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THE IMPACT OF FUTURE GOALS ON STUDENTS' PROXIMAL SUBGOALS AND ON THEIR PERCEPTIONS OF TASK INSTRUMENTALITY

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In partial fulfillment of the requirements for the

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By

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Norman, Oklahoma
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THE IMPACT OF FUTURE GOALS ON STUDENTS' PROXIMAL SUBGOALS AND ON THEIR PERCEPTIONS OF TASK INSTRUMENTALITY

A Dissertation APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

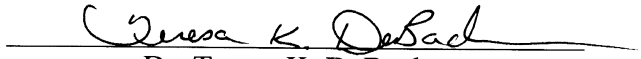
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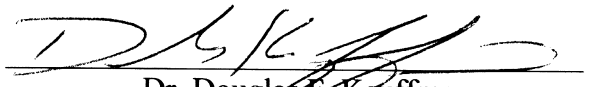
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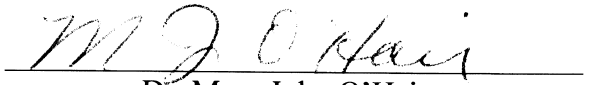
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DEDICATION

This dissertation is dedicated to my mother, Eva Lazar, and to my late father, Alfred Lazar. My mother, who had a high school education, strongly believed in learning, and pushed me and my sister to excel in school and do more than was strictly required. She encouraged me to read the classical literature that she read in high school, such as *Wuthering Heights*, and then she would discuss the books with me in the kitchen while fixing the family dinner after a long day's work at her full-time job as a section manager in a textile company. When I told my mother that I was going to study for a Ph.D., she said, "What took you so long?"

My father, who had only completed a few years of elementary school before being apprenticed in a store, served as testimony to the power of lifelong self-education. Respectful of educated people, but neutral about the benefits of a formal education, he was an avid newspaper reader and music lover (he sang beautifully), and he learned all that he could about topics that interested him. As a result, he became quite knowledgeable about diverse subjects such as world politics, opera, and wild animals. Among other things, he became an expert mechanic dealing with complex textile machines, and was delighted to be sent to Switzerland for more specialized training. During his stay in Switzerland he educated himself about Swiss cheese, and eagerly shared his newly-acquired knowledge upon his return. His love of new gadgets and of new knowledge in his areas of interest inspired a lot of well-intentioned laughter in my family. May he rest in peace.

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Being far from my home university during my dissertation work posed a particularly great challenge in the area of statistical analysis, where I needed to exchange ideas with a knowledgeable statistician. I feel very thankful and privileged to have made the acquaintance of, and to have worked with, George Reylea, a statistician for the Center of Community Health, which is affiliated with the University of Memphis. George listened to me carefully and gave me excellent advice, while letting me make the final decisions. I understand from other researchers that George is that type of a person—

always lending a hand to fellow researchers in a calm, articulate and reassuring manner, in spite of being extremely busy with his own research and teaching.

I would also like to thank the University of Memphis for allowing me to conduct my research on its campus, the University's English Department for allowing me access to its English classes, Mrs. Rebecca Argall, and the teachers teaching ENG 2201 who graciously allowed me to administer my instrument to their students. I would also like to thank Ron Scott, Manager of Computer Operations in the division of Information Systems (IS) at the University of Memphis, as well as Scott Beck, also of IS, who were instrumental in the scanning of the answer sheets and the transfer of data in my preferred format. Librarians and staff members at the University of Memphis Ned R. McWherter Library as well as those at the University of Oklahoma Bizzell Memorial Library deserve my thanks for their professional and friendly help while I was engaged in research.

During the last three years that I spent working on my dissertation, I have also worked as a full-time teacher at the Bornblum Solomon Schechter School in Memphis. First and foremost, I would like to thank Avi Halzel, the head of school, for his exceptional support of all of my doctoral efforts, including my necessary trips to Oklahoma during the regular school year. Other colleagues who have helped me with my work at school, thus enabling me to direct some needed attention to my studies, also deserve many thanks. They include Barbara Ostrow, Assistant Principal, Varda Schuman, Bonnie Kochman (a University of Oklahoma alumna), Felicia Riedell, Rayna and Celie Halzel, Terri Burson, Maya and Amir Sharabi, Sally Baer, and Annette Eisenberg, among others.

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ABSTRACT

Path analysis was performed to test the predictions of two models explaining the impact of students' future goals (both extrinsic and intrinsic) on their adoption of a system of proximal subgoals, and on their perceptions of task instrumentality. The models were based on the Miller and Brickman (2004) conceptualization of Future-Oriented Motivation and Self-Regulation, which draws primarily from Social Cognitive and Self Determination Theories. Participants were 421 college students who completed a questionnaire that included scales measuring future goals, college graduation and college instrumentality target subgoals, proximal subgoals, and perceived task instrumentality. Data strongly supported the model suggesting that students' future goals have an impact on their college graduation target subgoal, their adoption of pertinent proximal subgoals, and their perceptions of task instrumentality. The data also indicated that intrinsic, rather than extrinsic, future goals are the most strongly related to the adoption of a strong college graduation target subgoal, robust proximal subgoals, and positive perceptions of task instrumentality.

CHAPTER 1

INTRODUCTION

Many educators and policymakers share Bandura's (1997) perception that "The societies of today are undergoing extraordinary informational, social and technological transformations" (p. vii), changes that have dramatically altered the demands put on individuals and educational systems. In the United States, jobs demanding minimal manual skills have given way to jobs requiring sophisticated cognitive skills, such as computer, communication, and problem-solving skills. These higher-level skills are only possible to acquire through prolonged educational effort, and numerous and rigorous years of schooling. This fact has led to increased calls for and attempts at educational reform and restructuring (e.g. O'Hair & Odell, 1995; Hanushek, 2002; Merritt, 2001), and to demands on learning institutions to decrease student dropout, and increase retention rates (e.g. Carey, 2004).

Despite a national educational "call to arms" by three United States Department of Education reports (1983, 1994, 2001) under three different administrations, the United States still has a relatively high rate of high school and college dropouts, especially among low-income and minority students. According to a recent National Center for Educational Statistics (NCES, 2004) report, high school dropout rates during the 12 months ending in October 2001 were about 11% for low income youth, 5% for middle-income youth, and 2% for high-income youth. The NCES (2004) stated that "During the 12 months ending in October 2001, high school students living in low-income families dropped out of school at six times the rate of their peers from high-income families." Dropout rates among college students are even higher. According to

the same NCES report, the dropout rate at 4-year colleges (among students who started in 1995-96) is between 37% and 50%.[1] Moreover, according to Carey (2004), the gap in the graduation rate between white and black students at these colleges is about 10%. These dropout rates have remained relatively stable despite the fact that currently, according to the NCES (2004) report, about 76% of postsecondary institutions offer remedial help. Clearly, factors besides academic preparation and remediation play an important role in student education and retention.

Although intensive educational effort at high levels depends on numerous factors, the development of motivation and self-regulation in learners have been seen by motivation researchers as among the most central factors (e.g. Miller & Brickman, 2004; Zimmerman, 1990, 1998; Schunk, 1990, 2001). People who lack the motivation to learn, or who lack the self-regulatory knowledge or commitment necessary to learn, are unlikely to learn, regardless of the learning programs that may be made available. Among the numerous motivational and self-regulatory factors affecting individuals' engagement in learning (as well as in other areas of life), none has been found to be more powerful than the individuals' own goals that they set for themselves (Ford, 1992, Pintrich & Schunk, 2002). Regardless of theoretical perspective, there is now a growing consensus among motivation experts that motivation and self-regulation in humans are, in large part, a function of the goals that people are pursuing. People are seen as goal-directed individuals, who strive to achieve goals perceived as resulting in desirable outcomes, and to avoid pursuing goals perceived as resulting in detrimental outcomes (Bandura, 1986). If educational institutions are to fulfill the goal of preparing students to function in and contribute to our increasingly complex and changing society, it is

[1] Based on report of graduation within 6 years of entering college

imperative that they foster the adoption of constructive and adaptive educational goals on the part of the students.

Until recently, two relatively independent lines of research have attempted to analyze different aspects of people's goals and of other related factors involved in motivation and self-regulation. One line has focused on future (distal) goals and related factors that affect people's motivation and self-regulation, and the other line has focused on relatively more proximal goals and related factors involved in motivation and self-regulation. The future-focused research has sought to investigate whether distal future goals and aspirations and future time orientation or perspective predict people's well-being and adaptive educational indicators such as achievement and self-regulation toward goal achievement (e.g. DeVolder & Lens, 1982; Nurmi, 1989; Zimbardo & Boyd; Zaleski, 1987; Oyserman & Markus, 1990; McGregor & Little, 1998; Cox & Klinger, 1988; Emmons & King, 1988). The proximally-focused line of research has sought to investigate whether relatively proximal goals and related factors predict people's engagement in proximal tasks and people's persistence and effort expenditure in self-regulation to reach the tasks' successful completion (e.g. Ames & Archer, 1988; Meece et al., 1988; Nicholls, 1989; Nolen, 1988; Pintrich & Garcia, 1991; Miserandino, 1996; Grolnick, Ryan, & Deci, 1991; Williams et al., 1996; Bandura et al., 1988; Bandura & Schunk, 1981; Zimmerman & Martinez-Pons, 1990).

Although proximally-focused educational research has not discounted the influence of future goals, it has typically seen future goals as being too far off to provide strong incentives to people to act in order to reach their goals (see, for example, a review by Husman & Lens, 1999), and has, instead, viewed proximal goals as the ones providing

the strongest incentives for educational self-regulation (Schunk, 2001). For this reason, Social Cognitive Theory (Bandura, 1986), an influential psychological theory that has provided a comprehensive theoretical basis for understanding both future and proximal goals and their contribution to motivation and self regulation, has, until recently, generated mostly research focused on proximal factors.

The continued social and technological changes in our society that have made the support of rigorous long-term learning transparent, have brought to the forefront the necessity for a comprehensive understanding of motivation and self-regulation that combines the distal and proximal lines of research to create a coherent understanding of motivation and self-regulation in all their temporal and contextual manifestations (Miller & Brickman, 2004). Recently, two special issues of *Educational Psychology Review* (vol. 16, no.1 & 2 , March 2004) were devoted to an examination of students' goals set in various time frames, from distal to proximal, and the effect of this time perspective on students' motivation and achievement. Miller and Brickman (2004) were among the first to use Social Cognitive Theory as a basis for a comprehensive model of motivation and self-regulation that combines variables from the distally-focused and proximally-focused lines of research in order to understand educational motivation more fully. A coherent understanding of all factors, distal and proximal, that affect motivation and self-regulation is essential in any attempt to understand, and provide support for, rigorous and long-term learning.

Miller and Brickman's (2004) contention is that although proximal goals may provide strong proximal incentives, the combination of proximal and future goals provides much stronger overall incentive to people to work toward reaching their goals

than do proximal goals alone. They base their view on Social Cognitive Theory, which maintains that "attainable subgoals leading toward ultimate goals create the most favorable conditions for continuing self-motivation" (Bandura, 1986 p. 474). According to Miller and Brickman (2004), the combination of distal and proximal goals, as well as perceived task instrumentality, strengthens motivation considerably, and with it, persistence and effort expenditure in self-regulation. In other words, while working on accomplishing a proximal task, motivation and self-regulation are likely to be stronger if the individual's goals involve not only goals for the immediate task, but if accomplishing the proximal task-related goals is seen as leading to the accomplishment of a distal goal in the future. When proximal goal achievement is connected to future goal achievement, the incentive to act is hypothesized by Miller and Brickman (2004) to be much stronger than when only proximal goal achievement is involved.

Among the relationships depicted in Miller and Brickman (2004), the backbone of the model is delineated by three variables that clearly connect future goals with proximal subgoals, and then with the most proximal of sub-subgoals indicated by "perceived task instrumentality." The authors contend that students' future goals (conceptualized as long-range self-determined goals that one may or may not fully accomplish such as personal growth, contribution to community, personal relationships, etc.), influence the adoption of more proximal subgoals in the service of the future goals, and that these proximal subgoals, in turn, lead to stronger perceptions of task instrumentality on the part of students exposed to learning tasks. It is the authors' belief that this connection between personally-valued future goals, proximal subgoal systems, and task instrumentality is the driving force behind an entire set of self-regulatory mechanisms

that people put in place in order to reach not only their proximal subgoals, but, through them, their future goals.

An example that serves to illustrate the model's assumptions is that of a student who wants to be a medical researcher in order to make a medical contribution to the world. Depending on the strength of the student's personal valuing of this future goal and his or her commitment to it, he or she may set proximal subgoals, such as graduating from college, succeeding in medical school, etc. In order to graduate from college and succeed in medical school this student is likely to set himself or herself subgoals of a strategic nature, such as study in a quiet place, ask for help as needed, study for tests, etc. Once the proximal subgoal system is in place, the student is likely to perceive the work required for the college courses as instrumental to achieving the subgoal of graduating from college or succeeding in medical school, in the service of the future goal of making a medical contribution to the world. This entire goal system is likely to lead this student to regulate himself or herself so that the proximal subgoals, as well as the distal goals, are reached. Conversely, one can imagine various other scenarios involving such a student, where some of the goal structures are weak, missing, contradictory, or maladaptive. For example, a student may have a non-committal or externally-imposed future goal of making a medical contribution to the world, and his or her proximal goals may center around excessive partying. Such a student would be very unlikely to regulate himself or herself to graduate successfully from college or to succeed in medical school, and such a student would not be likely to find school work and tasks instrumental toward achieving his or her proximal subgoals or future goal.

Although many of the relationships among the variables depicted in Miller and Brickman (2004) are based on research results, some relationships are based mainly on theoretical grounds, as research that specifically connects distal future goals and proximal goals is scarce (Locke & Latham, 1990; Husman & Lens, 1999), especially in educational environments. Much of the research on goal setting and on the relationships (or coordination) between distal and proximal goals was done in work environments, and in the work motivation literature (see review of Locke & Latham, 1990). However, Miller and Brickman's (2004) definition of distal future goals, that sees these goals as self-set and self-determined long-range goals that one may never fully accomplish (i.e. personal growth, contribution to community, personal relationships, etc.) limits the usefulness of the research from the work motivation literature. In the literature on work motivation, both distal goals and proximal goals or subgoals tend to be work-related, which means that distal goals may not be conceptualized as self-determined life goals in the manner conceptualized by Miller and Brickman (2004).

The current situation of near-consensus about the importance of people's goals in their motivation and self-regulation on the one hand, and the scarcity of research on the relationship between future and proximal goals or subgoals in educational environments on the other, can lead to the adoption of misguided motivational interventions that unknowingly stress potentially detrimental goals such as making more money by staying in school, or choosing a profession based mainly on its earning potential.[2] Although it may be true that the earning potential of people with higher educational attainments is

[2] The author of the present study witnessed such an intervention in an alternative high school class in a large Midwestern city. Students were given earning tables, and were told, among other things, that they could buy a Porsche car much faster if they stayed in school than if they dropped out. They were also asked to repeat phrases such as "I will become a doctor" in unison.

larger than that of people with lower educational attainments (see U.S. Department of Labor, Bureau of Labor Statistics, 2004), the problem with promoting wealth as *the* future goal to strive for is at least three-fold. First, stressing the importance of money may inadvertently encourage the maladaptive pursuit of wealth, such as in engagement in illegal activities that bring quick profit. Secondly, the picture that is beginning to emerge from recent research about extrinsic future goals (Kasser & Ryan, 1993) shows that aspirations to money and wealth are associated with decreased well-being and mental health. And thirdly, encouraging professional choices based mainly on their earning potential (e.g. medicine, law, engineering) may result in devastating self-efficacy blows to students who may not have the preparation needed to make these professional goals realistic goals for themselves, and, thus, may inadvertently result in even more college dropouts (See Bandura, 1997 for a discussion of the potential debilitating impact of blows to one's self-efficacy in the early stages of self-efficacy development).

