the research setting and the participants, the procedures and instruments used to conduct the study, and how the data was collected and analyzed. The following chapter provides the results based on quantitative analyses of the data.

CHAPTER 4

RESULTS

This study investigated the effects of using a goal setting intervention on academic performance. This chapter presents the descriptive data and the results of analyses for each of the stated research questions. Additional results obtained from the student surveys and goal setting sheets are also included.

Research Question One

Research Question One: ***Does teaching two self-regulatory learning strategies, mental contrasting and implementation intentions, have an impact on academic performance as measured by end-of-quarter grades?***

End-of-quarter grades for the participants' English course were used to determine if there was an effect on students' academic performance as a result of using the intervention strategies, mental contrasting and implementation intentions, prior to setting academic goals. A linear regression analysis was conducted to compare the association of the intervention on end-of-quarter grades for the following conditions: Grade 9, Female, African-American, Hispanic, Experimental Group, Low-income, and Special Education. Table 7 provides a summary of the results.

Table 7

Summary of Linear Regression Results for End-of-quarter Grades

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.41305734
R Square	0.17061636
Adjusted R Square	0.1178374
Standard Error	0.09989846
Observations	118

ANOVA

	df	SS	MS	F	Significance F
Regression	7	0.225826785	0.032261	3.23265876	0.003718333
Residual	110	1.097767156	0.00998		
Total	117	1.323593941			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.8006	0.0339	23.5880	0.0000	0.7334	0.8679
G 9	0.0209	0.0188	1.1088	0.2700	-0.0165	0.0583
Female	0.0336	0.0192	1.7560	0.0819	-0.0043	0.0716
Black	-0.0753	0.0355	-2.1217	0.0361	-0.1456	-0.0050
Hispanic	0.0015	0.0254	0.0578	0.9540	-0.0489	0.0518
Experiment	0.0421	0.0186	2.2647	0.0255	0.0053	0.0790
FRL	-0.0197	0.0239	-0.8228	0.4124	-0.0670	0.0277
SpEd	-0.0409	0.0303	-1.3487	0.1802	-0.1009	0.0192

Note. G 9 = 9th grade; SES = Socioeconomic status; SpEd = Special Education status. *p-value < .05.

The regression showed that the following conditions did not have a statistically

significant effect on End-of-quarter grades: Grade 9, $p = 0.26$; Female, $p = 0.08$; Hispanic, $p =$

0.95; Low-income, $p = 0.41$, and Special Education, $p = 0.18$. However, there was a statistically

significant effect on end-of-quarter grades at the p<.05 level for the Experimental Group, $p =$

0.025. Results support that the treatment had a positive effect on end-of-quarter grades. The

coefficient for the experimental group indicates the effect to be 4 grade percentage points,

controlling for demographic differences. African-American students were the only demographic

group with a significant mean difference in grades, performing 7.5 points below the average (p =

-0.036). In addition, an independent samples *t*-test was performed to compare the end-of-quarter

grades for both groups. The experimental group (N=56) was associated with having higher end-

of-quarter grades *M = 0.84, (SD = 0.95).* By comparison, the control group (N= 61) was

associated with having lower end-of-quarter grades *M = .080, (SD = 0.114).* The independent

samples *t*-test was associated with a statistically significant effect, *t(44)=2.05, p = 0.04.* Table

8 shows a summary of the results.

Table 8

Summary of Independent t-test for End-of-Quarter Grades

95% Level		
T-test for differences in means		
Both Grades Combined		
t-Test: Two-Sample Assuming Equal Variances		
	Experimental Group	Control Group
	0.879	*0.967*
Mean	0.842109091	0.8004333
Variance	0.009130729	0.0128151
Observations	55	60
Pooled Variance	0.011054425	
Hypothesized Mean Difference	0	
df	113	
t Stat	2.123359183	
P(T<=t) one-tail	0.017952869	
t Critical one-tail	1.658450216	
P(T<=t) two-tail	0.035905739*	
t Critical two-tail	1.981180359	
REJECT null -> stat significant difference in means		

Note. *p < .05, two-tailed.

Research Question Two

Research Question Two. ***Does teaching two self-regulatory learning strategies, mental***

contrasting and implementation intentions, have an impact on academic performance as

measured by homework completion?

The number of missing homework assignments was used to determine if there was an

effect on students' academic performance as a result of using the intervention strategies, mental

contrasting and implementation intentions, prior to setting academic goals. A linear regression

analyses was conducted to compare the effect for missing homework assignments for the

following conditions: Grade 9, Female, African-American, Hispanic, Experimental Group,

Low-income, and Special Education. Table 9 provides a summary of the results.

Table 9

Summary of Linear Regression Results for Homework Completion

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.4762
R Square	0.2267
Adjusted R Square	0.1775
Standard Error	7.3643
Observations	118.0000

ANOVA

	df	SS	MS	F	Significance F
Regression	7.0000	1749.2973	249.8996	4.6079	0.0002
Residual	110.0000	5965.5586	54.2324		
Total	117.0000	7714.8559			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	10.2795	2.5022	4.1082	0.0001	5.3208	15.2383
G 9	-0.2030	1.3894	-0.1461	0.8841	-2.9565	2.5506
Female	-6.4302	1.4122	-4.5532	0.0000	-9.2289	-3.6314
Black	4.9753	2.6150	1.9026	0.0597	-0.2069	10.1576
Hispanic	0.0293	1.8735	0.0156	0.9876	-3.6836	3.7421
Experiment	-1.8941	1.3713	-1.3812	0.1700	-4.6118	0.8235
FRL	1.4432	1.7610	0.8195	0.4143	-2.0468	4.9332
SpEd	0.6232	2.2331	0.2791	0.7807	-3.8023	5.0487

Note. G 9 = 9th grade; SES = Socioeconomic status; SpEd = Special Education Status. *p-value < 0.05.

The regression showed that none of the conditions had a statistically significant effect on

the completion rate for homework assignments. Although the results point in a positive direction

for the experimental group, they do not support that the treatment had a statistically significant

effect on homework completion, $p = .17$. However, it is worth noting that African-American

students missed an average of 5 homework assignments more than their non-African-American

peers.

Measures of Student Expectations

The Expectations for Success Questionnaire (ESQ) was administered at the beginning

and at the end of the study to gain a better understanding of the students' perceptions of their

likelihood for academic success. The survey consisted of 6 scaled items, with responses ranging

from 1 (*Not at all likely*) to 5 (*Very likely*). Tables 10 and 11 list the means and standard

deviations scores for each item for the whole, experimental and control groups.

Table 10

Expectations of Success Questionnaire Response Averages (Pre-study)

Item	Total	Experimental Group (E) Means	Control Group (C) Means	Difference Between Means for E and C
1. How likely do you think it is that you will complete all of your assignments?	4.533	4.512	4.551	-0.039
2. How likely do you think it is that you will attend classes daily?	4.798	4.780	4.813	-0.032
3. How likely do you think it is that you will revise an assignment for a better grade?	4.126	3.950	4.277	-0.327
4. How likely do you think it is that you will study for your tests?	4.000	4.028	3.978	0.050
5. How likely do you think it is that you will show proficiency or master the skills as measured by your assessments?	4.236	4.350	4.143	0.207

Item	Total	Experimental Group (E) Means	Control Group (C) Means	Difference Between Means for E and C
6. How likely do you think it is that you will earn a higher grade in English than your last reporting period?	4.378	4.357	4.396	-0.039
Mean of the Means	4.345	4.330	4.360	-0.030

Table 11

Expectations of Success Questionnaire Response Averages (Post-study)

Item	Total	Experimental Group (E) Means	Control Group (C) Means	Difference Between Means for E and C
1. How likely do you think it is that you will complete all of your assignments?	4.684	4.826	4.667	0.159
2. How likely do you think it is that you will attend classes daily?	4.789	4.826	4.733	0.093
3. How likely do you think it is that you will revise an assignment for a better grade?	4.282	4.273	4.500	-0.227
4. How likely do you think it is that you will study for your tests?	4.043	4.190	3.966	0.225
5. How likely do you think it is that you will show proficiency or master the skills as measured by your assessments?	4.446	4.348	4.517	-0.169
6. How likely do you think it is that you will earn a higher grade in English than your last reporting period?	4.533	4.773	4.500	0.273
Mean of the Means	4.463	4.539	4.480	0.059