But even individuals with beneficial and adaptive goals may need help to focus on those goals and create the appropriate combination of future and proximal goals and subgoals in order to be motivated to continue learning. Although people are by nature goal-directed, focusing one's thought and consciousness on one's goals is volitional, and not all are aware of the power of their own goal setting process to motivate and regulate themselves to achieve their own desired goals. Locke and Latham (1990) explained that while some people focus their thinking on their goals, others may live as if in a daze, acting on whatever stimuli the immediate environment provides. They quoted Rand (1964 pp. 20-21) as saying that

> Thinking is not an automatic function. In any hour and issue of his life, man is free to think or to evade that effort…. The act of focusing one's consciousness is volitional.

> Man can focus his mind to a full, active, purposefully directed awareness of reality—or he can unfocus it and let himself drift in a semi-conscious daze, merely reacting to any chance stimulus of the immediate moment, at the mercy of his undirected sensory-perceptual mechanism and of any random, associational connections it might happen to make. (Rand, 1964, as cited in Locke & Latham, 1990, p. 11)

The purpose of the present study is to investigate the hypothesized relationships among personally-valued future goals, proximal subgoal systems, and perceptions of task instrumentality in an educational environment, as conceptualized by Miller and Brickman (2004). If these hypothesized relationships are supported by this study and other future studies, it will be possible to design goal-based motivational interventions that help increase high school and college retention, and help support long-term rigorous learning. The powerful incentives that people's own future goals and proximal subgoals can provide may be potentially harnessed to strengthen their motivation and self-regulation capabilities in order to focus on learning. If the assumptions by Miller and Brickman (2004) are further supported by research, they can provide the blueprint for helping people focus their attention on goals that they may already possess, for helping them adopt new beneficial personal goals, such as personal growth and learning, and for helping them see how a sound goal setting process that includes future goals, a system of proximal subgoals, and task instrumentality, along with the adoption of an effective self-regulatory mechanism, may result in the accomplishment of many desirable and personally-valued future goals.

The next chapter starts with an introduction that delineates the three variables from the Miller and Brickman (2004) model that are of interest in the present study (future goals, system of proximal subgoals, and perceived task instrumentality). It then reviews the theoretical framework of Miller and Brickman (2004), focusing especially on

Social Cognitive Theory (Bandura, 1986) and Self-Determination Theory (Ryan & Deci, 2000), which have had a major influence on the model. The chapter continues with the research questions of the present study (described both verbally and visually through two theoretical path diagrams), and the rationale for the study. That is followed by a review of the definitions and measurement of the variables of interest, as well as by a review of the literature pertaining to the manner in which the variables future goals, proximal subgoals, and task instrumentality have been defined and measured in the motivation literature. The last section of the chapter is devoted to reviewing previous research that has specifically addressed relationships among future and proximal motivational factors from various theoretical perspectives: Future Time Perspective and Orientation, Possible Selves and other Ideographic Goal Content theories, Achievement Motivation and Achievement Goals theories, Intrinsic Motivation theories (Self Determination and Flow), Attribution Theory, and Social Cognitive Theory (including Career Self-Efficacy, Delay of Gratification, Goal Setting, and Future-Oriented Motivation). The chapter concludes with a chapter summary.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

The question posed by the present study is whether Miller and Brickman's (2004) hypothesized relationships among personally-valued future goals, system of proximal subgoals, and task instrumentality follow the predicted direction in educational environments, with future goals influencing the system of proximal subgoals, and the latter, in turn, influencing perceptions of task instrumentality (See Figure 1).

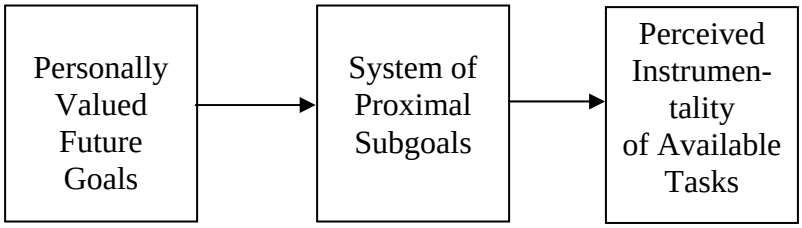


Figure 1. Major hypothesis in the Miller and Brickman (2004) model: personally-valued future goals predict the adoption of a system of proximal subgoals, and that, in turn, predicts perceptions of task instrumentality.

This chapter will start with a review of the theoretical framework for the Miller and Brickman (2004) model, will proceed with a review of the entire Miller and Brickman motivation model, and will include the research questions of and rationale for the present study, a review of the motivation literature regarding the definitions and measurement of the variables of interest to this study (see Figure 1), and, finally, a review of the literature pertaining to the relationships between future and proximal motivational factors. The chapter will end with a chapter summary.

The Theoretical Framework for the Miller and Brickman (2004) Model

Social Cognitive Theory (Bandura, 1986) serves as the major theoretical basis for the Miller and Brickman (2004) model (see Figure 4), and Self-Determination Theory (Ryan & Deci, 2000) serves as the basis for the definition of "personally-valued future goals," a central variable in the Miller and Brickman (2004) model. An understanding of both Social Cognitive and Self-Determination theories is essential for the understanding of the Miller and Brickman (2004) comprehensive motivation model.

Before proceeding to describe each theory, it is worth noting that some researchers have considered Social Cognitive Theory and Self-Determination Theory to be incompatible with each other (e.g. Bandura, 1986). However, many other motivation researchers have seen these two theories as complementary (e.g. Garcia & Pintrich, 1996; Senecal, Nouwen, & White, 2000). In fact, recent trends in motivation involve combining theories in order to build a coherent and comprehensive understanding of multiple aspects of motivation (e.g. Kaufman & Husman, 2004; the 1st and 2nd issues of *Educational Psychology Review*, 2004; Pajares & Urdan, 2002; Simons, Dewitte, & Lens, 2003). Miller and Brickman (2004) were influenced primarily by Social Cognitive Theory and Self-Determination Theory. Other motivational theories, such as Personal Investment Theory (Maehr, 1984), have also influenced Miller & Brickman (2004), but to a lesser extent. Because of the centrality of these two theories to Miller & Brickman's (2004), they will be described in some detail below.

Social Cognitive Theory

Social Cognitive Theory takes a triadic reciprocal view of motivation and self-regulation. The three interacting elements are Personal (i.e. cognitions, beliefs, and self-

regulation as denoted by the loop around P), Behavioral (i.e. actions), and Environmental factors (i.e. parents, teachers, schools, society, etc.), as indicated in Figure 2.

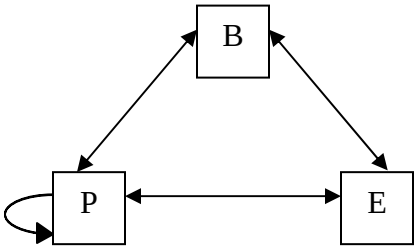


Figure 2. Model of triadic reciprocality (Pintrich & Schunk, 2002 p. 148)

Among the personal elements in Social Cognitive Theory, the most central one is people's personal goals. Social Cognitive Theory sees people's goals (reciprocally influenced by personal, environmental and behavioral factors) as the major force that drives people's motivation and self-regulation. These goals may have a number of dimensions (Bandura, 1986, Locke & Latham, 1990), including their extension into the future. According to Bandura (1986), both future goals and proximal goals play an important role in motivation and self regulation: "Proximal subgoals serving valued aspirations are well suited for enlisting the sustained involvement in activities that builds competencies, self-efficacy, and interest where they are lacking" (Bandura, 1986, p. 248).

People tend to set goals and engage in actions in order to obtain valued outcomes and avoid aversive ones. Bandura (1986) has referred to these anticipated outcomes as "outcome expectations." Outcome expectations influence behavior through people's goal setting and self-regulation of themselves in an attempt to reach desired outcomes and avoid unpleasant ones. Outcome expectations also serve as incentives for behavior: through the personal factors, they influence the choice of actions, and the level of effort

and persistence employed to achieve the desired outcomes. Another powerful mechanism that works together with outcome expectations is self-efficacy expectations or beliefs (Bandura, 1997; Zimmerman, 2001). These expectations stem from people's beliefs regarding their capability to master the skills needed to attain desired outcomes. The stronger and more positive the personal value, the self-efficacy expectations and the outcome expectations, the stronger the probability that people will set themselves appropriate goals to reach their desired outcomes, that they will engage in self-regulatory cognitions and behaviors to reach their goals, and that they will persist and spend effort to attain them.

Setting goals, deciding in what behaviors to engage to reach these goals, and deciding how long to persist and how much and what type of effort to expend, among other things, are all examples of *self-regulation* (Bandura, 1986; Zimmerman, 2001). The small loop around personal factors (P) in figure 1 above indicates the reciprocal interaction, or within-person interaction, among personal factors instigated by self-regulatory cognitions. In contrast with Control Theory (e.g. Lord & Hanges, 1987; Hyland, 1988) that sees self-regulation as relying on an automatic mechanism acting to reduce discrepancies between an inner reference standard and performance feedback, Social Cognitive Theory (Bandura, 1997; Bandura & Locke, 2003) sees self-regulation as relying on a self-driven process of "both discrepancy production and discrepancy reduction" (Bandura, 1997, p. 131). In other words, people set themselves valued standards that create discrepancy between their standards and present performance. They then put in effort to reach those standards. Self-reactive feedback then leads people to adjustment of effort, etc., to reach their goal. Once people have achieved the standard

they were attempting to reach, those with a strong self-efficacy are likely to set higher standards for themselves.

Motivation and self-regulation are tightly intertwined, as the triadic model above indicates. For even people with highly positive outcome expectations, high personal value and high self-efficacy beliefs need to engage in self-regulation in order to set themselves goals, and in order to instigate action toward reaching their goals and desired outcomes. Self regulation is seen to have three components (Bandura, 1986, Zimmerman, 2001): self-observation, self-evaluation, and self-reaction. All these three components depend on the existence of goals and standards, including more general goals and more specific "target" goals (Harackiewicz & Elliot, 1998) and their associated standards. According to Bandura (1986), "End goals have a general directive function, but specific subgoals determine people's immediate choice of activities and how hard they will work on them" (p. 474).

Figure 3 provides a schematic representation of possible inter-relationships among goals, self efficacy, and self-regulation, according to Schunk (1990).

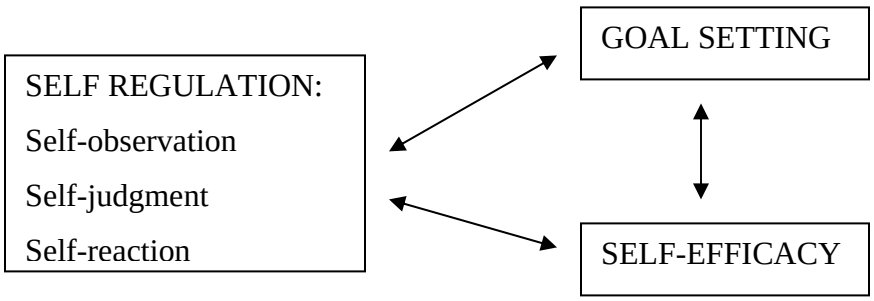


Figure 3. Social cognitive processes involved in self-regulated learning (Schunk, 1990 p. 72)

The model depicted in Figure 3 includes some of the factors hypothesized to be present in the "Personal" component of Bandura's triadic Social Cognitive model (as presented in Pintrich & Schunk, 2002 p. 148). Goal setting, self regulation and self efficacy are seen, by this model, to be highly interactive.[3]

Miller and Brickman (2004) make use of many concepts present in Social Cognitive Theory, including the connection between future and proximal subgoals, and the self-regulatory processes that enable people to reach relatively distal goals by setting themselves proximal subgoals in the service of their long-term goals.

Self-Determination Theory

In their Model of Future-Oriented Motivation and Self-Regulation, Miller and Brickman (2004) accorded a very important place to personally-valued future goals. Because their definition of personally-valued future goals is based primarily on a sub-theory within Self-Determination Theory (SDT), it is important to understand the main sub-theories within SDT. SDT is a multi-dimensional motivation theory that has explored people's motivation and personal growth as a function of the interaction between people and their social environment (Ryan & Deci, 2000). Three basic needs are theorized to be most important for human psychological well-being, and to require the most environmental support: the needs for competence, autonomy, and relatedness. When these needs are satisfied, people are believed to have enhanced self-motivation and mental health (or well-being); and when these needs are thwarted, people are believed to have diminished motivation and well-being.

[3] The bi-directional arrow between self-efficacy and goal setting, implying that goal setting can promote self-efficacy, may need to be examined more carefully. According to Schunk, "specific goals promote self-efficacy because progress is easy to gauge" (p. 74). However, it is also possible that goal setting may influence self-efficacy more indirectly, through self-regulation.

Four major sub-theories within SDT have been developed to specify the relationships among these theorized basic human needs and the environment in which they operate. The first, Cognitive Evaluation Theory (CET, e.g. Deci & Ryan 1985) has argued that supportive social environments that enhance feelings of competence and autonomy also help enhance intrinsic motivation. The second, Organismic Integration Theory (OIT), has described extrinsic motivation as being on a continuum, from the least self-determined to the most self-determined (e.g. Ryan & Connell, 1989; Vallerand, 1997), or from amotivation, to externally-motivated, introjected, identified, and integrated, regulation. The last two orientations are thought to result in more positive outcomes than the others. The third sub-theory, Causality Orientations Theory, has explored three different orientations (e.g. Deci & Ryan, 1985a; Rose, Markland, & Parfitt, 2001): the autonomy orientation (i.e. orientation toward intrinsic motivation), the controlled orientation (orientation toward being controlled by rewards, other people's directives, etc.), and the impersonal orientation (a belief that attaining desired outcomes is beyond one's control—due to luck, etc.). The autonomy orientation has been found to be the most conducive to enhanced well-being.

Finally, the fourth sub-theory, Basic Needs Theory, is the one that has most influenced Miller and Brickman (2004) in their conceptualization of future goals, as it can be seen as the most future-oriented of all the sub-theories. This sub-theory has examined various aspects of the three hypothesized basic needs (i.e. competence, autonomy and relatedness), especially by focusing on people's future aspirations and the congruence between their aspirations and the fulfillment of their basic needs. Researchers working on this sub-theory have found that, whereas the pursuit of intrinsic

life goals will provide relative satisfaction of the basic needs and enhance well-being, the pursuit of extrinsic goals will not (e.g. Kasser & Ryan, 1993, 1996). More specifically, these researchers found that a primary focus on the pursuit of intrinsic aspirations such as affiliation, personal growth, and community, was strongly related to well-being indicators, whereas a primary focus on the pursuit of extrinsic aspirations such as wealth, fame, and image, was often associated with diminished well-being. The basis for Kasser and Ryan's (1993, 1996) classification of aspirations into "intrinsic" and "extrinsic" was the premise of Self-Determination Theory that a pursuit of goals that satisfy the theorized basic needs (competence, autonomy and relatedness) embodies "authentic," or, literally, self-authored, or self-determined, motivation, whereas the pursuit of goals emanating from external pressure (e.g. wealth, fame, image) exemplifies externally-controlled motivation (Ryan & Deci, 2000).

Undoubtedly due to the scarce research examining the possible differential impact of extrinsic and intrinsic future goals on proximal subgoals in academic environments,[4] Miller and Brickman (2004) modeled future goals in a holistic, rather than in a differential, manner as affecting the adoption of a system of proximal subgoals. One of the things that the present study has tried to determine is whether all future goals are related to the adoption of a system of proximal subgoals and perceptions of task instrumentality equally in academic environments, or whether there is a difference in prediction between extrinsic and intrinsic future goals in academic environments.

[4] Studies based on Vallerand's (1992) Academic Motivation Scale do examine extrinsic and intrinsic motivational factors in academic environments, but they lack Miller and Brickman's (2004) focus on distal future goals.

Miller and Brickman's (2004) Model of Future-Oriented Motivation and Self-Regulation

In their Model of Future-Oriented Motivation and Self-Regulation (see Figure 4), Miller and Brickman (2004) use Social Cognitive Theory premises and Self Determination Theory views to integrate future-oriented motivational theories and research, and proximally-oriented theories and research. The major assumptions of the model center around the relationships among personally-valued future goals, a system of proximal subgoals, and task instrumentality (see Figure 1). These are the variables of interest in the present study. However, these variables need to be understood in the context of the full model. A full description of the Miller and Brickman (2004) model is included below, followed by research questions, rationale for the present study, and a schematic description of the study.