        The mean of the means scores across both surveys range between 4.430 and 4.480,

indicating that all of the participants perceived themselves as highly likely to be successful in

their academics. Figures 3 and 4 illustrate the similarities in responses for the experimental and

control groups.
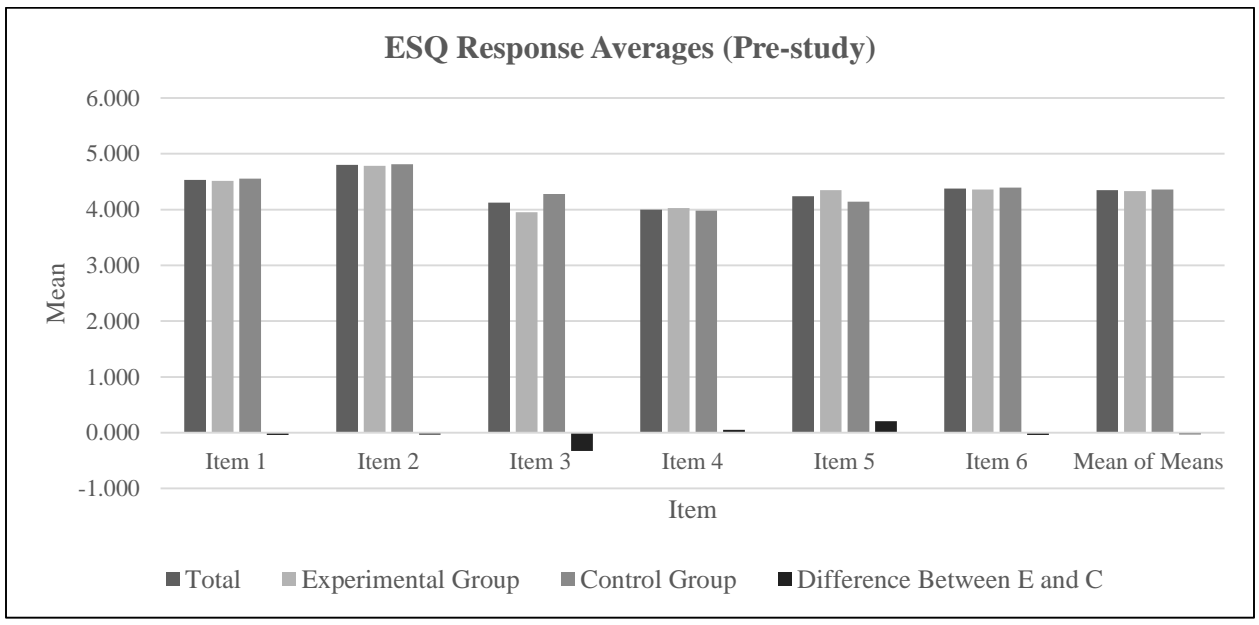
Figure 3. Expectations of Success (ESQ) Response Averages (Pre-Study).
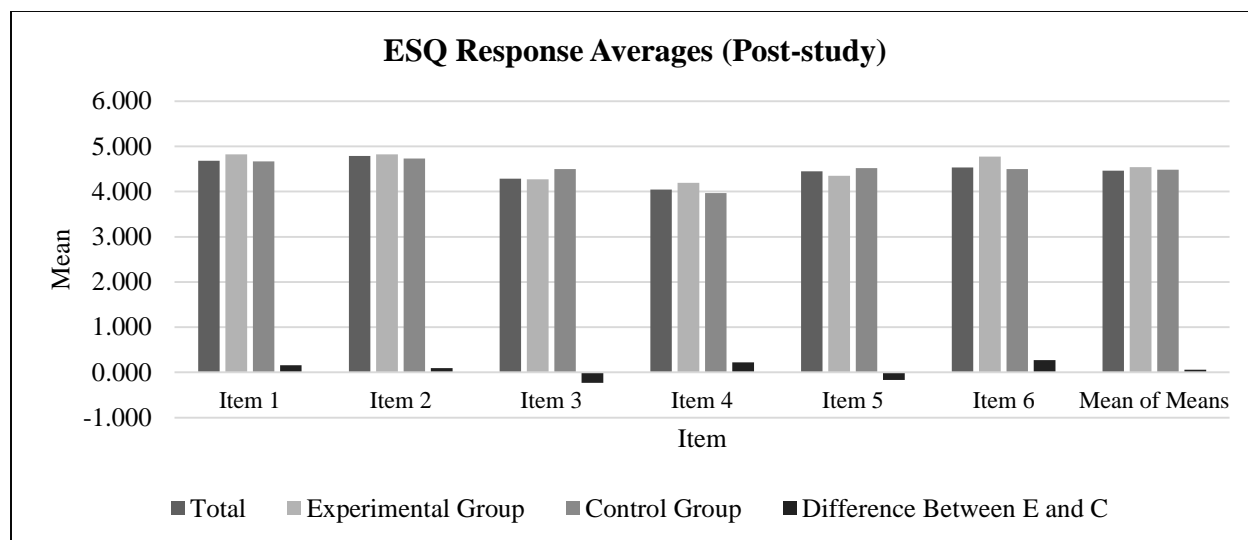
Figure 4. Expectations of Success (ESQ) Response Averages (Post-Study).

The Measure of Incentive Valence Questionnaire (MIVQ) was administered at the beginning and at the end of the study to gain a better understanding of the students' attitudes and beliefs about their academic performance. The survey consisted of 6 scaled items, with responses ranging from 1 (*Unimportant*) to 5 (*Very Important*). Tables 12 and 13 list the means and standard deviations scores for each item for the whole, experimental and control groups.

Table 12

Measure of Incentive Valence Questionnaire Response Averages (Pre-study)

Item	Total	Experimental Group (E) Means	Control Group (C) Means	Difference Between Means for E and C
1. How important is it to you to complete all of your assignments?	4.742	4.763	4.771	-0.008
2. How important is it to you to revise your assignments for a better grade?	4.032	4.026	4.042	-0.015
3. How important is it to you to attend your classes daily?	4.753	4.789	4.750	0.039

Item	Total	Experimental Group (E) Means	Control Group (C) Means	Difference Between Means for E and C
4. How important is it to you to study for your tests?	4.151	4.105	4.208	-0.103
5. How important is it to you to show proficiency or master the skills as measured by your assessments?	4.226	4.289	4.208	0.081
6. How important is it to you to get a higher grade in English than your last reporting period?	4.462	4.500	4.458	0.042
Mean of the Means	4.394	4.412	4.406	0.006

Table 13

Measure of Incentive Valence Questionnaire Response Averages (Post-study)

Item	Total	Experimental Group (E) Means	Control Group (C) Means	Difference Between Means for E and C
1. How important is it to you to complete all of your assignments?	4.609	4.650	4.667	-0.017
2. How important is it to you to revise your assignments for a better grade?	4.261	4.150	4.407	-0.257
3. How important is it to you to attend your classes daily?	4.522	4.550	4.407	0.143
4. How important is it to you to study for your tests?	4.043	3.900	4.000	-0.100
5. How important is it to you to show proficiency or master the skills as measured by your assessments?	4.348	4.400	4.222	0.178
6. How important is it to you to get a higher grade in English than your last reporting period?	4.507	4.500	4.556	-0.056
Mean of the Means	4.382	4.358	4.377	-0.018

The mean of the means scores across both surveys range between 4.358 and 4.412, indicating that all of the participants have above average positive attitudes and beliefs about their academic performance. Figures 5 and 6 illustrate the similarities in responses for the experimental and control groups.
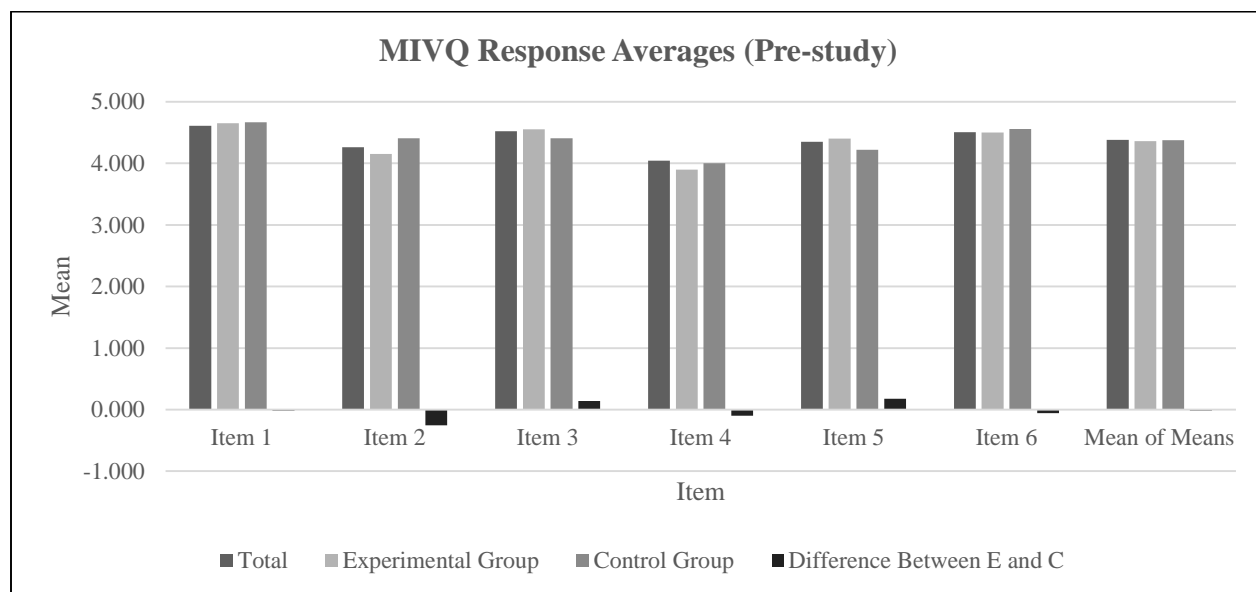
Figure 5. Measure of Incentive Valence Questionnaire (MIVQ) Response Averages (Pre-Study).
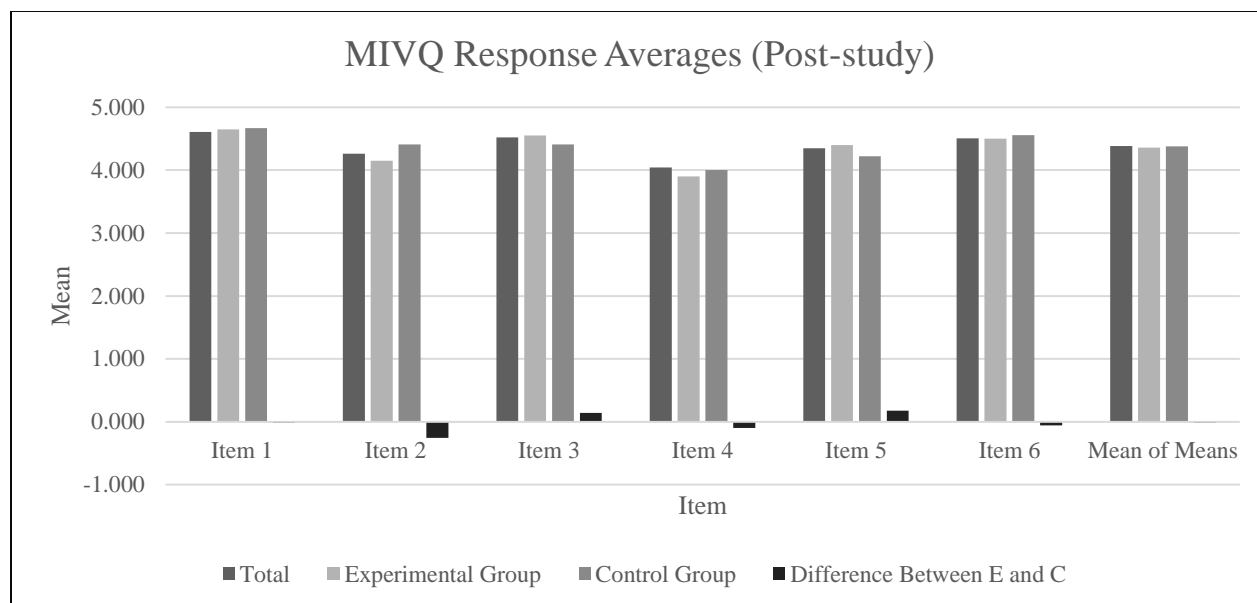
Figure 6. Measure of Incentive Valence Questionnaire (MIVQ) Response Averages (Post-Study).

Although the means for the responses differed only slightly for the pre and post surveys, the means for post-study survey responses increased on the ESQ compared to the responses at the beginning of the study by 0.209 for the experimental group and 0.12 for the control group. However, the means for the post study survey responses decreased slightly on the MIVQ compared to the earlier responses by -0.054 for the experimental group and -0.029 for the control group. See Figures 7 and 8 for pre and post mean averages by group.

ESQ Pre and Post Averages

	Total	Experimental Group	Control Group	E - C
■ ESQ Mean of the Means (Pre)	4.345	4.33	4.36	-0.03
■ ESQ Mean of the Means (Post)	4.463	4.539	4.48	0.059
■ Difference	0.118	0.209	0.12	0.089
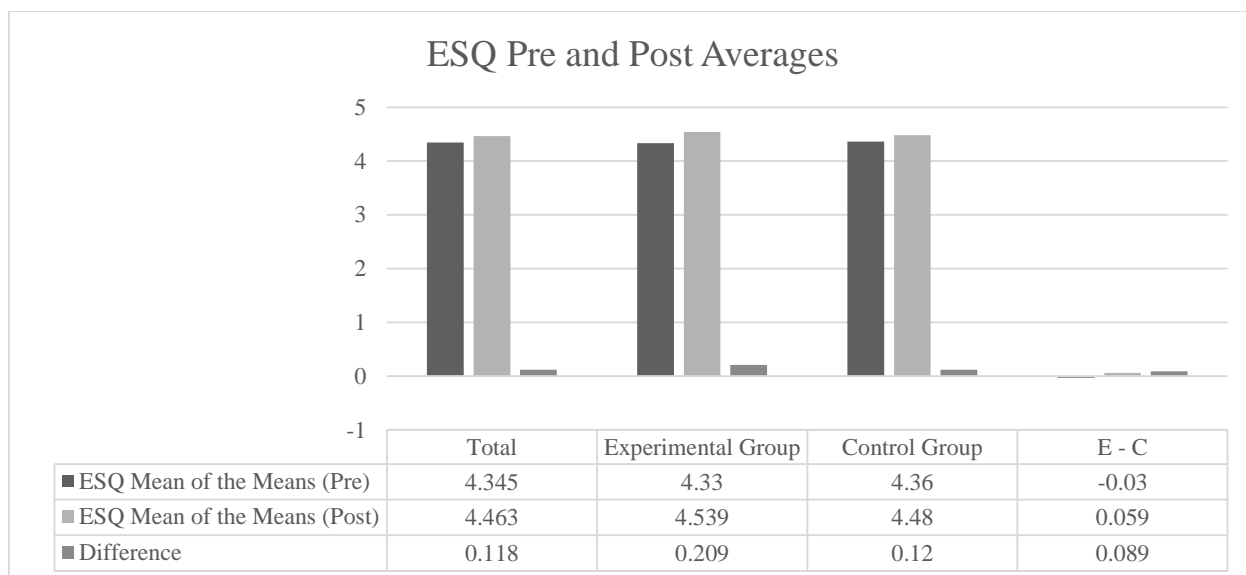
Figure 7. Expectations of Success (ESQ) Pre and Post Mean Averages.

MIVQ Pre and Post Averages

	Total	Experimental Group	Control Group	E - C
■ MIVQ Mean of the Means (pre)	4.394	4.412	4.406	0.006
■ MIVQ Mean of the Means (post)	4.382	4.358	4.377	-0.018
■ Difference	-0.012	-0.054	-0.029	-0.024

Figure 8. Measure of Incentive Valence Questionnaire (MIVQ) Pre and Post Mean Averages.

Measures of Students' Goal Setting and Action Plans

Independent samples t-tests were performed for each of the variables on the student

action plans to compare the association between the students' action plans and observed

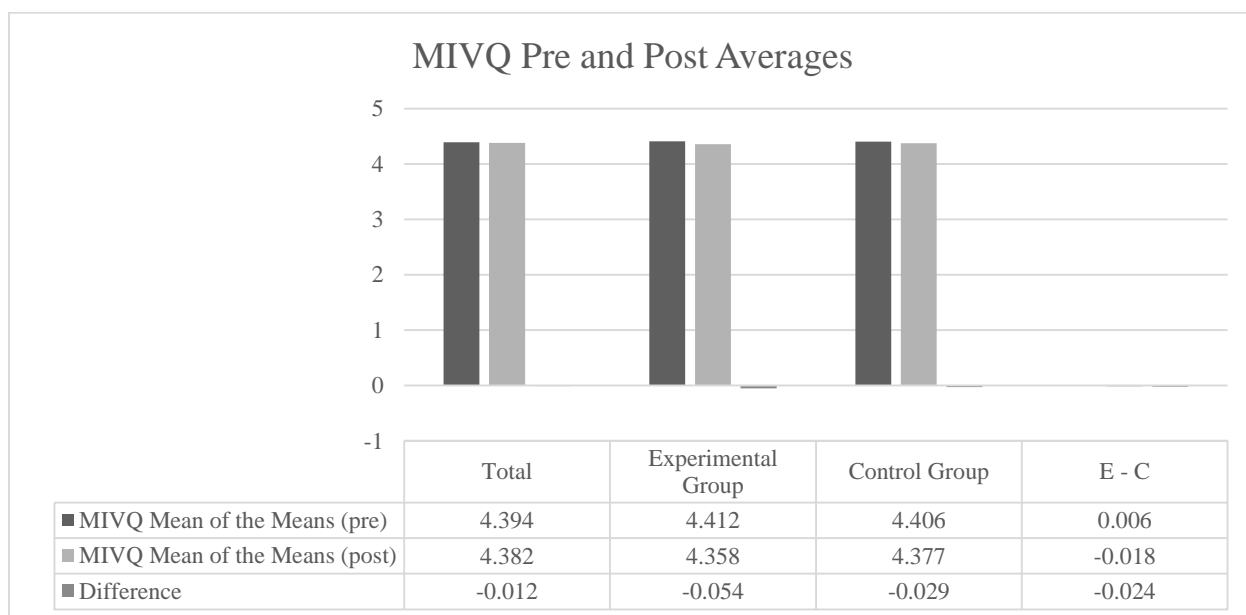outcomes (end-of-quarter grades and homework completion rates) for both groups. Although the correlations are in the right direction, the results revealed there were no significant differences in the variables of the action plans between the group that received the MCII treatment and the control group. However, the results for the experimental group were close to being statistically significant, ($t(53) = 1.89$, $p = .06$) for Evidence of Goal Attainment. Tables 14, 15, and 16 show a summary of the the correlations from each of the t-tests for the total, experimental, and control groups. Tables 17, 18, 19, and 20 show the t-test results for each variable.