"Future" versus "Proximal" goals (or subgoals)

The concepts of future goals, system of proximal subgoals, and task instrumentality will be defined in detail later in this chapter. Here it is important to note that there is no accepted standard in the motivation literature by which a goal can be definitively considered a "future" or a "proximal" goal or subgoal. Most goals are, to some extent, future-oriented, and the question that has interested researchers investigating the relationships among people's various goals, has concerned the relationship between people's *relatively* distal, and *relatively* proximal, goals and subgoals. Moreover, a system of proximal subgoals may be further subdivided into "target subgoals," or medium-range subgoals, and "proximal subgoals," or very proximal subgoals of a strategic nature. Thus, the operalization of goals and subgoals may differ, depending on

the conceptualization of the researcher. The lack of standard definitions and clear-cut lines among types of goals and subgoals has not impeded research, as investigators have provided their own goal terminology and operational definitions. The specific goal definitions and operalizations for the present study are listed later in the chapter.

The Model

The Miller and Brickman (2004) model consists of two major interconnected parts, leading from future to proximal goals and self-regulation: one is the *future-oriented regulation*, and the other—*proximal self-regulation processes*. To some extent, all goals can be seen to involve representations of the future: "Goal objects have the temporal sign of an event 'not yet realized' or 'not yet achieved,' i.e. 'belonging to the future'" (Nuttin, 1985, p. 18). However, goals do differ in their extension into the future, and that makes it difficult to define precisely where "future goals" end and where "proximal goals" begin. In this model, *personally valued future goals* refer to distal aspirations which are self-determined personal goals (Ryan & Deci, 2000), also referred to as personal strivings (Emmons, 1986, 1989), possible selves (Markus & Nurius, 1986), personal projects (Little, 1992), and life tasks (Cantor, Norem, Niedenthal, Langston, & Brower, 1987; Cantor, 1990). They include aspirations such as striving for intimate personal relationships, contributing to society, amassing wealth, and gaining power (Kasser & Ryan, 1993, 1996). These types of goals are open-ended in nature, sometimes taking a whole lifetime to pursue, and they are not readily achieved by performing successfully on any one task. *Personally valued future goals* refer not only to the adoption of valued goals, but to commitment to them as well.

These *personally valued future goals* are shown by the model to be affected by *past experiences in the sociocultural context* (i.e. by the home, school, peers, media, etc.), which in turn shape the personal *values* (Bandura, 1986) and *knowledge of possibilities* (Maehr & Braskamp, 1986), or knowledge of what goals and actions are possible. People decide to adopt or commit to a future goal, and decide to "invest" in actions leading to goal attainment, based on the perceived personal *values* for the goal, and on the knowledge of and value of the perceived possibilities (Maehr, 1984). Commenting on the importance of the sociocultural environment in assigning significance to various goals and activities, Bandura (1986) said that "children are not born innately interested in singing operatic arias, playing tubas, solving mathematical equations, writing sonnets, or propelling shot-put balls through the air. But with appropriate learning experiences, almost any activity, however silly it may appear to many observers, can become imbued with consuming significance" (p. 241).

Another factor, besides the sociocultural environment, that influences the adoption of and commitment to *personally valued future goals* is *self-concept of ability* or a general judgment of whether or not one has the ability to attain a goal. This judgment is likely to consist of more general self-efficacy beliefs (e.g. Betz & Hackett, 1981) and self-schemas (i.e. self-concepts, see Cantor, 1990; Markus & Nurius, 1986) that influence the development and adoption of future goals, as well as the actions taken to achieve them (Bandura, 1986, 1997; Markus & Nurius, 1986). *Self-concept of ability* also includes beliefs in one's ability to overcome obstacles such as perceived barriers such as bias, peer pressure, and others (e.g. Lent et al., 2001). People whose *self-concept*

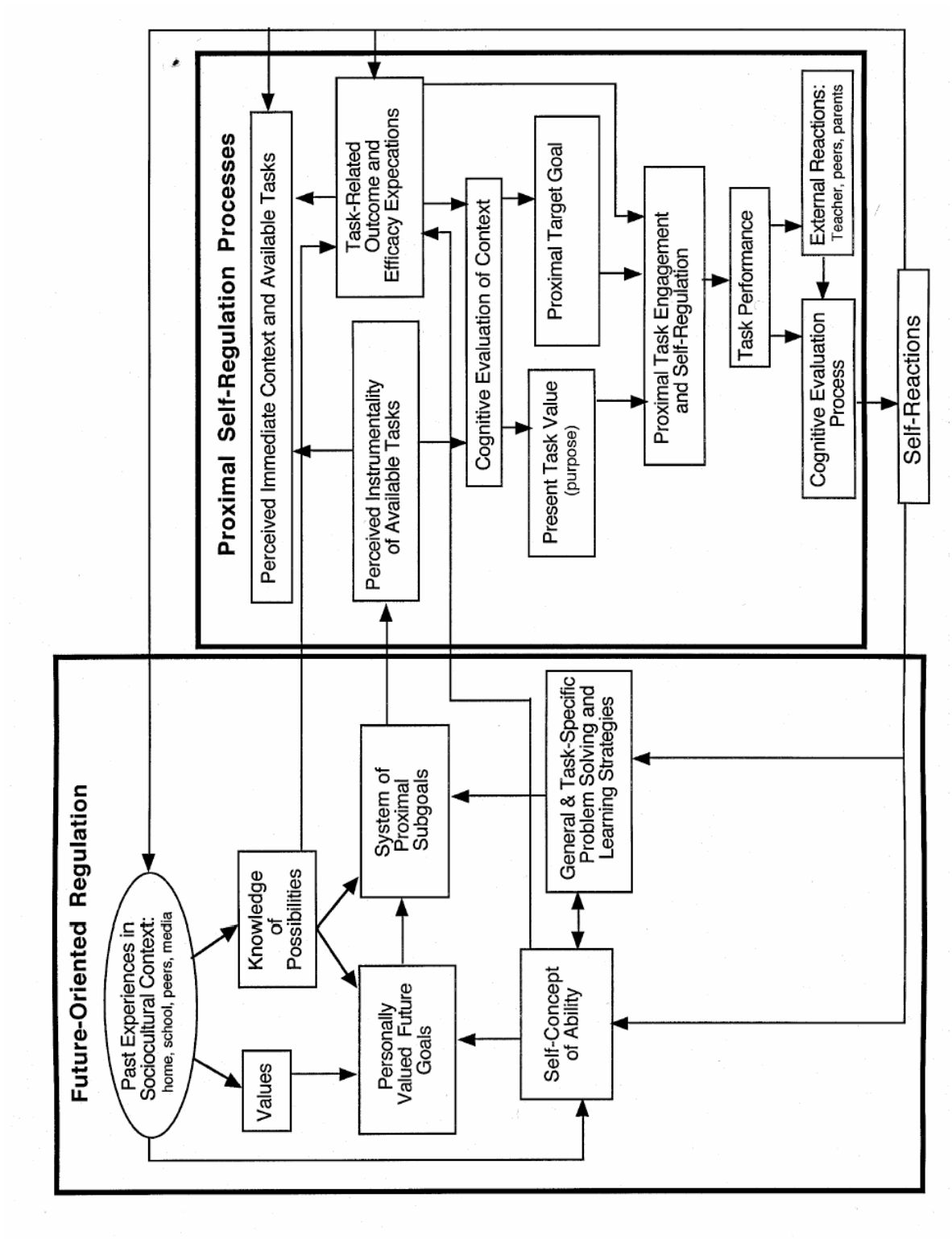


Figure 4. Model of Future-Oriented Motivation and Self-Regulation (Miller and Brickman, 2004).

of ability includes fear of perceived obstacles, may not choose to commit to certain goals (Bandura, 1986; Brickman & Miller, 2001).

Because of the relatively great distance of future goals, people who commit to future goals tend to develop a *system of proximal subgoals* to help them regulate their immediate and near-future actions in order to attain their future goals (Bandura, 1986, Bandura & Simon, 1977). As mentioned earlier, this system of proximal subgoals may be further subdivided into target subgoals with their own strategic subgoals, in order to provide standards of performance that enable self-regulation of proximal subgoals and actions to take place. Thus, the commitment to *personally valued future goals* provides the motivational basis for the development of a *system of proximal subgoals* (Nurmi, 1991; Nuttin, 1984), and the subgoals, in turn, make it possible to keep high motivational and self-regulatory levels as well as commitment to the valued future goals over long stretches of time (Bandura, 1986; Bandura & Schunk, 1981). Self-regulation theory and research indicates that people who develop subgoals for reaching future goals are more successful at self-regulating toward reaching their goals than people who do not (Schunk, 1990; Schunk, 2001; Zimmerman & Schunk, 2001). Similarly, possible selves theory and research indicate that proximal goals help keep future goals active in one's current self-concept, and that they also help by elaborating and clarifying the path to the future goal (Markus and Ruvolo, 1989). Finally, the clear development of a system of specific subgoals is thought to differentiate between realistic future goals and mere fantasy (Nuttin, 1984).

However, Miller and Brickman (2004) caution that "although the inherent importance of a system of proximal subgoals to effective self-regulation of behavior is

supported by empirical research…this should not overshadow the importance of the future goals to which they are anchored. As Bandura (1986) has indicated, 'personal development is best served by combining distal aspirations with proximal self-guidance'…It is the higher-order self-regulation engendered by the pursuit of distant, personally valued goals that gives the proximal tasks we engage in meaning beyond their immediate positive or negative consequences (Cantor & Kihlstrom, 1987; Markus & Nurius, 1986)" (p. 16).

The process of developing a *system of proximal subgoals* is influenced by the *knowledge of possibilities* that originate from *past experiences in the sociocultural context* , and also by the person's *general and task specific problem solving and learning strategies* (Cantor & Kihlstrom, 1987; Nurmi, 1991). Problem solving and learning strategies are particularly important in cases where the sociocultural context did not provide the needed knowledge basis of possible goals, subgoals, and actions needed to reach them.

Once a system of subgoals has been identified, proximal self-regulation in the form of task engagement, self-observation, self-evaluation, and self-reaction can take place. Proximal self-regulation, in this model, is guided by a triadic incentive value system: one incentive source is the outcome expectations for reaching one's proximal goal (e.g. praise, recognition), another is self-reaction expectations upon reaching one's proximal goal (e.g. pride, satisfaction), and yet another powerful incentive is *perceived instrumentality of available tasks*, or the view that engagement in and success with available tasks (that are perceived as related to the subgoals) is instrumental to attaining a

valued future goal (Nuttin, 1984, Raynor, 1974). Thus, this model sees *perceived instrumentality of available tasks* as vitally important for proximal self-regulation toward *personally valued future goals* .

The individual's *knowledge of possibilities* for goals and actions influence the *perceived instrumentality of available tasks* indirectly, through the *system of proximal subgoals*: if people are aware of goal and action possibilities, they may develop coherent subgoals that connect with tasks available in their current setting. These tasks, then, are very likely to be perceived as instrumental to attaining future goals. *Knowledge of possibilities* also influences *task-related outcome and efficacy expectations* directly, as it influences one's perceptions of what opportunities for reaching desired outcomes exist in a given environment, and perceptions about one's sense of efficacy to reach these desired outcomes (Bandura, 1986, 1997). Efficacy expectations include not only self-efficacy for tasks, but also efficacy to deal with perceived barriers such as perceived bias, etc (Lent et al., 2001).

The *perceived instrumentality of available tasks* together with *task-related outcome and efficacy expectations* lead people to analyze or interpret the *perceived immediate context and available tasks*. In other words, when making decisions about task instrumentality, and task-related efficacy and outcome expectations, people analyze or interpret the context in which they find themselves. *Perceived instrumentality of available tasks* together with *task-related outcome and efficacy expectations* are very important in the selection of proximal target goals. They influence one's *cognitive evaluation of context*, and through it, the *proximal target goal*: if either outcome

expectations or self-efficacy for a perceived available task is low, it is unlikely that the task will be selected as a target goal (Brickman, 1998; Brickman & Miller, 2001).

The *perceived instrumentality of available tasks* also exerts an important influence on *present task value* through *cognitive evaluation of context*. The value dimension is particularly significant, because people who perceive a target goal to be instrumental to attaining their future goal are likely to have a high incentive value for *proximal task engagement and self-regulation*, which then enables the self-regulatory sub-systems such as *task performance* (including self-observation), *cognitive evaluation process* (including self-evaluation), and *self-reactions* to take place. In fact, people with high future instrumentality perceptions are regarded by the model as having a much higher incentive value for *proximal task engagement and self-regulation* than people who do not perceive the target goals or task as instrumental to the attainment of future goals. That is because perceptions of instrumentality add to the types of incentive values. When perceptions of instrumentality are strong, incentive values for task engagement and self-regulation include not only the direct outcomes of achieving the proximal target goal itself (*external reactions: teacher, peers, parents*) and the anticipated *self-reactions* (e.g. tangible and affective reactions) to the proximal goal itself, but also the anticipated distal outcomes (through the *cognitive evaluation process*), as well as the anticipated self-reactions to the accomplishment of a milestone in the path to a distal goal (Raynor, 1974).

Miller and Brickman (2004) maintain that although anticipated future (distal) outcomes are typically portrayed in the motivational literature as having a weaker incentive value than proximal outcomes (Bandura, 1986 p. 248; Nuttin, 1984), that is not the case for self-evaluative reactions anchored to future goals:

When proximal achievements are perceived to have instrumental relationships to personally valued distal goals, their self-evaluative payoffs may be as powerful or more so than those simply anchored to the proximal achievements themselves…when schoolwork is perceived as important for attaining personally valued future goals…the student benefits from the immediate consequences…plus the self-evaluative reactions related to successful progress toward the personally valued future goal….In fact, it may be these future-oriented self-evaluative reactions that define the most compelling proximal consequences for engaging in school tasks….Why should school learning be perceived to have incentive value if it is not believed to be of some value beyond the moment?" (Miller & Brickman, 2004, p. 18)

Although Bandura (1986) discussed the disadvantages of focusing on distal goals such as the fact that distal goals may not provide clear enough self-appraisal standards, and the fact that distal goals may lead to premature discouragement about the possibility of reaching them (p. 248), he stated, similarly to Miller and Brickman (2004) above, that a combination of distal aspirations and proximal subgoals may be particularly beneficial: "High aspirations can be self-motivating…provided that ongoing performances are measured against attainable subgoals through which aspirations are eventually realized" (Bandura, 1986, p. 360).

A careful examination of Miller and Brickman (2004) reveals that three variables serve as the driving force behind future-oriented and proximal self-regulation. They are the *personally valued future goals*, the *system of proximal subgoals*, and the *perceived instrumentality of available tasks*. These variables are the focus of the present study.

Research Questions

Based on the Miller and Brickman (2004) hypothesis about the relationship among future goals, system of proximal subgoals and task instrumentality (see Figures 1 and 4), it is reasonable to assume that future goals (both extrinsic and intrinsic) influence the proximal (strategic) subgoals through a mediating target subgoal. In a college environment, the mediating target subgoal that would be closest to the Miller and

Brickman (2004) conceptualization would probably be college graduation: college students are likely to have personally-valued future goals that may lead them to set themselves the target subgoal of graduating from college. This target subgoal, in turn, may lead them to set more proximal (strategic) subgoals, which, finally, may lead them to perceive college work (or tasks) as instrumental to achieving their subgoals and goals.

An alternative mediating target subgoal may also be plausible, namely the target subgoal of college instrumentality for extrinsic and intrinsic future goals. Although this target subgoal is not as close to Miller and Brickman's (2004) conceptualization as the college graduation target subgoal, it is still plausible, especially in light of Kasser and Ryan's (1993, 1996) work based on Self Determination Theory. Under this conceptualization, extrinsic and intrinsic future goals may influence the target subgoal of extrinsic and intrinsic college instrumentality respectively. In turn, the extrinsic and intrinsic college instrumentality may influence the adoption of proximal subgoals, which, ultimately, may lead to perceptions of task instrumentality. The theoretical conceptualization of these two different target subgoals (i.e. college graduation and college instrumentality) is depicted in two path diagrams, Path Diagrams 1 and 2 in Figures 5 and 5a respectively. Based on these two theoretical path diagrams that follow from Miller and Brickman's (2004) model, the present study investigated the following question:

- Which theoretical conceptualization fits the data in the present study better? In other words, which theoretical path diagram (see Figures 5 and 5a) provides a more accurate description of the relationships among future goals, system of proximal subgoals, and task instrumentality?