Table 14

Correlations for All Participants

Correlations between Goal Setting and Outcomes for All Participants	Outcome 1	Outcome 2
	End-of-Quarter Grades	Homework Completion Rate
Action Steps Listed	0.203757867	-0.225142543
Resources Listed	0.213601081	-0.249804258
Evidence of Goal Attainment Listed	0.115024261	-0.271813711
Timeline listed	0.100988386	-0.142520644

Table 15

Correlations for Control Group

Correlations between Goal Setting and Outcomes for Control Group	Outcome 1	Outcome 2
Variables	End-of-Quarter Grades	Homework Completion Rate
Action Steps Listed	0.336716153	-0.241736289
Resources Listed	0.193569949	-0.25113038
Evidence of Goal Attainment Listed	0.098014948	-0.236954031
Timeline listed	0.171884738	-0.296979117

Table 16

Correlations for Experimental Group

Correlations between Goal Setting and Outcomes for Experimental Group	Outcome 1	Outcome 2
Variables	End-of-Quarter Grades	Homework Completion Rate
Action Steps Listed	0.032783881	-0.208865282
Resources Listed	0.238309391	-0.244457395
Evidence of Goal Attainment Listed	0.065683686	-0.300588412
Timeline listed	-0.003918068	0.061014535

Table 17

Independent Samples t-test for Action Steps Listed

95% Level Action Steps Listed t-Test: Two-Sample Assuming Equal Variances		
	Experimental Group	*Control Group*
Mean	3.35849057	3.40983607
Variance	1.77285922	1.87923497
Observations	53	61
Pooled Variance	1.82984623	
Hypothesized Mean Difference	0	
df	112	
t Stat	-0.2021369	
P(T<=t) one-tail	0.42008822	
t Critical one-tail	1.65857263	
P(T<=t) two-tail	0.84017644	
t Critical two-tail	1.98137181	
ACCEPT -> No significant difference in means between E and C		

Table 18

Independent Samples t-test for Resources Listed

95% Level **Resources Listed** **t-Test: Two-Sample Assuming Equal Variances**		
	Experimental Group	*Control Group*
Mean	2.58490566	2.49180328
Variance	1.40130624	1.88743169
Observations	53	61
Pooled Variance	1.66173059	
Hypothesized Mean Difference	0	
df	112	
t Stat	0.38461916	
P(T<=t) one-tail	0.35062447	
t Critical one-tail	1.65857263	
P(T<=t) two-tail	0.70124895	
t Critical two-tail	1.98137181	
ACCEPT -> No significant difference in means between E and C		

Table 19

Independent Samples t-test for Evidence of Goal Attainment Listed

95% Level **Evidence of Goal Attainment Listed** **t-Test: Two-Sample Assuming Equal Variances**		
	Experimental Group	*Control Group*
Mean	2.22641509	1.73770492
Variance	1.71698113	2.06338798
Observations	53	61
Pooled Variance	1.90255623	
Hypothesized Mean Difference	0	
df	112	
t Stat	1.88683124	
P(T<=t) one-tail	0.03088614	
t Critical one-tail	1.65857263	
P(T<=t) two-tail	0.06177228	
t Critical two-tail	1.98137181	
ACCEPT -> No significant difference in means between E and C		

Table 20

Independent Samples t-test for Timeline Listed

95% Level Timeline listed t-Test: Two-Sample Assuming Equal Variances		
	Experimental Group	*Control Group*
Mean	0.81132075	0.80327869
Variance	0.69448476	0.8273224
Observations	53	61
Pooled Variance	0.76564778	
Hypothesized Mean Difference	0	
df	112	
t Stat	0.04894446	
P(T<=t) one-tail	0.48052537	
t Critical one-tail	1.65857263	
P(T<=t) two-tail	0.96105073	
t Critical two-tail	1.98137181	
ACCEPT -> No significant difference in means between E and C		

The results from this study support that there exists a positive relationship between the MCII treatment and end-of quarter grades. However, the treatment did not indicate a significant effect on homework completion. The next chapter offers an interpretation of the results of the MCII treatment on academic performance.

CHAPTER 5

DISCUSSION

The purpose of this study was to investigate the impact, if any, of high school students using noncognitive skills as a strategy for improving their academic performance. As mentioned earlier, academic performance is dependent on self-discipline and effort for most adolescents (Duckwork, et al., 2011) and goal setting has been proven to increase the degree of effort and determination for taking action to attain desired results (Ames, 1992; Farrington, et al., 2012; Hirsh, et al., 2010, Zimmerman, 2008). This study adds to the current literature on the benefits of using mental contrasting and implementation intentions (MCII) to enhance goal attainment in various domains and more specifically, to the limited research of the effects of MCII on the academic performance of adolescents. In addition, the findings support the benefits of including noncognitive skills, specifically metacognition and self-regulatory strategies, in the curriculum for enhancing academic performance. The following findings are based on the analyses of end-of-quarter grades, homework completion rates, student survey responses, and goal setting action plans for two comparable groups.

Research Question One

Research Question One: *Does teaching two self-regulatory learning strategies, mental contrasting and implementation intentions, have an impact on academic performance as measured by end-of-quarter grades?*

The analyses of the data revealed a positive correlation between the MCII treatment and end-of-quarter grades. The students who received the treatment had statistically significantly higher grades than those in the control group; scoring an average of four percentage points

higher than their peers at the end of the ten-week marking period ($p = .025$). This is the

equivalent of a half letter grade when based on a five point grading scale. Although participants

in both groups had positive attitudes regarding their academic success and completed the same

action plan template for reaching their desired goals, the students who mentally contrasted the

benefits with the reality for attaining their desired grade and created if/then plans to overcome

potential obstacles performed better than those who only completed their goal intentions. Since

there was a positive correlation between end-of-quarter grades for students treated to the MCII

intervention, there is a strong possibility that the MCII intervention contributed to the difference

in grades between the two groups over the course of a ten-week period. These results align with

the findings of previous studies conducted using the MCII intervention in academic settings.

High school students enrolled in PSAT Prep Course assigned to an MCII intervention group

completed an average of 56 more practice questions than those assigned to the placebo group

($\beta=0.27$, p= 0.04), indicating that MCII can be an effective self-regulatory strategy for

adolescents ((Duckworth, et al., 2011). Research conducted by Gawrilow, et al. (2012), found

that students with more ADHD symptoms had increased their self-regulation levels when treated

with a learning style + MCII intervention as compared with those who were treated to a learning

style only intervention, thus concluding that the MCII intervention is a low time-consuming and

cost effective strategy to be used in academic settings.

Finding 1: The students in the MCII intervention group were more engaged in the cognitive

process of goal setting than those in the control group as a result of fantasizing about the benefits

of earning their desired grade as well as identifying the potential obstacles that may arise during

the goal striving phase. Research supports that successful goal attainment is dependent on

people engaging in more cognitive processing during the goal setting phase because it leads to

stronger goal commitment and goal striving; both required for pursing goals (Achtziger, et al., 2012; Gollwitzer, et al., 1990; Lock & Latham, 1990; Oettingen & Gollwitzer, 2001, 2011). Both goal setting theory (Lock & Latham, 1994) and Gollwiter's (2012) mindset theory of action phases claim that determining a goal's desirability and feasibility is critical to establishing strong goal commitment and that knowing the situational constraints for attaining a goal leads to more effective goal striving. Oettingen, et al., (2005), suggests that mental contrasting leads to expectancy based goal commitment as a result of fantasizing about the positives of a desired future while also identifying the negative reality that may impede goal attainment. Mental contrasting helps to determine if the goal is both desirable and feasible, thus activating strong goal commitment especially if one's expectations for success are high (Oettingen, Mayer, Thorpe, Janetzka, & Lorenz, 2005). As a result of mental contrasting, the students activated their expectations for success by realizing they could achieve their desired grades by overcoming their obstacles, thus establishing a stronger goal commitment. Other than completing the brief questionnaires, the students in the control group did not engage in a cognitive process prior to setting their academic goals and therefore, never established or activated their expectations for success which may lead to stronger goal commitment.

Finding 2: The students treated with the MCII intervention created if/then plans that may have contributed to an increase in goal-directed behavior during the goal-striving phase, resulting in higher end-of-quarter grades than the students in the control group who did not engage in a strategy designed to overcome their potential obstacles. As previously mentioned, successful goal pursuit is contingent on implementing effective goal-directed behaviors during the goal-striving stage (Achtiziger, et al., 2012; Locke & Latham, 1994, 2006; Gollwitzer, 2012). Planning how to navigate the path to attaining one's goals is necessary for overcoming any

obstacles along the way. Implementation intentions have been a proven strategy to help people

get started on a goal, stay on track during the goal-striving phase, and increase willpower when

faced with difficult situations by enabling an individual to automatically respond in an

appropriate manner when encountered by a critical situation (Gawrilow, et al., 2010; Kirk, et. al.,

2013). After students in the experimental group identified potential obstacles during the first

part of the MCII intervention, they created implementation intentions in the form of if/then

statements and then visualized themselves executing their plans and successfully overcoming

their obstacles. During the ten-week period, students may have actually implemented their

if/then plans when faced with obstacles in their reality; possibly resulting in overcoming their

challenges as they pursued their academic goals. Table 21 provides examples of students'

obstacles and implementation intentions in the form of if/then statements.

Table 21

Student Obstacles and If/then Statements

Obstacle	If/then Statements
Stress	"If I get lazy, then I will eat and maybe take a nap for 30 minutes then do what I need to do."
Social life, friends	"If I get a party invitation, then I will finish my homework first and maybe go later."
Being distracted	"If becoming distracted at home, then I will turn off any of my electronic devices and lock myself in my room to do homework."
Procrastinating	"If procrastination becomes a problem, then I will create a daily agenda of what work I need to do every day."
Challenging tests	"If I receive a challenging test during a class, then I will work my hardest trying to answer to receive partial credit for each question."
Not enough sleep, tiredness	"If not having enough sleep becomes an obstacle, then I will make sure I get at least 8 hours."
Not understanding the work	"If I don't understand the work, then I will ask my teachers for help."