If Theoretical Path Diagram 1 fits the data better, the following expected relationships should be observed:

- Valuing of and commitment to personal future goals (such as growth, fame, health, etc.) should predict the target subgoal of graduating from college
- Intrinsic versus extrinsic personally-valued future goals should make differential predictions
- The target subgoal of graduating from college should predict the adoption of proximal subgoals conducive to graduating from college
- Proximal subgoals should predict perceptions of task instrumentality
- There should be direct effects of future goals on perceptions of task instrumentality, and on the proximal subgoals
- There should be a relationship between extrinsic and intrinsic future goals

If Theoretical Path Diagram 2 fits the data better,

- Extrinsic and intrinsic future goals should predict the target subgoal of extrinsic and intrinsic college instrumentality respectively
- Extrinsic versus intrinsic personally-valued future goals should make differential predictions
- The target subgoal of extrinsic and intrinsic college instrumentality should predict proximal subgoals differentially
- The proximal subgoals should predict perceptions of task instrumentality
- There should be direct effects between future goals and perceptions of task instrumentality, and between future goals and the proximal subgoals
- There should be a relationship between extrinsic and intrinsic future goals

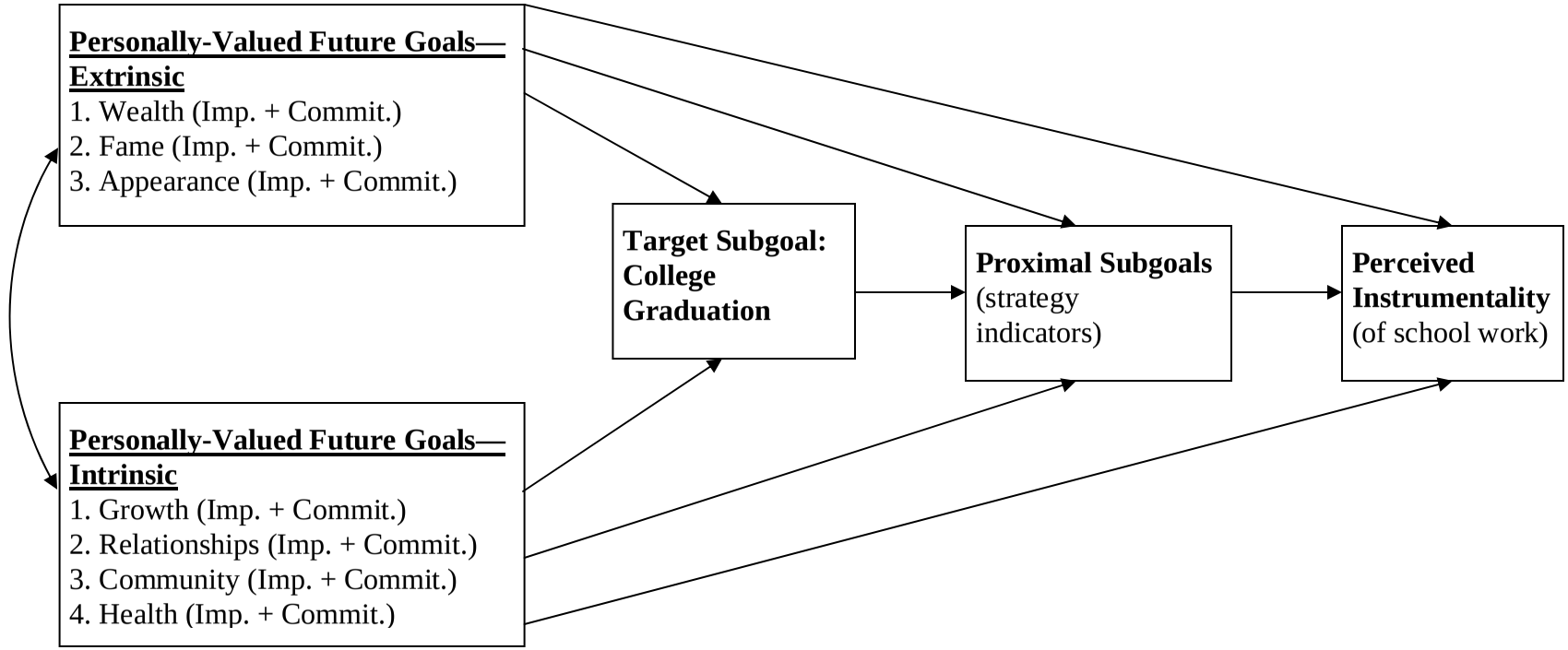


Figure 5. Theoretical Path Diagram 1. Extrinsic and intrinsic personally-valued future goals are hypothesized to impact the target subgoal of college graduation, which, in turn, predicts the adoption of proximal subgoals (in the form of strategy indicators). Finally, the proximal subgoals predict perceived task instrumentality. Additional direct effects are also hypothesized.

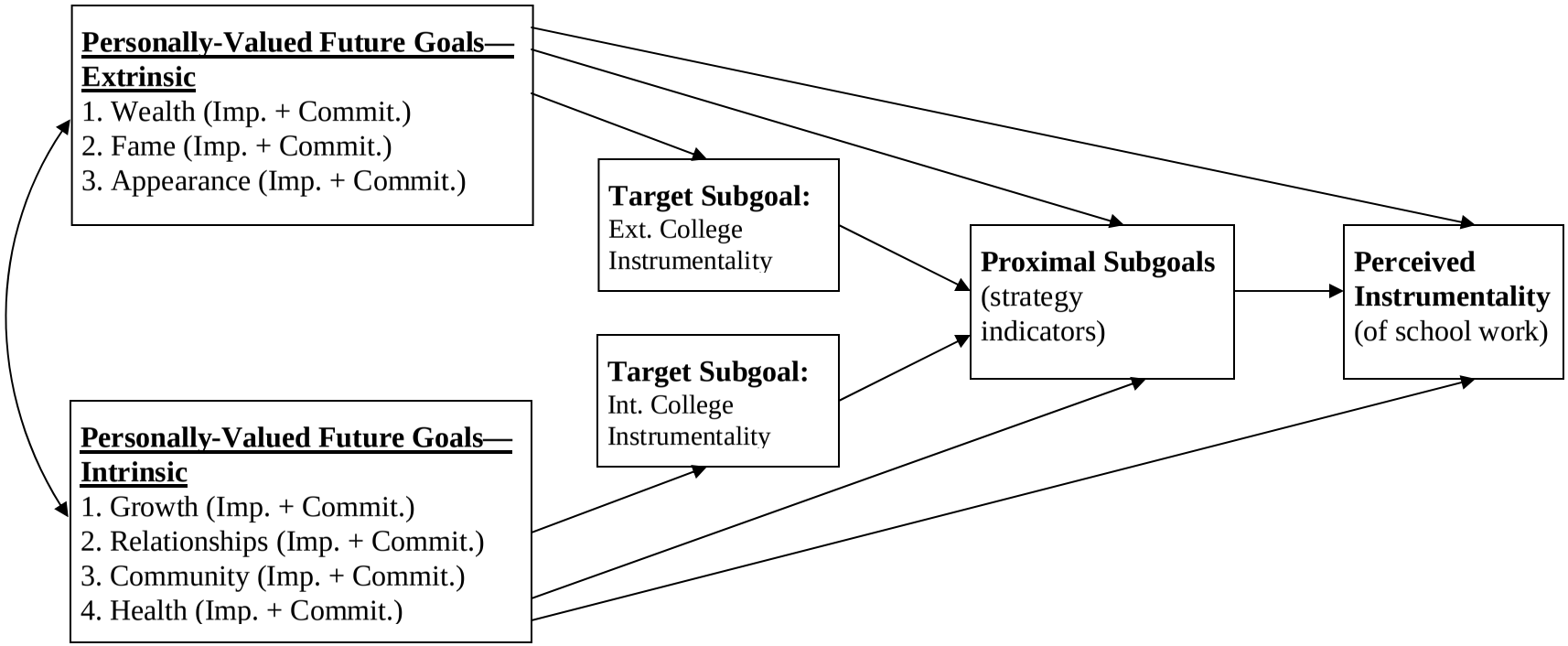


Figure 5a. Theoretical Path Diagram 2. Extrinsic and intrinsic personally-valued future goals are hypothesized to impact the target subgoal of extrinsic and intrinsic college instrumentality, which, in turn, predicts the adoption of proximal subgoals (in the form of strategy indicators). Finally, the proximal subgoals predict perceived task instrumentality. Additional direct effects are also hypothesized.

Rationale for the Present Study

Although research is available that supports parts of the proposed Miller and Brickman (2004) model, problems with this research include its fragmented nature, its sometimes lack of specific focus on education, its directional predictions, and the fact that it does not directly address hypothesized relationships present in the Miller and Brickman (2004) model. Each one of these issues will now be addressed more fully.

Available research in the area of distal and proximal motivation stems from two broad, yet fragmented, research traditions, that until recently, have not attempted to integrate their various theories, constructs, and research findings (Husman & Lens, 1999; Kauffman & Husman, 2004). One tradition has focused mostly on future motivation variables (e.g. Nurmi, 1989; Nuttin, 1985; Zaleski, 1994b; Gjesme, 1979; Little, 1983; Markus and Nurius, 1986; Emmons, 1986; Cantor et al., 1987), and another—on proximal motivation variables (e.g. Atkinson, 1965; Ames, 1992; Elliot & Dweck, 1988; Nicholls, 1984; Bandura, Cioffi, Taylor, & Brouillard, 1988; Bandura & Jourden, 1991; Zimmerman & Martinez-Pons, 1990; Zimmerman & Kitsantas, 2002; Schunk, 1989; Schunk & Ertmer, 1999). Until recently, these two broad traditions have not crossed paths too often, thus making it difficult to ascertain how, if at all, future motivation and self-regulation are related to proximal motivation and self-regulation. The present study has integrated research from both of these broad traditions through the Model of Future Motivation and Self Regulation (Miller & Brickman, 2004).

Among researchers who have attempted to study the relationship between future and proximal motivation variables, few have done so in educational environments (these include Brickman & Miller, 2001; Schutz, 1997; Schutz & Lanehart, 1994; Schutz et al.,

2001). In fact, most research that has examined the relationships between distal and proximal goals comes from goal-setting theory, that relies heavily on research done in business and management environments (see review of Locke & Latham, 1990, especially pages 58-61 on goal proximity). Yet, even this research suffers from numerous shortcomings that led Locke and Latham (1990) to state that "We believe that much more research needs to be done before firm conclusions can be drawn about the relative efficacy of proximal and distal goal setting" (p. 61). Although the authors' statement was made about fifteen years ago, it is still largely applicable to the situation today, especially in educational environments. The present study has been specifically designed to provide insight into the relationship of distal and proximal motivation and self-regulation in an educational environment.

Research about future aspirations (Kasser and Ryan, 1993, 1996) has addressed an important aspect of future goals, namely their extrinsic and intrinsic dimension, which has been shown to impact people lives and well-being in markedly different ways. However, the scarcity of research in this area that focuses on educational environments makes it unclear whether extrinsic and intrinsic future goals have similar, or differential, relationships to proximal subgoals in educational environments. The present study has addressed this issue by examining the relationship of both extrinsic and intrinsic future goals to proximal subgoal systems and to task instrumentality in an academic environment.

In educational environments, task instrumentality, or the perception among students that the tasks available in school are instrumental to their future, have been found to lead to very positive and adaptive learning outcomes (Raynor, 1970, 1974;

Miller & Brickman, 2004; Malka & Covington, 2004; Vansteenkiste, Simons, Lens, Soenens, Matos, & Lacante, 2004, Greene et al., 2004). However, existing research on perceptions of task instrumentality generally use task instrumentality as a predictor variable to predict other variables, such as task engagement or grades (e.g. Miller et al., 1999; Simons, Dewitte, & Lens, 2003; Vansteenkiste et. al., 2004; Malka & Covington, 2004). Very few studies have attempted to answer the question "what predicts task instrumentality itself?" The Miller and Brickman (2004) model hypothesizes that strong, self-determined, distal future goals and a robust set of self-regulatory proximal subgoals may actually lead to (predict) a higher perception of task instrumentality. This study would be among the very few to use future goals and proximal subgoals as predictors of task instrumentality.

Finally, the Miller and Brickman (2004) model is relatively new, and not much research has been designed to test key assumptions of this specific model. The present study would test some major assumptions specified in Miller and Brickman (2004), namely, the relationships among future goal variables, system of proximal subgoals, and task instrumentality.

There is great need for educational research that addresses whether personally valued future goals predict the adoption of a system of proximal subgoals and of perceptions of task instrumentality, and, among future goals themselves, whether extrinsic or intrinsic future goals are equally, or differentially, conducive to the adoption of the system of proximal subgoals and of perceptions of task instrumentality. High school and college dropout rates have been deemed much too high for the technologically-advanced society that these youths will be expected to function in (Carey,

2004). The kind of remedial help that has been offered to at-risk students has, evidently, not sufficed. For example, a recent NCES report (2004, indicator # 18) states that "Despite assistance offered through remediation, [postsecondary] students enrolled in remediation are less likely to earn a degree or certificate. Regardless of the combination of remedial coursework, students who completed any remedial courses were less likely to earn a degree or certificate than students who had no remediation."

It may well be the case that the reason why available college interventions such as remediation and other retention programs (such as workshops on time management and self-regulation strategies) are not sufficient, is that they may fail to take into account the complex relationship between future and proximal motivation and self-regulation. If research reveals that, in line with Social Cognitive Theory, future goals and proximal subgoals work in tandem to produce the most optimal self-regulation process, powerful enough to provide long-term self-regulatory benefits, then it will be possible to design more effective interventions that combine future and proximal factors, and truly improve learning, as well as retention and graduation rates, at the high school, as well as the college, level. Also, if research reveals that, in line with Self Determination Theory, extrinsic and intrinsic future goals relate to the adoption of a system of proximal subgoals and perceptions of task instrumentality in differential ways, educators can be informed of the best approach to take when encouraging their students to think about their future.

Definitions of Major Variables and their Measurement in the Literature

Personal Future Goals

Definition

Personal future goals are defined by Miller and Brickman (2004) as broad, self-defining and "self-determined" goals (a term from Self-Determination Theory, Ryan & Deci, 2000), such as "getting an education, striving for a career or job, developing intimate personal relationships, and making a contribution to society. They are future-oriented in that successful performance on the current task does not, in itself, produce the desired consequence. In fact, some goals, such as becoming an educated person or making a contribution to society, may have open-ended futures in which the ultimate goals are never fully reached" (Miller & Brickman, 2004, p. 14). These goals are similar to the ones listed below under research from the "ideographic goal content" perspective, and include "possible selves," (Markus & Nurius, 1986), "personal projects" (Little, Lecci, & Watkinson, 1992), "current concerns" (Cox & Klinger, 1988), "personal strivings" (Emmons, 1986), and "life tasks" (Cantor, Norem, Niedenthal, Langston, & Brower, 1987). They also include "aspirations," based on Self-Determination Theory (Kasser & Ryan, 1993, 1996). The term "personal goal" (as compared with "goal") specifies that the goal is self-generated, rather than assigned (Locke & Latham, 1990, p. 7). The examination of future goals through the Self-Determination Theory perspective is also consistent with Simons, Vansteenkiste, Lens, and Lacante (2004) and Husman and Lens (1999), who see this combination as very important to a full understanding of future and proximal motivation and self-regulation.

Although Miller and Brickman's (2004) definition of "future goals" is holistic and does not include intrinsic versus extrinsic differential definitions, the present study defines future goals in a differential intrinsic and extrinsic manner, consistent with Self-Determination Theory (Deci & Ryan, 2000; Kasser and Ryan 1993, 1996). Self-Determination Theory (e.g. Deci & Ryan, 2000) differentiates between "intrinsic" and "extrinsic" goals based on the goals' content. Goals that seek to satisfy one of the three hypothesized basic human needs of competence, autonomy, and relatedness are seen as "authentic," or self-authored and self-determined, goals, and thus are classified as "intrinsic," or emanating from the self. On the other hand, goals that seek to satisfy externally-driven or externally-imposed factors such as wealth, fame, or appearance, are seen as non self-authored or self-determined, and are classified as "extrinsic," or emanating from sources other than the self (Deci & Ryan, 2000). This study defines future goals differentially in terms of their intrinsic and extrinsic qualities as defined by Self-Determination Theory (Deci & Ryan, 2000; Kasser and Ryan, 1993, 1996).

Measurement in the Literature

These types of future goals have been mostly measured by a combination of ideographic and nomotheic methods. Ideographic methods involve having individuals generate their own list of goals, so that participants may generate very different goals from each other. Nomotheic methods are methods that are more conducive to comparisons, and often involve self-report instruments whereby participants respond to supplied lists of goals or goal properties, and indicate on Likert-type scales to what degree the statements reflect their personal goals. The main advantage of using ideographic methodology is having participants generate their own goals, rather than

being asked to respond to other-generated goals. However, disadvantages of using ideographic methodology include the difficulty of between-subject comparisons, the increased possibility of influence of social desirability in participants' responses (see Kasser & Ryan's 1993 comment based on Rokeach, 1973), and the possibility of increased error due to coding procedures (see Aronson, Ellsworth, Carlsmith, & Gonzales, 1990, p. 281). For these reasons, most researchers investigating personal future goals have used either a combination of ideographic and nomotheic measures (e.g. Oyserman & Markus, 1990; Cross & Markus,1994; Little et al., 1992; Cox & Klinger, 1988; De Volder & Lens, 1982; Emmons & King, 1988; Nurmi, 1989, Zaleski, 1987) or nomotheic measures alone (e.g. Kasser & Ryan, 1993; Cooper, 1994; Betz & Hackett, 1981; Rotberg, Brown, & Ware, 1987; DeVolder & Lens, 1982).

An example of an ideographic goals instrument is Nuttin's MIM instrument (Nuttin, 1985). The MIM instructs participants to list their own goals by providing prompts such as "I hope…," "I strive to…," I don't want…," etc. The responses are then coded for various dimensions by trained coders. An example of a nomotheic goals instrument is Kasser and Ryan's (1993, 1996) Aspirations Index, that provides a list of goals to participants, and asks them to rate them on a number of dimensions, such as personal importance (value), and the chances of attaining them in the future (expectancy). The literature review section of this chapter will provide more detailed examples of the researchers' use of the ideographic and nomotheic methods.

Consistent with the Miller and Brickman (2004) conceptualization of personally-valued future goal in terms of Self-Determination Theory, the present study used a modified Aspirations Index (Kasser & Ryan, 1993, 1996, 2004) to measure the valuing

of and commitment to future goals. Although Miller and Brickman (2004) did not model future goals in a differential manner as Kasser and Ryan (2004) did, one of the aims of the present study was to examine future goals differentially, in terms of their hypothesized intrinsic and extrinsic qualities, consistent with Self-Determination Theory (Deci & Ryan, 2000). The Aspirations Index measures four goals classified as intrinsic (personal growth, health, meaningful relationships, and community contributions) based on the fact that they map onto the three hypothesized basic human needs for competence, relatedness, and autonomy, and three goals classified as extrinsic (wealth, fame, and image), based on these goals' external focus.

System of Proximal Subgoals

Definition

"Subgoal" has been defined as "an intermediary goal selected as an aim toward which one works when directed, ultimately, toward a final goal" (Reber, 1995, p. 765). The word "proximal" draws attention to the fact that the subgoals to which Miller and Brickman (2004) refer are temporally closer to the individual than the distal future goals to which they are anchored. As indicated above, a "system of proximal subgoals" may be divided into "target subgoals," that are seen as relatively more proximal, middle-range, subgoals leading to the attainment of the distal aspirations, and "proximal subgoals," or more strategic sub-subgoals leading to the target subgoals.

Measurement in the Literature

Target subgoals and proximal subgoals have been measured by ideographic methods, where participants were asked to provide their own individual goals and subgoals (e.g. Schutz, Crowder, & White, 2001), but mostly either by nomotheic

methods, where participants were asked to rate subgoals provided by the researcher (e.g. Lasane, 1996; Lasane, Cramer, & Breymaier, 1999; Schutz, 1997; Schutz & Lanehart, 1994), or by combinations of ideographic and nomotheic methods (e.g. Early, Wojnaroski, & Prest, 1987; Donovan & Williams, 2003; Lese & Robbins, 1994; Morgan, 1985; Bergin, 1989; Brickman, 1999; Brickman & Miller, 2001).

At the more proximal strategic level, researchers have had to address the problem of differentiating between strategies per se, and proximal subgoals of a strategic nature (e.g. Schutz, 1997). For example, is "time management" a strategy, or a strategic proximal subgoal that people set for themselves in order to achieve a target subgoal, such as "pass the course?" Strategies are often seen as "a set of operations for solving some problem or achieving some goal" (Reber, 1995, p. 760). If strategies are a set of operations for achieving a goal (or subgoal), can they also be subgoals in and of themselves?

Although there are grounds for considering strategies as subgoals in their own right (strategies, are, after all, most often directed toward a target subgoal), for the sake of conceptual clarity, it is probably more helpful to think of strategies as *indicators* of proximal subgoals. This is the approach that Schutz (1997) took, as he used the LASSI-HS instrument (Weinstein & Palmar, 1990), designed to measure strategies, as an indicator of the students' proximal subgoals.

In the present study, two different, but plausible, target subgoals were measured by two scales created specifically for this study (the College Graduation Scale and the College Instrumentality Scale). Proximal (strategic) subgoals were measured by a modified MSLQ (Pintrich, Smith, Garcia, & McKeachie, 1991), because the MSLQ

tapped strategies of interest to this particular study, such as time management, study strategies, and organization, among others.

Value and Commitment

Definitions

Although people's goals have been found to contain numerous dimensions or attributes, such as the goal's relative extension into the future, self-efficacy for attaining the goal, expectancy for reaching the goal, personal value of the goal, and commitment to the goal, among many others, (see Locke & Latham, 1990; Austin & Vancouver, 1996 for various dimensions), social cognitive theory (Bandura, 1986) has seen goal value and goal commitment as among the most important goal attributes and predictors of self-regulation toward goal attainment. For example, commenting about the importance of values, Bandura (1986) stated that "Human behavior is partly governed by value preferences and evaluative standards. It is through this internal source of guidance that people give direction to their lives and derive satisfactions from what they do. Values and internal standards of behavior are extensively developed and altered through the experiences of others" (p. 323). Value is defined as "The quality or property of a thing that makes it useful, desired or esteemed…the value of a thing is given by its role in a (social) transaction, the thing itself does not possess value" (Reber, 1995 p. 834). In terms of goal value, as Bandura (1986) noted, children are not born valuing the goal of dancing ballet or playing the tuba. Children and adults come to value certain goals because of previous experiences in their social environment (Miller & Brickman, 2004).

Commenting on goal commitment, Bandura (1986) said that "Goals and intentions are unlikely to have much impact on future behavior if there is little personal

commitment to them." He went on to define goal commitment as "the resolve to pursue a course of action that will lead to selected outcomes or performance attainments" (p. 477). Echoing the importance of goal commitment, Locke and Latham (1990) stated that "It is virtually axiomatic that a goal that a person is not *really* trying for is not *really* a goal, and therefore cannot have much effect on subsequent action. Only an individual who is genuinely trying for a goal can be described as being committed to that goal" (p. 124). It is reasonable to assume, then, that individuals who either do not value a goal or who are not committed to it, will, in all likelihood, not engage in self-regulatory activities designed to reach those goals, and that personal valuing and commitment to a goal are essential and central factors in trying to reach a goal.

Measurement in the Literature

Personal value has been measured mostly by Likert-type scales that ask participants to rate to what extent they value certain goals. Some scales have used the term "value" specifically in their item stems. An example for such a scale is the Value/Utility subscale of the Intrinsic Motivation Inventory or IMI (Deci, Eghrari, Patrick, & Leone, 1994). Others have used related terms in their instruments, such as "importance" (e.g. Kasser & Ryan, 1996, "how important is this [aspiration] to you?") "usefulness," (e.g. Eccles 1983; Wigfield, 1994, utility value questions such as "in general, how useful is what you learn in math?") and perceived level of "satisfaction" upon attainment of a goal or goal level (e.g. Mento, Locke, and Klein, 1992).

Commitment has also been measured mostly by various Likert-type scales. Some are one-question instruments, asking participants to indicate how "committed" they are to various goals (e.g. Lese and Robbins, 1994; Early, 1985) and others are

longer instruments utilizing multiple items to tap people's commitment to a specific goal (e.g. Hollenbeck, Williams, & Klein, 1989; Klein, Wesson, Hollenbeck,Wright, & DeShon, 2001. Sample items are "I think this is a good goal to shoot for," and "Quite frankly, I don't care if I achieve this goal or not"). Yet other instruments use more indirect commitment indicators, such as "amount of goal already achieved" (Ryan et al., 1999), or degree of "enthusiasm" about trying for their goal (Leifer & McGannon, 1986 as reported in Locke & Latham, 1990).

In the present study, each personal future goal, as well as the items assessing the strength of the target subgoal of graduating from college, are followed by one "importance" and one "commitment" question (i.e., "how important is this goal to you?" and "how committed are you to this goal?"), in keeping with the general format of the Aspirations Index (Kasser & Ryan, 2004). The proximal (strategic) subgoals are not followed by interest and commitment questions, because theoretically, these strategic subgoals are deemed too proximal to benefit from such an analysis.

Perceived Instrumentality

Definition

Perceived Instrumentality is viewed by Miller and Brickman (2004) in terms of the expectancy-value framework of achievement motivation theories. "Perceived instrumentality focuses on the recognition of the instrumental relationship between one or more current activities and the attainment of a personally valued future goal"(Greene, Miller, Crowson, Duke, & Akey, 2004). An "instrumental" relationship refers to a means-end relationship (Reber, 1985), where a current activity is seen as a means to the attainment of a personally valued future goal. Raynor (1969, 1974a) used the construct

of perceived instrumentality as a way to extend Atkinson's (1965, 1974) achievement motivation theory in order to make it account for the significantly higher achievement outcomes among students who perceived current work or activities as instrumental, or as steps in a contingent path (based on Lewin, 1938) to their desired future goal. Recognizing the value of instrumentality in motivation, Vroom (1964) and others have referred to "value-instrumentality-expectancy," or VIE, rather than to "expectancy-value" alone to explain work and achievement motivation (see Ford, 1992; DeVolder & Lens, 1982).

Later achievement motivation theorists such as Eccles and colleagues (Eccles, 1983; Wigfield, 1994) have used a broader conceptualization of value-based terminology, such as "utility value," to tap into this means-end relationship between current activities and future goals. However, because of this broader conceptualization of utility value, a distinct difference between "utility value" and "perceived instrumentality" has emerged (see Husman, Derryberry, Crowson, & Lomax, 2003 for a discussion of constructs related to instrumentality). The construct of "utility value" covers any type of perceived usefulness, whether for self-determined goals or for socially-imposed goals, and whether for one's daily life or for the future. For example, a representative question in Eccles' (1983) utility value/usefulness subscale is "In general, how useful is mathematics to you?" This type of question may cue participants to either self-determined or imposed goals, and to either daily usefulness (such as in everyday shopping) or to future usefulness. In contrast, a representative item in the Miller, DeBacker, and Greene (1999) instrumentality scale, geared to measure schoolwork-related instrumentality, is "I do the work assigned in this class because my achievement

plays a role in reaching my future goal," clearly cuing participants to self-determined and future-oriented goals. Greene et al. (2004) suggested that "The construct of perceived instrumentality can be viewed as a subset of Eccles' broader constructs of utility value and attainment value" (Greene et al., 2004). As such, perceived instrumentality deals with a more restricted range of value, that dealing with self-determined or identified goals (to use Self-Determination Theory terminology) and that geared specifically toward the attainment of future goals.

Measurement in the Literature

Instrumentality has generally been measured by Likert-type scales, where participants are asked to indicate to what extent they find a current task, activity or achievement-oriented variable (i.e. successful school performance) "important," "helpful," (e.g. Raynor, 1974a) or "useful" (e.g. Eccles, 1983; see also Simons et. al.'s review of their previous studies, 2004) for the achievement of some future goal. For example, Gjesme's 7-item instrumentality scale (described in Gjesme, 1983) included performance-oriented items such as "It is important for me to perform well at school in order to reach my future goals," (p. 452), and Miller et al.'s (1999) 5-item scale included schoolwork-oriented items such as "I do the work assigned in this class because learning this material is important for attaining my dreams." However, other types of measures exist, such as the DeVolder and Lens (1982) instrument. The instrument directs participants to rate the subjective probability of reaching given goals if they would study hard ("if I study hard, I will get good grades"), and if they would not study hard ("If I do not study hard, I will get good grades."). The instrumentality score (for studying hard) is the difference between these two probabilities.

The instrument chosen to measure perceptions of instrumentality in the present study was Miller et al.'s (1999) Perceived Instrumentality Scale, because it was designed to measure instrumentality for school work, which was the variable of interest in this study.

The Relationship between Future-Oriented and Proximally-Oriented Motivation and Self-Regulation: A Review of the Literature

As mentioned earlier, very little research exists that addresses the relationships among the variables of interest in the present study, namely, personally-valued future goals, system of proximal subgoals, and perceptions of task instrumentality, especially in educational environments. One of the major reasons for this is probably the fact that until recently, little research attempted to merge distal and proximal motivational components (Miller & Brickman, 2004). Many contemporary educational theories have assumed that although the future may play a part in motivation and self-regulation, it is too distant to affect these variables in a very meaningful way (see review of Husman & Lens, 1999). Emerging research results pointing to significant relationships between future motivation variables and proximal motivational variables have resulted in a new, concerted effort, to investigate the mechanism by which future motivational variables affect proximal ones, and vice-versa (Kauffman & Husman, 2004).

In line with this growing interest in the relationship between, and the combined impact of, future and proximal motivational variables, researchers have combined variables from various theoretical backgrounds, such as future time perspective or future time orientation and intrinsic motivation, and goal orientation and value-expectancy theories (see volume 16 issues 1 and 2 of *Educational Psychology Review* of March 2004

for a variety of combinations). This trend has resulted in much more integrated and coherent research results about motivation, and in a richer understanding of motivation and self-regulation in their various temporal manifestations. The purpose of this review is to summarize motivational and self-regulatory research that has specifically investigated the relationships among future (distal) and proximal motivational and self-regulatory variables.

Although the integrated trend in research mentioned above makes it difficult for reviewers to assign a piece of work to a specific theoretical tradition, it is still important to understand the theoretical basis or bases of each individual piece of research. Therefore, in the following review, work will be reviewed under the umbrella of a particular research tradition based on this investigator's judgment about its major contribution to our understanding of the relationship between future motivation and proximal motivation variables. For example, based on this investigator's judgment, an article that draws from FTP, as well as from SDT, research, may be placed under either the FTP heading or the Intrinsic Motivation heading. Furthermore, the writings of any one author may be placed under different headings, depending on the specific article's questions and findings.

Future Time Perspective and Orientation (FTP/FTO)

Modern research on Future Time Perspective (FTP) and Future Time Orientation (FTO) has been ongoing since the first half of the 20th century (see review by Nuttin, 1985 and Husman & Lens, 1999; Markus & Nurius, 1986). FTP and FTO have been viewed either as different, or as interchangeable, constructs, depending on the particular researchers' operalization. Researchers who view these constructs as being different,

have typically viewed FTP as a multidimensional construct capturing human cognizing about the future, with aspects such as *extension* (length or depth), *density* (i.e. the degree to which objects are distributed within the time period), *structure* (i.e. the presence or absence of connections among the objects such as means-ends), and *realism* (Nuttin, 1985), and FTO as a more unidimensional construct describing a relatively stable tendency to prefer directing one's thoughts and activities toward the future (Gjesme, 1983). However, it seems that many researchers have increasingly used the terms FTP and FTO interchangeably (Nurmi, 1994; Zaleski, 1994). Following the example of Greene and DeBacker (2004), this review has used the original terminology employed by the individual researcher, with the understanding that both FTP and FTO refer to individuals' perceptions of the psychological future in its various manifestations. When not referring to a specific piece of research, the term FTP was used, consistent with Nurmi (1994).