A lot of homework	"If I have a lot of homework, then I will start it earlier."
Phone distractions	"If my cell phone keeps distracting me, then I will give it to my parents."
Distracted by an event	"If there is an event or trip, then I will set time to do my work before the trip or event."
Falling asleep doing homework	"If I feel tired, groggy, etc., then I will sleep for 2 hours and wake up to do my work."
Life issues	"If life issues get tough, then I will get help from my counselor and teachers to keep up with my work."

Finding 3: As a result of learning and utilizing two self-regulatory strategies, students in the experimental group obtained higher end-of-quarter grades compared to their peers who did not engage in any metacognitive strategies prior to setting their academic goals. Self-regulated learning, such as setting goals, is a proactive process that enable students to monitor their learning and adjust their behaviors and efforts to positively influence their academic performance (Zimmerman, 2008). These results support the current research suggesting that self-regulation is associated with impacting and predicting grades (Duckworth & Carlson, 2013) and that metacognition and self-regulatory learning strategies have been proven to help strengthen self-efficacy and increase motivation and perseverance during challenging tasks (Farrington, et al., 2012; Hirsh, et al., 2010). Research supports that the MCII intervention is responsible for influencing self-regulatory behavior as a result of increasing self-discipline, self-esteem and executive functioning skills (Gawrilow, et al., 2010). Specifically, implementation intentions help people to regulate their goal-directed behavior by giving them control when faced with critical situations. In previous studies, Oettingen & Gollwitzer (2010) determined that participants in an MCII intervention group consistently exercised nearly twice as much as the control group over a 16 week period, thus finding the MCII intervention to be effective for everyday goal pursuits. In another study, the same researchers found that college students

treated with the MCII intervention reported higher self-esteem and self-discipline ratings post intervention when using the MCII strategy to study for an upcoming exam (Oettingen & Gollwitzer, 2010). Like the participants in past studies, the students treated to the MCII intervention in this study may have confronted their distractions, delayed non-goal oriented behaviors, or initiated goal-directed behaviors in a more decisive manner as a result of being able to automatically respond appropriately when confronted with potential obstacles during the marking period.

<div align="center">**Research Question Two**</div>

Research Question Two. ***Does teaching two self-regulatory learning strategies, mental contrasting and implementation intentions, have an impact on academic performance as measured by homework completion?***

Although there was not a significant positive correlation between homework completion for students treated with the MCII intervention, the results were in a positive direction ($p = .17$). It is important to note that the data collection for homework was not limited to the participants' English course so a comparison between the two groups for homework completion specific to their English course could not be analyzed. These results do not reflect the findings of previous studies indicating a significant difference for using the MCII intervention to complete various tasks across a various domains (Duckworth & Carlson, 2013; Gawrilow, et al., 2012; Gawrilow, Morgenroth, Schultz, Oettingen, & Gollwitzer, 2012; Gollwitzer & Oettingen, 2010).

Finding 4: In regard to this study, only eight students identified homework completion as an obstacle to attaining his/her desired grade. Therefore, few if/then plans specific to homework were created which may explain the results. Even though homework has been historically accepted as an effective practice for enhancing academic performance, there exists conflicting

views about whether or not homework has a positive impact on student achievement. A meta-analyses of 32 homework studies revealed that students who were assigned homework scored better on class tests than those who did not have homework; the standard deviation on unit tests varied from $d = .39$ to $d = .97$ (Cooper, Civey Robinson, & Patall, 2006). Results from another meta-analyses study using data collected from 1990-2001 for 10th grade students in Math and Science concluded that time on homework was positively associated with standardized test scores; however, time on homework was not positively associated with higher course grades in math or science (Maltese, Tai, & Xitao, 2012). Although the debate continues regarding the impact of homework on academic achievement, several studies support that homework completion may be influenced by several factors including goal orientation, student and family characteristics, adult monitoring, amount of time spent on homework, and task value and interest (XU & Wu, 2013).

Additional Findings

Measures of Students' Goal Setting and Action Plans

Finding 5: Based on the response averages for the Expectations for Success and the Measure of Incentive Valence Questionnaires (means for both surveys ranged between 4.430 and 4.480), the students across both groups indicated they had positive attitudes and beliefs about their academic performance. In addition, most students set a goal to obtain an A or B for their end-of-quarter English grade. Out of 118 students, 69.5% desired an A, 28% a B and only 1.6% hoped to obtain C. Since the academic histories and the previous grades for the participants in this study were unknown, it was not possible to determine if the students' goals were feasible based on their past academic performance. However, it is still worth mentioning that thirty-nine percent of the students met their end-of-quarter goals. Forty-four percent of the students treated to the MCII

intervention attained their desired grade (or higher) as compared to 33% for the students who only completed an action plan. These results support the empirical evidence suggesting that the MCII intervention enhances the chances for successful goal attainment.

Finding 6: The student action plans did not have a statistically significant impact on the observed outcomes across groups. Independent samples *t*-tests indicated that there were no significant differences between the means of the 4 variables listed on the goal setting template (Action steps, Resources, Evidence of Goal Attainment, and Timeline) and the observed outcomes (end-of-quarter grades and homework completion). These results may indicate that the MCII intervention does not lead to the creation of higher quality action plans. However, this may be due to the design of the goal setting template since it did not require students to identify potential obstacles and create action steps as part of the overall action plan.

Finding 7: In addition to the findings based on the quantitative data for the two outcomes, an analyses of the participants' responses from the MCII intervention activities revealed the following information.

- Students listed a total of 22 benefits for earning their desired grade as a result of fantasizing about how they will feel or what they will obtain for reaching their goals. Benefits included making their parents proud, increased self-esteem, improve the chances of earning a scholarship, understanding the concepts, getting a good job, and avoiding summer school. Table 22 provides examples of the most frequently listed responses.

Table 22

Most Frequently Stated Benefits for Reaching Desired Grade

Benefits for Earning Desired Grade	Frequency	Sample Responses
Proud of self	15	"If I get an A in English I will feel good and it will motivate me to keep getting A's for the rest of the year."
Make parents proud	12	"If I reach my goal then my parents will be proud of me. I will feel normal. If I do reach my goals my parents will reward me."
Feel more confident	6	"I would feel confident in myself and would be very satisfied because of that."
Receive a reward	5	"The benefits I would experience as a result of earning my desired grade would be getting straight A's and B's for the quarter and have a great score. My parents would reward me and get me an IPod."
Get into college	5	"I'll feel good, have a good GPA, I'll feel smart and get into good colleges."
Raise GPA	5	"I would like to get an A in English so that I can pass the class and have a higher GPA. I am going to feel better about myself at accomplishing the grade I want and I am going to feel happy."

- The students identified a total of 76 obstacles that may impede their academic success. The most frequently mentioned obstacles included hanging out with friends/going to parties (21x), getting distracted (16x), not getting enough sleep (14x), laziness (11x), work too challenging (9x), and homework (8x). Other obstacles included social media, video games, family problems, and stress.

- An analyses of the if/then statements revealed that some of the students had difficulty writing specific if/then statements. For example, some of the participants wrote if/then statements that were too vague and therefore did not include a specific action. Other students neglected to write an if/then statement for their identified obstacle(s).

Finding 8: The results of this study indicate that African-American students are not performing as well as their peers. Students in this sub-group scored 7.5 percentage points below the average on end-of quarter grades and missed an average of 5 more homework assignments than students across all other sub-groups. These results confirm that the achievement gap continues to exist for African-American students and new ways for developing and strengthening their self-efficacy and self-regulation skills are needed in order to increase their level of engagement in their academic responsibilities and activities. Due to a lack of empirical evidence for how noncognitive skills and different strategies impact the academic performance for racial or gender groups, Farrington, et al. (2012), suggests that more research is necessary for determining which ones are more effective for closing the acheivement gap.

<h3 align="center">Implications for Practice and Policy</h3>

Previous research suggests that the MCII intervention is designed to be a cost effective and low time-consuming strategy for goal setting that can be used in the academic setting (e.g., Gollwitzer et al., 2011; Oettingen et al., 2010 & 2013). The literature also cites the following implications for educational purposes: the MCII intervention can be integrated into existing curricula to help students attain their academic goals (Duckworth et al., 2011); they can be used to help improve executive functioning skills for students with self-regulation disorders. This study supports the implications from previous studies as well as the following developments in an academic setting that emerged: (1) suggestion for using the MCII intervention more effectively in the classroom, (2) the need to provide professional development for teachers in using noncognitive skills to increase academic achievement, (3) the potential for being a successful intervention for all students, including those with diverse needs, and (4) the need to advocate for the inclusion of noncognitive skills in the core curriculum and to support additional

research in identifying which metacognitive strategies are best for enhancing academic

performance at the local, state, and federal levels.

The present study demonstrates that the MCII intervention did have a positive association

with academic performance as measured by end-of-quarter grades for students who attended a

single 45 minute session to learn the mental contrasting and implementation intention strategies.