As Lens and Moreas (1994) noted, "By definition, human motivation is future-oriented. People strive for goals that are not present yet but already anticipated" (p. 25). Much of human cognition and behavior is directed toward the future, and many motivational theories in the 20th century have included some future component in their theoretical models (Nurmi, 1994), even when the research based on these models has focused on proximal factors. For example, early achievement motivation theories such as Atkinson's (1974) have included expectancies, Raynor's (1974) extension of achievement motivation has included instrumentality leading to valuing of a task in a "contingent" path to a desired future goal, recent achievement motivation theorists such as Eccles (1983) have combined expectancies, utility value, and future goals in their

motivational models, Self-Determination Theory has included an aspirations component (Kasser & Ryan, 1993, 1996), and Bandura's Social Cognitive Theory (1986) has stressed forethought as a major feature of human cognition, leading to outcome expectancies and goal setting. However, some theorists and researchers have specifically devoted themselves to studying future time perspectives and orientations, and this part of the review will be devoted to them.

De Volder and Lens (1982) conducted a study with 251 Belgian high school students, mostly 11th graders, and found a very strong relationship between their FTP and their present academic achievement (using repeated measure ANOVAs to analyze the data). For example, high achieving students were found to attach significantly higher valence to goals in the distant future than low achieving students, and high achieving students perceived studying hard as more instrumental for achieving goals in the distant future and the present than low achieving students. In addition, highly persistent students attached significantly higher valence to goals in the distant future than low-persistent students, and highly persistent students perceived studying hard as more instrumental for reaching goals in the distant future, present and near future than low-persistent students. This study indicates that there is a strong positive relationship between academic indicators such as GPA and perceptions of persistence on the one hand, and valuing of goals in the distant future and ascribing higher instrumental value to studying hard for reaching goals in the distant future, on the other hand.

Nurmi (1989) did a longitudinal study with adolescents, combining qualitative and quantitative methods, to investigate adolescents' goals, plans, and future and proximal perceptions about their lives. One of the important findings pertained to the

positive effect of future-oriented cognizing, even when those cognitions include some negative fears, such as the fear of war. The authors found that many adolescents in their study indicated a fear of war in the future, but that those adolescents concerned about the threat of war also indicated a higher level of present interest in their future occupation and family compared with those who were not concerned about the threat of war. Another finding indicated a correlation between internality and optimism regarding the future (as children got older), and perceptions of weaker parental control in the present. These results are in line with Self-Determination Theory (Ryan & Deci, 2000), that predicts more internality with a decreased sense of external control. However, girls differed from boys, in that they showed tendencies to become more pessimistic about their future with age, perhaps reflecting the traditional conflicts in society between expectations of achievement in occupational fields, as well as differences in child-rearing practices between boys and girls.

Zaleski (1987) set out to investigate the impact of self-set goals for various future time ranges on participants' perceived actions in the present. The 331 participants were college students from various disciplines. They were asked to write down goals that they set for themselves for different time ranges: 1 week, 1 month, 1 year, 10 years, and life span, and then rate some of them on different dimensions. The data were analyzed by a series of ANOVAs and correlations. The study revealed that more important goals are set in a more distal time frame, and that people tend to perceive that they expended more effort and persistence when working toward more distal goals, and that they are more satisfied when pursuing more distal goals. In addition, proximal goals tended to be seen as means toward achieving the more distal goals, which are more often seen as final goals.

When compared with other time perspectives, future time perspective has been consistently found to be the best predictor of proximal achievement-related outcomes. In their article on time perspectives, Zimbardo and Boyd (1999) provided research data that validated their time perspectives instrument and demonstrated the importance of a future-time orientation for achievement-related goals and outcomes. Based on the theories and work of researchers such as Nuttin (1985) and Bandura (1997), the authors developed and validated the Zimbardo Time Perspective Inventory (ZTPI), that measures five time perspective factors (validated through an extensive factor analysis): a past-negative factor (reflecting a negative view of the past, e.g. "I think about the bad things that have happened to me in the past"), a past-positive factor (reflecting a sentimental attitude toward the past, e.g. "I get nostalgic about my childhood"), a present-hedonistic factor (reflecting a "'devil may care'" attitude, e.g., "I do things impulsively"), a present-fatalistic factor (reflecting a non-controllable present, e.g. "My life is controlled by forces I cannot influence"), and a future factor (reflecting a general future orientation, e.g. "I am able to resist temptations when I know that there is work to be done").

The authors administered the ZTPI to 205 college students in introductory psychology courses, along with other personality measures. Most *p* values ranged between .01 and .02. Results indicated that the past-negative factor was related to depression (r = .69), anxiety (r = .73), and to aggression (r = .57), and negatively related to happiness (r = -.41) and to self-esteem (r = -.56). The present-hedonistic factor was related to uncontrolled ego (r = .75), novelty and sensation seeking (r = .72), and negatively related to preference for consistency (r = -.51). The present-fatalistic factor was related to aggression (r = .48), anxiety (r = .47), depression (r = .45), and was

negatively related to consideration of future consequences (r = -.72). The only factors related to positive outcomes were the past-positive factor and the future factors. The past-positive factor, though, was related only to affective-related variables, whereas the future factor was related to achievement-related variables as well as affective variables. Specifically, the past-positive factor was positively related to self-esteem (r = .33), and negatively related to aggression (r = -.19, p < .05), depression (r = -.20, p < .05), and anxiety (r = -.30). The future factor was related to conscientiousness (r = .73), consideration of future consequences (r = .67), preference for consistency (r = .59), and self-reported hours spent studying per week (r = .28), and was negatively related to novelty seeking (r = -.53), sensation seeking (r = -.40), anxiety (r = -.17, p < .05), and depression (r = -.24). Other studies based on the authors' instrument indicated that the future element was the most predictive of variables relating to positive proximal goals and achievement in many different areas such as academics (Harber, Zimbardo, & Boyd, 2003) and persistent homelessness (Epel, Bandura, & Zimbardo, 1999).

The studies from the FTP/FTO perspective provide evidence of a definite relationship between future motivational factors, such as future goals, and proximal ones, such as achievement and self-regulation.

Possible Selves and Other Ideographic Goal Content Theories

Ford (1992) used the term "Ideographic Theories of Goal Content" to describe "frameworks and assessment procedures designed to promote a better understanding of the content and organization of personal goal[s]…" (p. 171). Typically, these theories and research studies have examined people's future goals and future goal-directed activities that are personally valued and meaningful to individuals, and have linked these

personal future goals to various affective and well-being outcomes, such as satisfaction, guilt, mental health, etc. (Ford, 1992). Although researchers from both the FTP/FTO tradition as well as those from an Ideographic Goal Content tradition have been interested in people's future goals, FTP/FTO researchers have focused more on the time element (or time extension) in people's goals, and ideographic goal content researchers have focused more on the content of people's future goals. Researchers under the ideographic goal content theoretical umbrella have used different terminology to refer to personally valued future goals and strivings. For example, some have used the term "personal strivings" (Emmons, 1986), others used the term "life tasks" (Cantor et al., 1987), and yet others have used "current concerns (Klinger 1994), "personal projects," (Little, 1983), and "possible selves" (Markus & Nurius, 1986).

Oyserman and Markus (1990) investigated the relationship between possible selves and delinquency in a study with 238 youths between the ages of 13 and 16, drawn from four environments with differing degrees of delinquency. All four groups were from the same lower middle-class to working-class area of Detroit.

The methodology included coded open-ended individual interviews as well as closed-ended self-report questionnaires. A series of ANCOVAs were used for the data analysis. Results showed almost no significant effects for age, sex and race, but there was a significant effect for amount of delinquency. Amount of delinquency predicted negative expected selves, F (3, 225) = 9.05, $p < .0001$, expecting "to get along in school," F (3, 225) = 9.36, $p < .0001$, expecting material goods such as cars or clothes, F (3, 225) = 2.77, $p < .05$, and fearing criminal selves, F (3, 224) = 10.98, $p < .0001$, among other things. Across the four groups, the more delinquent the youths, the more they had

negative expected selves, the less they expected to get along in school, the more they expected to have cars or nice clothes, and the more they feared becoming criminals (i.e. "a thief" or "a murderer"). Also as hypothesized, the amount of delinquency predicted a balance in possible selves, F (3, 224) = 7.62, $p < .0001$. The public school children (the non-delinquent group) had the most balanced possible selves, and the more delinquent the group, the less balance was found in their possible selves. This article supported the notion that there is a relationship between the content of people's future perceptions of the self (i.e. future possible selves, expected selves, feared selves and a balance in hoped for and feared selves), and the present reality of the self (i.e. whether one is a delinquent or not).

Studies carried out from the Personal Projects perspective have also revealed relationships between people's personal future goals or projects (either proximal or distal) and personality dimensions in the present. For example, McGregor and Little (1998) found that different dimensions of future personal projects were related to two identified factors of well-being, namely happiness and meaning (i.e. perception of having a satisfying life purpose) in the present. Participants were 146 university students from an introductory psychology course. The students were asked to generate a list of personal projects, after which they were asked to pick the top ten and rate them on 35 dimensions. Correlational results indicated that project efficacy (i.e. perceptions of how achievable the personal projects were) was positively associated with the happiness factor of well-being ($r = .37$, $p < .001$), and project integrity (i.e. perceptions of consistency of project with other self-concepts) was positively associated with meaning ($r = .22$, $p < .007$). Other factors from the personal projects that correlated with happiness were fun and

support (r = .27, p < .001). Similar relationships between measures of personal projects and measures of well-being were also observed in a second study with 179 students. In this study, project efficacy was related to both happiness and meaning (r = .34 and .33 respectively, p < .001), whereas project integrity, as in the first study, was related solely to meaning (r = .39, p < .001). These studies demonstrated a consistent relationship between future aspects of self-concept and well-being in the present.

In another study using a correlational design, Little et. al. (1992) wanted to find out whether there was a relationship between personal projects, which are future- and action-oriented, and personality traits, which are seen as relatively stable characteristics of an individual. Their participants were 147 university students from introductory psychology courses, who completed self-report instruments including a personality measure, the Personal Projects Analysis, and other measures of university adaptation, and emotional and physical well-being.

Correlation tables revealed that each one of the five personality factors correlated with a different set of personal project dimensions. The most important correlations were those between Neuroticism and problematic personal project evaluations on the one hand, and between Conscientiousness and positive personal project evaluations on the other hand. All p values were between p < .001 to p < .01, unless otherwise indicated. Neuroticism was linked mostly with affective dimensions of personal projects such as stress (r = .33), difficulty (r = .23), and perceptions of challenge (r = .20), and negatively linked with enjoyment (r = -.27), perceptions of control (r = -.27), time adequacy (r = -.15, p < .05), and efficacy dimensions such as perceptions of progress and outcomes (r = -.32 and r = -.23 respectively). Conscientiousness, on the other hand, was linked with

positive project indicators, such as importance (r = .21), enjoyment (r = .23), absorption (r = .26), time adequacy (r = .24), and efficacy indicators such as progress and outcome (r = .33 and r = .28 respectively). The other three personality factors, namely extraversion, openness and agreeableness were also associated only with positive personal projects dimensions, but not as extensively as conscientiousness.

Finally, Emmons and King (1988), working from the perspective of "personal strivings," found that the nature of individuals' strivings affect their current physical and psychological well-being. In a study with 40 college student participants, the authors found that the more conflict and ambivalence participants had among their future strivings, the more they indicated a lack of well-being (significance levels ranged from $p < .01$ to $p < .05$). For example, the level of conflict among, and ambivalence toward, their future strivings was related to negative affect (r = .28 and r = .39 respectively), somatization (i.e. physical symptoms; r = .28 and r = .35 respectively), anxiety (r = .29 and r = .37 respectively), and depression (r = .34 and r = .44 respectively).

These and other studies from the ideographic goal content perspective provide evidence for a significant relationship between future goals and aspirations and proximal motivational and psychological variables. This relationship is so compelling, that some theorists and researchers working from the ideographic perspective have designed interventions based on clarifying the connection between future and proximal motivational and psychological variables to people with chronic addictive problems such as alcoholics (e.g. Cox and Klinger, 1988).

Achievement Motivation and Achievement Goals Literature

Early Achievement Motivation Models and Future Dimensions

Modern theoretical approaches focusing specifically on achievement motivation (rather than motivation in general), have often adopted an Expectancy x Value framework. In general terms, this framework assumes that the two most important predictors of achievement motivation (i.e. of serious engagement in a task with intent of succeeding at it) are one's expectations in regard to succeeding at that task (i.e. how likely they are to succeed), as well as one's perceptions of the value for succeeding at the task (i.e. how valuable success at that task is to an individual). Important findings following Atkinson's (1965, 1974) formulation have expanded the scope of the earlier operalizations of the variables in the model. Additional constructs have been found to be very important to a thorough understanding of achievement motivation. For example, Raynor (1974) found that *perceived instrumentality* (i.e. importance of succeeding at a task that is on a contingent path to desired future goals) enhanced achievement motivation predictions considerably. Other researchers (e.g. Ames, 1992; Elliott & Dweck, 1988; Nicholls, 1984; Maehr & Midgley, 1991) have focused their attention on *achievement goals* or *goal orientations* that people approach tasks with, and found these orientations, that included *learning goal* orientations and *performance* goal orientations, were highly predictive of achievement motivation. And yet other achievement motivation researchers (Eccles, 1983; Wigfield, 1994) have found that variables such as *utility value* and actual *goals* (i.e. short-term goals such as "getting an A on this paper" and long-term goals, such as "becoming a doctor," as Pintrich & Schunk, 2002 noted on p. 62) were important predictors of achievement motivation. Following short introductions

to these theories, works that have contributed to our understanding of the role of the future in achievement motivation and achievement goal literature will be reviewed.

Studies based on Atkinson's Achievement Motivation Theory (1974) typically considered how the strength of the motive for success, or achievement motive, relative to the strength of the motive to avoid failure (measured by M_S - M_{AF}) affected various motivational outcomes. Much of this earlier formulation of expectancy x value theory was conceived of in terms of the present without much of a future orientation (Husman & Lens, 1999). However, a few studies based on this earlier formulation of the theory did, in fact, introduce a future dimension by considering participants' expectancies regarding career and other life goals. For example, Greene and DeBacker (2004) pointed out a study by Astin and Nichols (1964) who examined the life goals of high achievers among male as well as female students, and found sex differences commensurate with 1960's stereotypes: "Men reported more interest in careers in science and technology and more concern with attaining prestige than did women. Men also expected to make more money than women" (Greene & DeBacker, 2004, p. 94).

In their 1974 co-edited book, Atkinson and Raynor (1974) introduced an extension of the expectancy x value framework to specifically include future perspective and task instrumentality as a motivational component:

> To this earlier formulation, restricted as it was to *the psychological present,* must now be added a major elaboration of the theory of achievement motivation in terms which embrace *the psychological future*, the impact on motivation for some present activity of perceiving its **instrumental** relationship, as a step in a longer path, to more distant future goals and threatening consequences…(my bolding, p. 5)

More specifically, Raynor (1974) made a distinction between achievement tasks with no perceived connection to the future, which he called "noncontingent paths," and

achievement tasks with perceived future connections, which he called “contingent paths.” In noncontingent paths, success on the first task is not a prerequisite to striving for success on the next task, because in this case success on a present task has no *instrumental value* for future success. Even if the person fails in a task, he or she may go on to another task. So the strength of the motive to strive for success in the first task in such a path is not expected to be any different than the motive to succeed on a single isolated task. However, in a contingent path of achievement tasks, success in the first task is necessary in order to aspire for success in the next task, etc. If one fails, one may not continue on the path, and cannot strive for success on the next task. This type of instrumentality was assumed to intensify the total (i.e. intrinsic plus instrumental) achievement motivation.

In two studies with students from introductory psychology courses from the University of Michigan, Raynor (1970) confirmed his hypothesis based on his elaborated theory of achievement motivation. His hypothesis was that current academic performance of the students would be a joint function of the students’ achievement-related motives, and their conception of the relationship between their grades and their future career success. He found that students high in the achievement motive (n Achievement) and low in test anxiety received higher grades when they perceived good grades in a college course to be instrumental to their future career success, than when they did not perceive good grades as related to their future career success.

In another study with students enrolled in introductory psychology classes at the State University of New York at Buffalo, Raynor and Rubin (1971) found further evidence about the effects of future orientation on motivation. Their hypothesis was that

people high in motive to succeed and low in the motive to avoid failure ($M_S > M_{AF}$) would be more motivated to do well, and have higher achievement in an activity of a contingent, rather than non-contingent path. On the other hand, people low in the motive to succeed and high in the motive to avoid failure ($M_S < M_{AF}$) would be more inhibited and have lower achievement in an activity of a contingent, rather than non-contingent path. The hypothesis about people whose motive to succeed and to avoid failure was approximately equal ($M_S \approx M_{AF}$) was that their strength of achievement motivation would not be affected by future orientation, and their performance would not differ in either contingent or non-contingent paths. Results confirmed predictions. Participants in the $M_S > M_{AF}$ group answered significantly more problems correctly in the contingent than in the noncontingent condition ($p < .05$), and participants in the $M_S < M_{AF}$ group answered significantly fewer problems in the contingent than in the noncontingent condition ($p < .025$). Also, the number of questions answered correctly by participants in the $M_S \approx M_{AF}$ group was not significantly affected by the contingent or noncontingent condition.

Later Achievement Motivation Models and Future Dimensions

One currently influential expectancy x value model is that of Eccles and Wigfield and colleagues (Eccles, 1983, Eccles, Wigfield, Flanagan, Miller, Reuman, & Yee, 1989; Wigfield, 1994; Wigfield & Eccles, 1992, 2000). Similarly to Atkinson's (1974) model, achievement behavior is predicted by two major constructs: expectancy and value. However, a major difference between the two models is the prominent role accorded to future dimensions via the constructs of "utility value" as well as distal (and proximal) goals in the Eccles (1983) model. Eccles (1983) and Eccles et al. (1998) defined value as

consisting of four components, with each component being potentially able to influence achievement behaviors such as achievement, persistence, and choice. The four components of value, according to this model, are *attainment value* (or importance of doing well on a task), *intrinsic value* (the enjoyment gained from doing a task, similar to intrinsic motivation in Self-Determination Theory (Ryan & Deci, 2000)), *utility value* (usefulness, i.e. specifically future-oriented, such as ”How useful is high school math for what you want to do after you graduate and go to work?” and more general utility, such as “”How useful is what you learn in high school math for your daily life outside school?”), and *perceived costs* (what a person has to give up to do a task, and the anticipated effort needed to complete the task).[5] As mentioned earlier, the component “utility value” captures the missing future link in Atkinson’s (1974) model, and is somewhat similar to the “instrumentality” construct added in Raynor’s (1974) elaborated model of achievement motivation, although “instrumentality” is often conceptualized as being geared specifically to the future, whereas “utility value” contains both future as well as more general utility perceptions. In addition to incorporating a future-oriented component through its value construct, the Eccles (1983) model depicts long range (as well as immediate) goals as influencing utility value (as well as other types of value), and achievement behaviors.

Research based on Eccles’ (1983) new expectancy x value formulation (e.g. Wigfield et al., 1997) has given future-oriented motivational factors a central place via the introduction of the constructs of utility value and long range goals.

In a recent longitudinal study of children’s competence beliefs and subjective task values, including utility value, Wingfield et al. (1997) investigated the change over 3

[5] From Wigfield, 1994.

years in elementary children's competence beliefs and subjective task value in math, reading, instrumental music, and sport. The authors found positive relationships between children's competence beliefs and their ratings of utility value and importance of the different activities, and this relationship was much stronger among the older than the youngest children. Because of the correlational nature of the study, it was not clear whether the children came to value those tasks at which they believed they were competent, or whether their competence beliefs developed to match their utility values as they grew older. However, the study demonstrated that utility value, representing a future dimension, was found to be an important factor in proximal achievement motivation.

In another study based on the Eccles (1983) model, and utilizing data from the SIMS (Second International Mathematics Study) database, Ethington (1991) wanted to find which variables were most predictive of male and female's intentions to study more mathematics among 8th graders in the United States. The author found that utility value, future goals and self concept had the strongest direct influence on the females' intention to study math. Items measuring utility value included both specifically future-oriented statements such as "It is important to know mathematics in order to get a good job," and more generally utility statements, such as "mathematics is useful in solving everyday problems." Future goals were measured by one item, "I would like to work at a job that lets me use mathematics" (Ethington, 1991, p. 170). Based on her results, the author highlighted the importance of working with all students in late elementary school and junior high school to increase their awareness of the mathematical demands of many quantitative fields that students might aspire to, and work especially with females who

(because of social expectations) might rule out aspirations involving fields involving mathematical knowledge (Ethington, 1991, p. 169). This study demonstrated that present intentions to study more math are related to future goals and to utility value.

Achievement Goal Motivation and Future Dimensions

In contrast to achievement motivation theorists who have tended to study the multi-faceted aspects of motivation within the expectancy x value framework, achievement goal theorists have focused specifically on the impact of goal orientation approaches on students' achievement motivation. Pintrich & Schunk (2002) have defined goal orientation theory[6] by contrasting it with goal setting theory: "In contrast to…goal setting theory, which focuses on specific…goals (e.g. get 10 problems correct), goal orientation theory is concerned with *why* individuals want to get 10 problems correct, and how they approach and engage in this task" (my italics, p. 213). Although goal orientation theories vary somewhat (Pintrich & Schunk, 2002), they all share an interest in exploring two basic goal orientations that have been defined by the use of various terminology. These orientations can be summarized as learning and performance goal orientations (Elliot & Dweck, 1988), although other labels have been applied, such as mastery and performance goal orientations (Ames & Archer 1988), and ego and task goal orientations (Nicholls, 1984). Achievement goal theory posits that learners' purposes when facing a task include *learning goals* which lead learners to seek mastery over the material and to improve their work relative to themselves, and *performance goals*, which lead learners to strive to look good in relation to others (or to avoid looking bad, or "stupid"), or to outperform others without seeking true mastery of the material at hand.

[6] Despite the use of the term "theory," there are a number of such theories that differ somewhat from each other. The reason for the use of the term "theory" in the singular, however, is that all these theories share very similar premises, although they may use slightly different terminology.

Learners' achievement goals have been shown to be related to their cognitive engagement in and achievement on academic tasks, with learning goals being predictive of more adaptive engagement and achievement outcomes, such as self-regulation, deep strategy use and higher achievement, and performance goals being predictive of more maladaptive cognitive engagement and achievement outcomes, such as shallow processing and lower achievement (Ames & Archer, 1988; Meece et. al., 1988, Miller et. al., 1993, 1996; Nicholls, 1989; Nolen, 1988; Greene & Miller, 1996; DeBacker & Schraw, 1995; DeBacker & Nelson, 2000; Pintrich & Garcia, 1991).

Performance goals have been further subdivided into *approach performance goals*, under which students approach a task so that they can look good or outperform others, and *avoidance performance goals*, under which students attempt to avoid looking stupid, unable or incompetent, and that leads them to avoid the task altogether (Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997; Pintrich, 2000). Although research has shown that learning goals still offer well-documented adaptive learning outcomes, approach-performance goals (especially when coupled with learning goals) have also shown some adaptive learning outcomes (Linnenbrink & Pintrich, 2002). This subdivision of performance goals has been extended to include an entire 2 x 2 model for both mastery as well as performance goals (Elliot & McGregor, 2001), resulting in four goal patterns: mastery-approach (e.g. strive to learn the material), mastery-avoidance (e.g. strive to avoid making mistakes), performance-approach (e.g. strive to look competent in comparison with others), and performance-avoidance (e.g.strive to avoid looking incompetent). In addition, some researchers have adopted a multiple-goals perspective, investigating the impact of goals other than learning and performance goals, such as

pleasing the teacher or pleasing the parents goals (Wentzl, 1989; 1991; Miller, Greene, Montalvo, Ravindran & Nichols, 1996).

From the perspective of traditional goal orientation theory, the future did not figure prominently (Miller & Brickman, 2004), because it was thought that students are amply motivated by either proximal learning goals (i.e. the desire to improve knowledge, skill and competence) or proximal performance goals (i.e. the desire to demonstrate competence or avoid appearing incompetent). However, Nicholls, Patashnick and Nolen (1985) found a strong relationship between proximal goal orientation and future-oriented perceived reasons for education. Moreover, in a series of research combining achievement goal theory variables and future-oriented variables based on FTP/FTO and expectancy x value models of achievement motivation, Miller and colleagues (Miller et al., 1996, 1999; Greene et al., 1999; DeBacker & Nelson, 1999) have demonstrated that adding future-oriented variables, such as future goals and perceptions of task instrumentality to traditional goal achievement theory, clearly shows that there is a relationship between future goals or perceptions of instrumentality (i.e. students' perceptions of the extent to which current school tasks were instrumental to attaining their personally valued future goals) and adaptive proximal learning goals.

Miller et al. (1996) examined engagement in academic work from a multiple goals perspective. Participants were 297 high school students in grades 10-12, enrolled in various advance mathematics classes who completed a self-report instrument. Using correlational and regression methods, the authors found support for their inclusion of future goals as an important predictor of proximal engagement and achievement variables. Future consequences were positively correlated with every single other variable at *p*

< .001, and the correlation values went from $r = .21$ to $r = .41$. Furthermore, the regression analyses indicated that future consequences were statistically significant contributors to the explanation of variance in deep processing, effort, persistence, and achievement.

In a path analysis study investigating how classroom perceptions and motivation influence high school students' proximal cognitive engagement and achievement, Greene et al. (2004) found support for the hypothesized importance of student perceptions of task instrumentality, a future-oriented variable. Study participants were a diverse group of 220 high school students from the Midwest, enrolled in English classes taught by three different teachers. They completed a series of instruments during a three-month period, and in addition, an achievement measure was collected in the form of percentage of course points earned for the fall semester in the class. Results showed that perceptions of instrumentality (a future component in this study indicating the degree to which students perceived class work to be important for their future) predicted mastery goals ($\beta = .44$, $t = 7.49$) but did not predict performance goals, and perceptions of instrumentality also predicted strategy use ($\beta = .27$, $t = 3.85$), and thus also had an indirect effect on achievement, because strategy use was a significant predictor of achievement ($\beta = .15$, $t = 2.08$).

DeBacker and Nelson (2000) conducted a study investigating factors affecting gender differences in motivation to learn science. The study involved 242 public high school students in grades 10-12 enrolled in science classes, and utilized self-report measures. Results indicated that higher achievement and choice of harder science classes were linked to perceived instrumentality and valuing of all types (including utility value

as well as intrinsic value), and that among girls, perceived instrumentality may play a particularly important role in science achievement and choice of hard science classes. In addition, higher achievement and harder science were related to both learning and performance goals, which prompted the authors to suggest, that "there are advantages to holding some externally focused academic goals. Students will unavoidably encounter aspects of instruction in science, as in all domains, that are not intrinsically motivating to them. When that occurs, their willingness to engage in learning may be highly determined by…the extent to which they see the task as related to valued future goals…." (p. 251).

Further evidence for the importance of the future dimension to achievement goal motivation was uncovered in another study by Greene et al. (1999). The authors based their study on the expectancy x value model of Eccles and colleagues (i.e. Eccles 1983; Eccles and Wigfield, 1995; Eccles, Wigfield, Harold, and Blumenfeld, 1993), but added additional variables to the model, including learning goals, performance goals, and future goals. Self-report measures were administered to 366 high school students, and two achievement measures were collected: one self-report measure of effort in math class, and the percentage of course points earned in the math classes participating in the study.

Future goals were found to have significant correlations with achievement (r = .26), effort (r = .37), learning goals (r = .38), perceived ability (r = .24), utility value (r = .26), attainment value (r = .37), and intrinsic value (r = .25). Furthermore, regressions including future goals as a predictor of both effort and achievement strongly supported the predictive role of future goals in achievement motivation.

Finally, Miller, DeBacker, and Greene (1999) hypothesized that when academic tasks are seen as relevant to the attainment of self-chosen future goals, those goals lend both intrinsic value (i.e. satisfaction from mastering the task itself), and extrinsic value (satisfaction at being one step closer to attaining the future goal) to the academic task. To test their hypothesis, the authors asked 180 college student participants, all in a teacher education program, to fill out a self-report survey. Correlations among the variables indicated that learning goal and instrumentality scores had a significantly high and positive correlation with each other ($r = .72$, $p < .05$). Learning goal and instrumentality also had significant correlations with intrinsic and extrinsic valuing (from a low of $r = .61$ to a high of $r = .74$; $p < .05$). Performance goal was not correlated with perceived instrumentality, but had a significant, albeit weak, negative correlation with both intrinsic and extrinsic valuing ($r = -.15$, and $r = -.16$, respectively). Intrinsic and extrinsic valuing were moderately and positively correlated with each other ($r = .59$, $p < .05$).

Two regression analyses further indicated that perceived instrumentality, a future-oriented variable, significantly predicted both intrinsic and extrinsic proximal valuing (even when controlling for learning and performance goals). Although the relationship between instrumentality and extrinsic valuing may be somewhat expected because of the external/occupational dimension in many future aspirations, the relationship between instrumentality and intrinsic valuing is particularly interesting, and supported by intrinsic goal theorists (Csikszentmihalyi & Larson, 1984; Ryan, Connell, & Deci, 1985; Ryan, Connell, & Grolnick, 1992), FTP/FTO theorists (Nuttin, 1984, 1985), and achievement motivation theorists (Raynor & Entin, 1982).

Intrinsic Motivation Theories and Future Dimensions

Self Determination and Future Dimensions

Research from the Basic Needs sub-theory perspective in Self Determination Theory provides further evidence that future-oriented goals have a significant impact on motivational and psychological factors in people's present-day lives, thus supporting Miller and Brickman's (2004). As mentioned earlier, although researchers working from the premises of the Basic Needs sub-theory have identified a differential impact of extrinsic versus intrinsic future aspirations on motivational and psychological factors in the present, Miller and Brickman (2004) modeled their future goals in a holistic manner, likely due to the scarcity of research about future and proximal goals in academic environments. Because one of the goals of the present study is to test the differential impact of extrinsic versus intrinsic future goals on proximal subgoals and task instrumentality in educational environments, it is important to review research supporting this research goal.

Working from the Basic Needs perspective of Self Determination Theory, Kasser and Ryan (1993) developed and tested the "Aspirations Index," a measure of a number of distal aspirations that are conceived of as either intrinsic or extrinsic in nature, and its relationship to various outcomes indicating present well-being in three separate studies. Each study employed between 118-198 college students, most of them in introductory and upper level psychology courses (in studies 1 and 2), and a mix of high school students and freshmen college students (in study 3). The studies employed self-report measures, analyzed by correlation, regression, and MANOVA methods. Taken together, these studies revealed that the content of the participants' aspirations predicted their well-

being above and beyond general aspirations: Strong aspirations for self-acceptance and community feelings (i.e. intrinsic aspirations) were associated with greater self-actualization and vitality, while strong future aspirations for financial success (i.e. extrinsic aspirations) were related to lower psychological adjustment in the present. Also, people who favored self-acceptance and affiliation to other aspirations, showed less anxiety and depression, and those who favored financial success aspirations to other aspirations tended to be more control-oriented. Gender differences were also observed, with women rating both the importance and chances of community feeling and affiliation higher than did men. Women also had higher scores than men on the importance of self-acceptance. In summary, when extrinsic aspirations for financial success dominated, rather than intrinsic aspirations for affiliation, self-acceptance, and community feeling, worse psychological adjustment was found, including a much stronger controlled (as opposed to autonomous) orientation.