Researchers in previous studies have taught the strategies in one or two brief sessions (lasting

less han one hour) and made statements referencing the intervention to be a time-effective

strategy: for example, "It is no longer necessary, therefore, for the interventionist to keep

reminding students of their set school-related goals and their plans for how to implement these

goals" (Gawrilow et al., 2012, p. 145) and "Research demonstrates that goal pursuit can be

improved almost instantly through the introduction of self-regulation strategies in terms of

mental contrasting, implementation intentions, and a combination of both strategies" (Oettingen

et al., 2013, p. 525). Although the empirical evidence recognizes that the MCII intervention is

specific to enhancing goal commitment and goal striving (the early stages of goal attainment)

and can be taught fairly quickly, it would be most effective in the classroom setting if the

intervention was part of an overall goal attainment unit that involved all of the cognitive

processes as outlined earlier in goal setting theory and the mindset theory of action phases (e.g.,

feedback and self-monitoring progress). Since the content and structure of one's plans must be

tailored to the individual in order to plan effectively for academic success (Parks-Stamm,

Gollwitzer, & Oettingen, 2010), students would benefit from feedback about the quality of their

if/then statements as well as learn how to evaluate their progress during the goal striving stage.

In this present study, none of the students participated in any follow up activities providing

feedback on the quality of their if/then statements or checking their progress for implementing

their plans. As a result, the students who wrote vague statements did not have the opportunity to fine-tune them or create more appropriate statements aligned with their obstacles. Furthermore, it is difficult to know the extent to which the MCII intervention was internalized since it is unknown if the participants self-monitored their success in overcoming their obstacles. Practitioners should allow time to provide feedback through conferencing with individuals or small groups to ensure that their goals are feasible and that their plans are specific. They must also teach students how to self-monitor their progress on overcoming their obstacles so they can adjust their plans if necessary.

As mentioned earlier, the MCII intervention consists of two learning strategies that can be easily taught and has been proven to be a successful strategy for improving self-regulation skills for students with ADHD. Students with conduct disorders, obsessive-compulsive tendencies, and anxiety disorders could benefit from the MCII intervention like the students diagnosed with ADHD. The MCII intervention could be successful in helping students with social-emotional disorders by helping them to reduce their bad habits that may impede academic goal attainment or to improve their positive goal directed behaviors which may lead to improved academic performance.

If practitioners value self-regulated learning in order to improve academic performance, than it is vital that they are knowledgeable about the cognitive processes involved in the development of self-regulation (e.g., goal setting and self-monitoring). Teachers need to learn which metacognitive strategies are useful under various circumstances, how to provide instruction for teaching these strategies, and how to evaluate their units to ensure that they include the use of metacognitive strategies on a regular basis so that students have ample opportunities to internalize them. Administrators should include school-wide professional

development on the use of noncognitive skills in their school's improvement plans to ensure that self-regulatory and metacognitive strategies are not left to chance for being included into the curriculum. Furthermore, administrators should provide planning time for teachers to develop new learning strategies and methods for measuring their impact on student learning. In addition, they should encourage their faculty to share their successes and challenges with integrating the noncognitive skills with core academic skills.

While there exists some empirical evidence that supports the use of noncognitive skills into the curriculum to increase academic performance, there is little research in the areas of which strategies are most effective for increasing student learning. Policy makers could use the findings of studies focused on noncognitive skills to advocate for additional research to better understand the role of learning strategies for increasing academic performance. Additional research is needed for developing valid and reliable measurement tools to evaluate which noncognitive skills are essential to student learning as well as identify which skills may benefit certain sub-groups to help close the achievement gap (Farrington et al., 2012). Finally, the inclusion of noncognitive skills has implications for both teacher and parent education programs. Education courses should include coursework designed to increase teachers' expertise in incorporating noncognitive skills in the classroom and require aspiring teachers to demonstrate their knowledge of noncognitive skills during their student teaching experience. Parents could also benefit from learning how they could use noncognitive skills in the home setting in order to support their children's education.

Recommendations for Future Research

The findings and implications for using the MCII intervention in the academic setting seem promising. However, more studies are needed to understand how mental contrasting and

implementation intentions impact student learning, the effect they have on various academic outcomes and sub-groups of students, and how they may be most effectively used in the classroom. Recommendations for furture research include the following:

1. Design a similar study that investigates the impact of the MCII intervention on other academic outcomes (i.e., attendance, standardized test scores, disciplinary referrals); as well as other content areas (i.e., math, science, social studies, world language, physical education).

2. Design a qualitative study to investigate the students' experience with using the MCII intervention to gain insight into how they implement and internalize these strategies. The results could be used to shape future MCII lessons for the classroom.

3. Conduct a similar study that extends throughout the course of the year or multiple years to gain insight into the lasting benefits or long-term effects of using the MCII intervention strategies.

4. Research the impact of the MCII intervention on various sub-groups of the student population including the following: minority, gender, age level, socio-economic, English Language Learners, and students with diverse needs. Results may prove the MCII strategy to be more/less effective for different students.

5. Design a study comparing the outcomes of an experimental group that receives the MCII intervention + additional feedback and self-monitoring during the goal striving stage, and a control group that only receives the MCII intervention prior to goal striving.

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APPENDICES

APPENDIX A

Parent Consent Form

Understanding how Mental-contrasting and Implementation Intentions Impact Academic Performance

Principal Investigator: Suzanne Velasquez-Sheehy, Doctoral Candidate in Ed. Leadership
Institution: DePaul University, Chicago, Illinois, USA
DePaul University, College of Education
Faculty Advisor: Dr. Barbara Rieckhoff, Faculty, College of Education

What is the purpose of this research?
We are asking your child to be in a research study because we are trying to learn more about the effects of teaching special learning strategies. This study is being conducted by Suzanne Velasquez-Sheehy, a graduate student at DePaul University. This research is being supervised by her faculty advisor, Prof. Barbara Rieckhoff, Ph.D.

Why is your child being asked to be in the research?
Your child is invited to participate in this study because she/he is because you are enrolled at Intrinsic Charter School.

What is involved in being in the research study?
If you allow your child to be in this study, he/she will randomly (like a flip of a coin) be assigned to an 'experimental group' or a 'control group'.

- If your child is assigned to the control group, he/she will complete a goal setting template for your English course and fill out two questionnaires about your child's expectations and how important it is to meet his/her goals.
- If your child is assigned to the experimental group, he/she will learn specific strategies to use during the goal setting process during your advisory course. He/she will complete a goal setting template for your English course. He/she will also fill-out two questionnaires about your child's expectations and how important it is to meet his/her goals.
- Both groups: Under Family Educational Right to Privacy Act (FERPA), we must obtain your written permission for the release of identifiable information from your child's school record. As part of the research, we will request: your child's race, gender, socioeconomic status, English course grades, English test scores, attendance for the 1st quarter, and how long it takes to complete assignments.

How much time will this take?
This study will take about one-half to 1.5 hours of your child's time depending on which group your child is assigned to:

- If your child is assigned to the control group, it will take approximately a half-hour to complete a goal setting template and 2 questionnaires (to be completed at the beginning and end of the 1st Quarter).
- If your child is assigned to the experimental group, he/she will learn two learning strategies to use during the goal setting process, complete the goal setting template and fill-out two questionnaires (at the beginning and end of the 1st Quarter) during the course of 3 half-hour advisory sessions. The total time for the students assigned to the experimental group is approximately 1.5 hours.

Are there any risks involved in participating in this study?
Being in this study does not involve any risks other than what your child would encounter in daily life. Your child may feel uncomfortable or embarrassed about answering certain questions. Your child does not have to answer any question he/she does not want to.

Are there any benefits to participating in this study?
Your child will not personally benefit from being in this study. We hope to learn how teaching specific learning strategies during the goal setting process affects student academic performance. We also hope that what we learn from this study will be helpful in the field of education.

Can you decide not to let your child participate?

Your child's participation is voluntary, which means you can choose not to allow your child to participate. Even if you agree to allow your child to be in the research, your child may decide that he/she does not want to be in this study now or once he/she starts the study, he/she can withdraw at any time. There will be no negative consequences, penalties, or loss of benefits if you decide not to allow your child to participate or if you change your mind later and withdraw your child from the research after he/she has begun participating.

Your decision whether or not to allow your child to be in the research will not affect your child's grades or status at the Intrinsic School.

Parents, please be aware that under the Protection of Pupil rights Act. 20 U.S. C. Section 1232 (c)(1)(A), you have the right to review a copy of the questions asked or of materials that will be used with your child. If you would like to do so, you should contact Suzanne Velasquez-Sheehy at (708) 417-0370 to obtain a copy of the questions or materials.

Who will see my child's study information and how will the confidentiality of the information collected for the research be protected?
The research records will be kept and stored securely. Your child's information will be combined with information from other people taking part in the study. When we write about the study or publish a paper to share the research with other researchers, we will write about the combined information we have gathered. We will not include your child's name or any information that will directly identify your child. We will make every effort to prevent anyone who is not on the research team from knowing that your child gave us information, or what that information is.

All of your child's data will be assigned a Student ID number to ensure his/her confidentiality and be kept in in computer files that are protected with passwords.

However, some people might review or copy our records that may identify your child in order to make sure we are following the required rules, laws, and regulations. For example, the DePaul University Institutional Review Board may review your child's information. If they look at our records, they will keep your child's information confidential.

Who should be contacted for more information about the research?
Before you decide whether or not to allow your child to take part in the study, please ask any questions that might come to mind now. Later, if you or your child have questions, suggestions, concerns, or complaints about the study or you or your child want to get additional information or provide input about this research, you or your child can contact the researcher, Suzanne Velasquez-Sheehy at (708) 417-0370.

This research has been reviewed and approved by the DePaul Institutional Review Board (IRB). If you (or your child) have questions about your child's rights as a research subject you or your child may contact Susan Loess-Perez, DePaul University's Director of Research Compliance, in the Office of Research Services at 312-362-7593. The person at this number and email address may not be able to read or understand Spanish so it might be necessary for you to have someone you know who speaks English to help with the call or help translate your email.

You or your child may also contact DePaul's Office of Research Services if:

- Your (or your child's) questions, concerns, or complaints are not being answered by the research team.
- You (or your child) cannot reach the research team.
- You (or your child) want to talk to someone besides the research team.

You will be given a copy of this information to keep for your records.

Statement of Parent/Legal guardian Permission for a Child's Participation in Research:

I have read the above information. I have had all my questions and concerns answered. By signing below, I indicate my permission for my child to be in the research.

Please check each box if you agree to allow your records to be reviewed:

☐ I give permission to review my 1st Quarter grades, assignments, attendance rate, demographic data including race, socio-economic status, and gender and test scores for my English Course for the purpose of this study.

☐ I do not give permission to review my 1st Quarter grades, assignments, attendance rate, demographic data including race, socio-economic status, and gender and test scores for my English Course for the purpose of this study.

Child's Name: _____

Parent/Legal Guardian's Signature:_____

Parent/Legal Guardian's Printed Name: _____

Date: _____

APPENDIX B

Child Assent Form

Suzanne Velasquez-Sheehy, a Doctoral Candidate in Ed. Leadership at DePaul University, Chicago, IL will conduct a research study under the supervision of Dr. Rieckhoff, PhD. The purpose of this research is to learn about how learning strategies impact academic performance.

You are invited to participate in this study because you attend Intrinsic Charter School. If you agree to participate in this study, you will complete a goal setting template for your English course and fill-out two questionnaires (at the beginning and end of the 1st Quarter). The study will take about one-half to 1.5 hours of your time during Personalized Learning Time periods.

Your race, gender, socio-economic status and English Course grades, English test scores, completion rate of assignments for your English Course, and your attendance for the 1st Quarter will be collected for the purpose of this study.

Your personal information will not be shared with anyone and your name will not be used in the study. All of your data will be assigned a Student ID number to ensure your confidentiality and be kept in in computer files that are protected with passwords. However, the law may require us to report information to school authorities or a court if you report being abused or neglected or if you pose a danger to yourself or someone else.

There are no benefits from being in this study and your participation is voluntary. You can withdraw from participating at any time during the study. There is a risk that students may become uncomfortable filling out surveys but this is a part of typical student work so the risk is minimal. There will be no negative consequences, penalties, or loss of benefits if you choose not to participate.

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions, suggestions, concerns, or complaints about the study or you want to get more information or provide input about this research, you can contact the researcher Suzanne Velasquez-Sheehy at 708 417-0370 or ssheehy01@wowway.com.

Statement of Assent from the Participant:

I have read the above information. I have had all my questions and concerns answered. By signing below, I indicate my assent to be in the research.

Signature:_____

Printed name: _____

Age:_____

Grade Level:_____

Date: _____

Please check each box if you agree to allow your records to be reviewed.

☐ I give permission to review my 1st Quarter grades, assignments, and test scores for my English Course for the purpose of this study.

☐ I give permission to review my attendance rate for the 1st Quarter for the purpose of this study.

☐ I give permission to review my demographic data including race, socio-economic status, and gender for the purpose of this study.

You will be given a copy of this information to keep for your records.

APPENDIX C

Measure of Incentive Valence Questionnaire

Read each sentence and choose the statement that best describes you.

* Required

Last Name: *

First Name: *

Grade Level: *

1. How important is it to you to complete all of your assignments? *

- o   Unimportant
- o   Of little importance
- o   Important
- o   Moderately important
- o   Very important

2. How important is it to you to revise your assignments for a better grade? *

- o   Unimportant
- o   Of little importance
- o   Important
- o   Moderately important
- o   Very important

3. How important is it to you to attend your classes daily? *

- o   Unimportant
- o   Of little importance
- o   Important
- o   Moderately important
- o   Very important

4. How important is it to you to study for your tests? *

- o   Unimportant
- o   Of little importance
- o   Important
- o   Moderately important
- o   Very important

5. How important is it to you to show proficiency or master the skills as measured by your assessments? *

- ○ ○ Unimportant
- ○ ○ Of little importance
- ○ ○ Important
- ○ ○ Moderately important
- ○ ○ Very important

6. How important is it to you to get a higher grade in English than your last reporting period? *

- ○ ○ Unimportant
- ○ ○ Of little importance
- ○ ○ Important
- ○ ○ Moderately important
- ○ ○ Very important

Submit

Never submit passwords through Google Forms.

APPENDIX D

Measure of Expectations of Success Questionnaire

Read each sentence and choose the statement that best describes you.

Last Name: *

First Name: *

Grade Level: *

1. How likely do you think it is that you will complete all of your assignments? *
- ○ Not at all likely
- ○ Rarely likely
- ○ Sometimes likely
- ○ Often likely
- ○ Very likely

2. How likely do you think it is that you will attend classes daily? *
- ○ Not at all likely
- ○ Rarely likely
- ○ Sometimes likely
- ○ Often likely
- ○ Very likely

3. How likely do you think it is that you will revise an assignment for a better grade? *
- ○ Not at all likely
- ○ Rarely likely
- ○ Sometimes likely
- ○ Often likely
- ○ Very likely

4. How likely do you think it is that you will study for your tests? *
- ○ Not at all likely
- ○ Rarely likely
- ○ Sometimes likely
- ○ Often likely
- ○ Very likely

5. How likely do you think it is that you will show proficiency or master the skills as measured by your assessments? *

○ ○ Not at all likely

○ ○ Rarely likely

○ ○ Sometimes likely

○ ○ Often likely

○ ○ Very likely

6. How likely do you think it is that you will earn a higher grade in English than your last reporting period? *

○ ○ Not at all likely

○ ○ Rarely likely

○ ○ Sometimes likely

○ ○ Often likely

○ ○ Very likely

Submit

Never submit passwords through Google Forms.

APPENDIX E

Goal-setting Template for Experimental Group

First & Last Name: _____

TAKE A FEW MOMENTS TO THINK ABOUT WHAT GRADE YOU WOULD LIKE TO EARN IN ENGLISH BY THE END OF THE QUARTER. THINK ABOUT HOW YOU WILL FEEL AND THE BENEFITS YOU WILL EXPERIENCE IF YOU ATTAIN YOUR DESIRED GRADE.

Write down what you just imagined including the details about how you would feel and what benefits you would experience as a result of earning your desired grade.

THINK ABOUT AND IMAGINE ALL OF THE OBSTACLES THAT MIGHT PREVENT YOU FROM EARNING YOUR DESIRED GRADE.

Write down all of the obstacles that may prevent you from earning your desired grade:

FOR EACH OF THE OBSTACLES LISTED ABOVE, FORM ONE *'IF…THEN STATEMENT'* WHICH WILL HELP YOU TO OVERCOME YOUR OBSTACLES SO YOU CAN

REACH YOUR GOAL. (USE THE IMPLEMENTATION INTENTION LEARNING STRATEGY WE LEARNED IN CLASS)

Write down at least 3 **'IF…THEN STATEMENT's** below:

COMPLETE THE FOLLOWING STATEMENT:

My goal is to earn at least a _____ for my English grade. (Insert the grade you desire to earn)

USE THE SPACE BELOW TO PLAN HOW YOU WILL REACH YOUR GOAL BY THE END OF THE QUARTER. LIST THE ACTION ITEMS YOU WILL NEED TO DO TO ACCOMPLISH YOUR GOAL.

Activities and Steps to be Taken	Resources Needed	Evidence of Goal Attainment	Timeline

APPENDIX F

Goal-setting Template for Control Group

First & Last Name: _____   My goal is to earn at least a _____ for my English grade (insert letter grade).

Activities and Steps to be Taken	Resources Needed	Evidence of Goal Attainment	Timeline

APPENDIX G

Protocol for Group Sessions

Lesson Plan for Experimental Group (MCII Intervention Strategy):

Pass out worksheet and have students complete warm-up activity (What is a goal?, List 2 examples, Why are goals important?)-2 minutes

How many of you have ever set a goal and reached it? How many of you have ever set a goal and failed to reach it or decided to not to pursue that goal?

Our lesson today will focus on learning two strategies that will hopefully help you to increase your chances of reaching your goals.

What is a goal?

Something you want to accomplish in the future (can be short or long term)

Why are goals important?

Help to guide and direct behavior
Provide clarity about what we want to accomplish
Provide challenges and standards for what we want to achieve
Help to improve performance
Increase motivation to achieve
Increase pride and satisfaction when goals are accomplished
Increase our self-confidence
Help to decrease a negative attitude

People set goals in all areas of their life. What are some of these areas?
Academic
Social
Physical
Career
Family
Financial

What are some examples of academic goals?
Academic (doing well on a test, get better grades, getting into college of my choice, graduating high school/college)

The process for attaining a goal consists of setting your goal, planning what you are going to need to do to reach your goal, and to evaluate how you are doing along the way.

The strategies we are going to learn today will help you set clear goals and come up with a plan to overcome any obstacles that may arise along the way of reaching your goals.

The first strategy will help you form a strong goal.

The strategy is called mental contrasting and it is a very simple strategy to use:

3 steps are needed in order to form a strong goal:

1. Identify a wish or desire that you are able to attain (e.g., decrease amount of time playing videos, increase amount of daily reading)
2. Identify and imagine all of the positive outcomes of changing your behavior and attaining your goal. Visualize what it feels like to reach your goal.
3. Identify and imagine all of the obstacles* that stand in the way attaining your goal. These can be things that might make it difficult to start working towards your goal or things that prevent you from working towards your goal.

*Obstacles come in many forms. They can be a

- a feeling (e.g., if someone is tired, angry, frustrated)
- a place (e.g., a party, a friend's house, a room in the house)
- an object (e.g., television, video games, iPhone, Facebook)
- a point in time (e.g., afterschool, early in the morning, on the weekend)

Directions for completing goal template with MCII

This is the template you are going to use to record your goals for your 1st Quarter English class. Think about your desired grade for your English class and write down at least 3 benefits for reaching your goal. Include how you will feel for each item you listed.

Now think about your present reality and list anything that might prevent you from earning your desired grade. It can be a situation, a current behavior, or even a person that may prevent you from reaching your goal. Write down at least 3 obstacles.

Direct students to rewrite their first obstacle on the template. Write down your first obstacle and think about and write down what you need to do in order to overcome your obstacle. Complete the same step for your other two obstacles.

By going through this process, you will become more aware of what your goal entails; and if you decide to move forward with your goal you will be more committed to working towards it. In some cases, you may decide that the goal is too difficult to accomplish so you may choose to adjust your goal or may even decide not to pursue it. Mental contrasting is definitely worth doing at the beginning of the goal setting process for both of these reasons.

PART II

So we just learned the first strategy and we're ready to learn the second strategy. Even people committed to their goals get distracted or forget to act when an opportunity arises.

Anticipating critical obstacles and developing a plan <u>for when, where, and how the person wants to act in situations</u> will help to ensure the person stays on track.

Creating an Implementation Intention can help you overcome your obstacles. An implementation intention is something that you plan to do when you face an obstacle that you already anticipated might happen as a result of using mental contrasting.

Implementation intentions consist of two parts-the obstacle and the response to the obstacle. They are created using the formula: <u>"If I encounter situation X, then I will perform behavior Y!"</u> Implementation intentions are also known as If/then statements.

The first step is to identify your personal obstacles to starting and sticking with your goals. Remember that obstacles come in many forms.

Using the formula, create the "If" part of the statement.

This is an obstacle or situation that will require you to perform an action step that you will need to do or it may even be something you shouldn't do in order to stay on track for reaching your goal.

Examples of obstacles and if statements that may arise when someone is trying to pass a major exam:

Feeling tired: If I feel tired when I begin to study…
My friend is having a party: If my friend is having a party….
My phone is distracting me: If I keep reading my text messages…
Everyone is on XBOX: If my friends are all on Xbox…
I don't understand my notes: If I don't understand my notes…

Next, create the "Then" part of the statement. This is the response you will initiate once the "If" cue happens.

The response is designed to keep you on track towards your goal, and it might involve thinking something, doing something, or ignoring something.

Make your "if/then" statements as specific as possible. Vague "if/then" statements create room for deliberation and reduce your chances for attaining your goal.

Vague Example:

"If I need to get to school early to study, then I will wake up early"

Clear Example:

 "If I need to get to school by 8 am, then I will wake up at 6 am Monday through Friday."

Let's try to complete the then part of the statement for the examples I just mentioned. Raise your hand when you have a response to the following obstacle:

If I feel tired when I begin to study, then I will….(rest quietly for 15 minutes)

If my friend is having a party, then I will….(only go if I have finished studying for the test)

If I keep reading my text messages, then I will….(turn my phone off or leave it in another room)

If my friends are all on Xbox then I will…(join them later after I complete my work)

If there is more than one obstacle keeping you from a goal, you can make multiple if/then statements as long as they don't conflict with each other.

Direct students to complete an if/then plan for each obstacle. Turn to side 2 of your worksheet and create an implementation intention for each of your obstacles using the formula: If (obstacle) arises, then I will (behavior to overcome the obstacle).

The final step is to imagine yourself successfully overcoming your obstacles by rehearsing your if/then plan in your mind. Repeat your if/then plan slowly 3 times and review them regularly as you continue to work towards your goal.

Students will visualize facing the obstacle in their minds 3 times. At this time, each of you are going to visualize what you are going to do to overcome your obstacles by rehearsing your if/then plans in your mind. Practice visualizing your if/then plans on a weekly basis between now and the end of the 1st Quarter. You should also review your implementation intentions on a daily basis to help remind you what you should do in a critical situation.

Direct students to submit completed form.

Thank you for your participation and I wish all of you a very successful and fun-filled school year!

At this time we will join the others and complete the Goal setting template for your Q1 English grade.

 Lesson Plan for Control Group:

Please complete 2 brief questionnaires that were in your daily agenda by Monday morning. Your responses will help me to get some background information regarding how you feel about your English class. Please ask your teacher if you need help accessing the surveys.

Think about the grade you hope to realistically earn by the end of the 1st Quarter for your English class. You may want to reflect your previous English grade in order to set a goal that you are able to attain. Write down your grade on the form.

Next, list the action steps you need to do in order to reach your goal. What are some action steps you may want to include? (setting aside time for studying, increasing the amount of time reading outside of class, getting fewer demerits, increasing your participation, completing all of your assignments, becoming better organized, taking better notes, asking for help, studying with a friend)

List the resources you will need (supplies, help from family or teachers, quiet space for studying)

List the evidence of your efforts or the signs that will let you know you are on the right track for earning your desired grade (e.g. high test scores, positive feedback from your teachers, increased participation, fewer demerits).

Some of your actions may require a timeline and some may be ongoing. List any deadlines if they apply to your action items.

Please write neatly so that I can read your handwriting.

I hope that you all reach your goals and that you have a very successful school year!

APPENDIX H

IRB Approval

D<small>E</small>P<small>AUL</small> U<small>NIVERSITY</small>

Office of Research Services
Institutional Review Board
1 East Jackson Boulevard
Chicago, Illinois 60604-2201
312-362-7593
Fax: 312-362-7574

Research Involving Human Subjects

N<small>OTICE OF</small> I<small>NSTITUTIONAL</small> R<small>EVIEW</small> B<small>OARD</small> A<small>CTION</small>

To: Suzanne Velasquez-Sheehy, Graduate Student, College of Education

Date: June 10, 2014

Re: Research Protocol # SV041514EDU

"Understanding How Mental-Contrasting and Implementation Intentions Impact Academic Performance"

Please review the following important information about the review of your proposed research activity.

Review Details

This submission is an initial submission. Your research project meets the criteria for Expedited review under 45 CFR 45 CFR 46.110 under the following category(ies):

"(5) Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis)."

"(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies."

Approval Details

Your research was originally reviewed on April 29, 2014 and revisions were requested. The revisions you submitted on June 5, 2014 were reviewed and approved on June 10, 2014.

Approval Period: June 10, 2014 – June 9, 2015

Approved Consent, Parent/Guardian Permission, or Assent Materials:
1) Parent/guardian permission, version June 5, 2014 (attached)
   Alteration of parental permission for no face-to-face discussion under 45 CFR 46.116(d)

2) Assent, 14-17 years, version June 5, 2014 (attached)
   Alteration of assent for no face-to-face discussion under 45 CFR 46.116(d)

Other approved study documents:
1) Recruitment Script, version 5/27/2014(attached)

Number of approved participants: 200 Total

1

You should not exceed this total number of subjects without prospectively submitting an amendment to the IRB requesting an increase in subject number.

Funding Source: 1) None

Approved Performance sites: 1) DePaul University

The Board determined that the research satisfies 45 CFR 46.404; it is not involving greater than minimal risk, therefore children may participate in this research project. The Board determined that according to 45 CFR 46.408 one parent must sign the permission document, as one parent's signature is sufficient, and age appropriate assent will be obtained from each child.
Reminders

- Only the most recent IRB-approved versions of consent, parent/guardian permission, or assent forms may be used in association with this project.

- Any changes to the funding source or funding status must be sent to the IRB as an amendment.

- Prior to implementing revisions to project materials or procedures, you must submit an amendment application detailing the changes to the IRB for review and receive notification of approval.

- You must promptly report any problems that have occurred involving research participants to the IRB in writing.

- If your project will continue beyond the approval period indicated above, you are responsible for submitting a continuing review report at least 3 weeks prior to the expiration date. The continuing review form can be downloaded from the IRB web page.

- **Once the research is completed, you must send a final closure report for the research to the IRB.**

The Board would like to thank you for your efforts and cooperation and wishes you the best of luck on your research. If you have any questions, please contact me by telephone at (312) 362-7497.

For the Board,

Jennifer Ordman, B.S.

Assistant Director of Research Compliance

Office of Research Services

Cc: Barbara Rieckhoff, Ph.D., Faculty Sponsor, College of Education