To further examine the issue of contents of aspirations and their relationships with various psychological adjustment variables, Kasser and Ryan (1996) conducted two additional studies (one with 100 adults, the other with 192 undergraduate psychology students) with an expanded Aspirations Index that included more aspirations especially on the extrinsic aspirations side. Aspirations that were classified as intrinsic included affiliation (relatedness), community feelings (helpfulness), physical fitness (health), and self-acceptance (growth). Aspirations classified as extrinsic included financial success (money), social recognition (fame), and appealing appearance (image). On the basis of self-report measures, and correlational and regression methods, the authors reported results similar to their 1993 study. A factor analysis supported the expanded Aspiration

Scale's structure, with the individual domain scores for the hypothesized intrinsic and extrinsic aspirations falling on two separate factors, as hypothesized. The centrality of intrinsic goals was positively associated with well-being and negatively with distress, whereas the opposite was true of extrinsic goals. These results were similar across adult as well as college samples.

This pattern of results was confirmed by studies with adolescents. For example, Williams, Cox, Hedberg, and Deci (2000) found evidence that extrinsic, versus intrinsic, distal aspirations were predictive of high school students' various at-risk behaviors in the present. Participants were high school students in grades 9-12 (N = 141 in study 1, and N = 271 in study 2). In study 1, a t-test between the results of smokers and non-smokers revealed that smokers had significantly higher extrinsic values than nonsmokers (Ms = 49.2 versus 45.5 respectively), t (139) = 1.99, $p < .05$. In other words, smokers valued the extrinsic aspirations of wealth, fame, and image much more than the nonsmokers. A path analysis in study 2 revealed that strong extrinsic aspirations were direct predictors of risk behaviors ($\beta = .18$, $p < .01$).

Although these studies revealed a consistent pattern of relationships between extrinsic and diminished well-being on the one hand, and intrinsic and increased well-being on the other, researchers in the Self-Determination Theory tradition wanted to find out whether this pattern could be extended to cultures other than those in the United States. In an effort to answer that question, Ryan, Little, Sheldon, Timoshina, and Deci (1999) compared samples of American and Russian participants and their perceptions of aspirations and psychological well-being. Their total sample consisted of 299 university students: 183 Russian students (80 males and 103 females), and 116 American students

(47 males and 69 females). Various statistical analyses showed that both the intrinsic and extrinsic aspirations and the well-being outcome measures had equivalent measurement properties, and showed similar correlational pattern across gender and cultures. The most important finding, however, was that in both the Russian and U.S. samples, the higher importance that the participants accorded to extrinsic (relative to intrinsic) aspirations, the more they reported lower well-being. In the American sample this effect was equally strong for both men and women, but in the Russian sample this effect was strong for Russian men and weaker for Russian women. However, despite this somewhat weaker relationship between extrinsic/lower well-being (and intrinsic/higher well-being) among Russian women, there was no evidence of any positive association in any group between a strong extrinsic orientation and well-being.

Optimal Experience Theory and Future Dimensions

Csikszentmihalyi and colleagues (Csikszentmihalyi, 1990, 2000; Seligman & Csikszentmihalyi, 2000; Nakamura & Csikszentmihalyi, 2001; Csikszentmihalyi & LeFevre; Wong & Csikszentmihalyi, 1991) have been interested in the more affective aspects of intrinsic motivation, that Csikszentmihalyi (1990) called the Theory of Optimal Experience. This theory, emanating from humanistic psychological traditions and drawing on ancient Greek philosophers' quest for the causes of happiness, has sought to identify factors involved in making people experience happiness. Among factors involved in happiness, Csikszentmihalyi (1990) has identified "Flow" as the most central of all factors. Flow was defined as "the state in which people are so involved in an activity that nothing else seems to matter…." (p. 4). Based on qualitative research methods, as well as a self-report research method entitled the "Experience Sampling

Method" (ESM), involving people responding to pagers and registering their feelings and actions when the pager beeped, Csikszentmihalyi and colleagues (e.g. Csikszentmihalyi, 1990) have identified eight major factors present while people are in a state of flow.

Although Csikszentmihalyi originally focused on flow-producing proximal experiences, he and his colleagues soon discovered the fact that in educational environments, students generally feel sadder and less motivated than usual when they study (than when they do other things), regardless of the fit between the level of challenge of the material and the student's skill level (Csikszentmihalyi & Larson, 1984; Csikszentmihalyi & Nakamura, 1989), and that "learning in school is not something young people find pleasant" (Wong & Csikszentmihalyi, 1991 p. 545). Csikszentmihalyi and Larson (1984) attributed this finding to a general devaluing of school-related learning on the part of adolescents, but the finding raised the possibility that intrinsic school-related motivation may depend, in part, on perceiving school tasks as having personal value or meaning beyond the specific present time in which they occur (Miller & Brickman, 2004). Indeed Wong and Csikszentmihalyi (1991) have come to the conclusion that a better understanding of intrinsic (as well as extrinsic) motivation in school environments can be gained only from investigating a combination of *two* motivational orientations: an orientation to long-term goals, and an orientation to proximal task involvement.

In their 1991 study, Wong and Csikszentmihalyi examined the relationships among "work orientation," "experience while studying," and scholastic achievement. "Work orientation" was conceptualized as a combination of personality traits that were interpreted as representing high-level long-term aspirations such as aspiring to

accomplish difficult tasks, willingness to expend effort to attain excellence, etc. "Experience while studying" was a "flow" instrument, designed with Csikszentmihalyi's ESM procedure, and scholastic achievement was measured by GPA of all courses, PSAT scores, and difficulty level of math courses taken. Results were supportive of the authors' hypothesis that "there are indeed two kinds of motivation in scholastic achievement, one directed toward long-term goals (work orientation), the other directed toward the enjoyment of experience while one studies (intrinsic motivation while studying)" (p. 563).

In addition, results also suggested that there was a relationship between the long-term goals and some of the flow factors. Work orientation, conceptually a long-term future goals variable, had a significant positive effect on lack of self-consciousness and satisfaction with performance, two important factors in flow ($\beta = .14$, $p < .05$ and $\beta = .22$, $p < .05$ respectively). Work orientation also had a significant positive effect on amount of time devoted to studying, and on GPA ($\beta = .30$, $p < .01$; $\beta = .31$, $p < .001$ respectively), as well as a significant positive effect on the difficulty level of the mathematics courses taken in the 4th year of high school (but not in the earlier high school years), $\beta = .29$, $p < .05$.

In contrast, intrinsic motivation, one of the major factors in the flow instrument, predicted only level of difficulty of the mathematics courses taken exclusively in the 2nd and 3rd year of high school ($\beta = .31$ and $\beta = .30$ respectively, both at $p < .05$). Unselfconsciousness as well as concentration, two other factors in the flow instrument, predicted GPA ($\beta = .18$, $p < .05$; $\beta = .26$, $p < .01$ respectively), thus implying that work orientation also had both a direct (see above), and an indirect influence on GPA through

unselfconsciousness, a flow indicator. These results point to relationships between long-term and immediate motivational factors especially in school settings.

This combination of factors (i.e. long-term and proximal) may be responsible for a much expanded and wider view of motivation on the part of Csikszentmihalyi and his colleagues, articulated in a more recent vision of "Positive Psychology." The aim of positive psychology, according to Seligman and Csikszentmihalyi (2000), is to change the focus of psychology from dealing with repairing people's problems to building positive life qualities and experiences. The definition of positive psychology is very telling, because it involves an expanded view of motivation, which includes past, present and future concepts:

> The field of positive psychology at the subjective level is about valued subjective experiences: well-being, contentment, and satisfaction (in the past); **hope and optimism (for the future)**; and flow and happiness (in the present). At the individual level, it is about positive individual traits: the capacity for love and vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality, **future mindedness,** spirituality, high talent, and wisdom…. (p. 6, my bolding)

Indeed, Csikszentmihalyi (2000) stated when responding to a critic that "I do not claim that flow is the only means of reaching happiness…other means for controlling subjective states [are]…optimism, hope, and …mental discipline" (p. 1163). Hope and optimism and their documented benefits are by definition future-oriented, and there are suggestions that flow can be seen as part of the feelings that an optimistic person is experiencing (Peterson, 2000).

On the individual level, originality and creativity (traits often associated with flow) have been shown to be strongly tied to long-term goals not only of the individual but also of the field that he or she is part of. For example, in a case study of the Nobel Prize

winning chemist Linus Pauling, Nakamura and Csikszentmihalyi (2001) demonstrated how Pauling's creativity was inextricably linked to long-term goals and visions imposed by the field of chemistry as a whole, and by the individuals that Pauling came into contact with during his career. Thus, there seems to be a strong relationship between future goals and proximal motivation and accomplishments.

Attribution Theory and Future Dimensions

Attribution theory (Weiner, 1986) assumes that people's major motivational force is the goal of understanding and mastering their environment and themselves. Toward that end, they tend to be naïve scientists, who try to understand the causal relationships among events in their environment, as well as the causal determinants of their own behavior and other people's behavior. Thus, when things happen to them, people tend to ask themselves *why* they happened, and their explanation of why something happened to them (i.e. their "attribution") has been shown to influence subsequent motivational and behavioral aspects in their lives (e.g. Reyna & Weiner, 2001; Graham, Weiner, & Benesh-Weiner, 1995; Weiner, 1993; 1991; Stipek, Weiner, & Li, 1989). In his attributional model, Weiner (1986) portrays the antecedents to attributions as consisting of two major factors—environmental (i.e. situational features, social norms or specific information one receives), and personal factors (i.d. self-schemas, prior knowledge, attributional bias, etc.). The attributions themselves (such as to ability, effort, luck, task difficulty, etc.) are organized into three causal dimensions: stability (i.e. to what extent a person believes that an attribution is stable and unchangeable), locus (i.e. to what extent a person believes that he/she is responsible for what happened, or if outside factors were responsible), and controllability (to what extent a person feels that he/she has control over

the causal factor perceived to be responsible for what happened). These attributions, in turn, affect both psychological consequences such as expectancy for success, self efficacy beliefs and affect, as well as behavioral consequences, such as choice, persistence, level of effort and achievement.

Although much of the research in the attributions area has focused on proximal factors, such as on how different attributions affect proximal psychological and behavioral consequences (see research mentioned above), some of the research has investigated how attributions affect long-term or future psychological or behavioral factors.

For example, Stanley and Standen (2001) studied how subsequent expectancies and distal goal setting by staff members working with intellectually disabled (ID) adults is altered following attributions. The authors explained that staff working with people with ID are often asked to set future goals regarding their patients' progress, and then to evaluate the patients' actual progress against the future goals that they set for the patients. Consistent with attribution theory (Weiner, 1986), if staff members' evaluations reveal that they have achieved the goals (i.e. no surprise), they do not tend to engage in spontaneous attributions. However, if the outcome is surprising, such as surpassing a goal by far, or such as doing much more poorly than expected, staff members either spontaneously, or because of their supervisors' request, engage in an attributional process to explain the results. Stanley and Standen (2001) wanted to find out, if, following an attributional process (as a result of such surprising results), the staff workers would alter their subsequent expectancies and future goals for their patients. Based on attribution theory, their hypothesis was that "given an unexpectedly successful outcome, …workers

will have a higher expectancy of future goal attainment if they attribute this success to stable factors rather than to variable factors….[on the other hand,] an unexpected failure will result in …workers offering lower forecasts of goal attainment if they attribute the failure to stable rather than variable factors" (p. 353).

Participants were 67 experienced staff members in a community health trust, working with 148 clients with ID. After goals were set, the goal achievement was evaluated a number of times. Following evaluation, staff members set new goals for the ID clients. *T*-tests (significance levels between $p < .001$ and $p < .012$) indicated that attributions in the case of the unexpected outcomes followed the hypothesized outcomes as predicted, thus indicating a tight relationship between future goals and proximal goals and attributions.

. Finally, Zaleski (1988) combined variables from attribution and FTP theories, and investigated the relationship between attributions and future goals in two studies with 331 and 392 student participants respectively. The data analysis was based on self-report questionnaires about the students' goals for various time ranges (i.e. one week, one month, one year, 10 years, and a lifetime), and their attributional patterns in case of success or failure. Results based on a series of ANOVA statistical analyses suggested that there was a definite relationship between attributions and the time element. The farther in the future a goal was placed, the less participants believed that external factors accounted for its successful attainment (they believed that internal factors were more responsible), and the more they believed that external factors (rather than internal) accounted for their failure to attain it. In other words, what has been called the "hedonic bias," or the tendency of people to take credit for success and ascribe failure to external

factors, showed a tendency to increase for goals set in the distant future as compared with proximal goals. An examination of the specific components of the external attributions involved in the contribution to the time-related effects revealed that the attribution of success to goal ease decreased over time (F 4, 326 = 6.14, $p < .001$; Ms = 3.06, 2.71, 2.15 and 1.92 for one week, one month, one year, 10 years, and life, respectively). On the other hand, the attribution of failure to goal difficulty increased over time (F 4, 326 = 2.37, $p < .05$; Ms = 4.09, 4.07, 4.81, 4.65, and 4.86).

Taken together, these results indicate that present attributions are significantly related to future factors.

Social Cognitive Theory and Future Dimensions

As indicated in an earlier section, Social Cognitive Theory is a multi-dimensional motivation theory that sees people as goal-directed (that is, seeking to achieve personally-valued goals judged to bring about desired outcomes and avoid seeking goals judged to bring about undesired outcomes), and sees motivation as a result of mutual interactions among individual cognitions, behaviors, and the environment. Although a lot of research from this theoretical perspective has been focused on proximal task-related goals, there are a number of research areas that have used Social Cognitive Theory framework to examine motivational variables from a more distal, future goal perspective. These areas include Delay of Gratification, Career Self-Efficacy, Goal Setting, and Future-Oriented Motivation and Self-Regulation. This part of the review will examine each one of the mentioned research areas.

Delay of Gratification

Traditionally, self-efficacy theory has been used to study the effect of perceptions of efficacy on proximal task-related goals (see review by Zimmerman, 1995). However, in an overview of self-regulated learning and academic achievement that was written as an introduction to a special journal issue on self-regulation, Zimmerman (1990) referred to problems in self-regulation that "typically arise when discrepancies occur between short-term outcomes and long-term outcomes. For example, during academic studying, students must sacrifice immediate recreational time for the possible eventual rewards…. Their willingness to make this sacrifice demands both self-confidence in one's ability to learn and the personal resolve to delay gratification—two [important] self-regulative capabilities…" (p. 12). Traditional studies of delay of gratification (see Mischel, 1974; Mischel et al., 1996) involved the manipulation of amount of rewards, in conjunction with time perspectives, such as offering children a candy in the immediate present, versus offering them two candies at a more distal time.

This theoretical and research framework was extended to assess delay of gratification (seen as a sub-function of self-regulation) in learning environments. The inclusion of the study of delay of gratification within a self-regulatory and social-cognitive perspective has brought with it an interest in more future-oriented self-regulation, and has refocused attention on future dimensions in self-regulation.

In a series of studies, Bembenutty and colleagues (e.g. Bembenutty & Karabenick, 1998; Bembenutty et al., 2004) have investigated the self-regulated function of delay of immediate gratification in favor of learning (e.g. deciding to continue doing one's homework based on valued future outcomes, rather than watching a favorite television

program and receiving an immediate reward or gratification). They have found support for their hypothesis that delay of gratification, a future-oriented variable, is predictive of other adaptive proximal academic and motivational outcomes.

Bembenutty and Karabenick (1998) developed the Delay of Gratification Scale (ADOG) that helped measure this construct and 'tease out" the relationships between it and other motivational and achievement factors. The scale presents a series of scenarios that students may encounter, and each scenario is followed by two response alternatives: one represents a short-term goal, and the other—a long-term goal. For example, faced with either studying the night before the test or going to a party, students were asked to indicate whether they would "go to a party the night before a test for this course and study only if you have time (short-term goal)," or "study first and party only if you have time (long-term goal)." The authors then had 369 college students in introductory Psychology take the ADOG, as well as the MSLQ (Pintrich et al., 1993), which assesses students' use of various learning and school-related strategies. Results indicated a significant positive relationship between delayed gratification as measured by ADOG and most learning strategies as measured by the MSLQ. In particular, ADOG correlated with students' reported regulation of their time and study environment ($r = .62$, $p < .001$) and with effort ($r = .58$, $p < .001$).

In a similar study with 102 college students enrolled in undergraduate mathematics classes, Bembenutty (1999) found that academic delay of gratification correlated significantly and positively with the students' beliefs that the delay alternatives were more important, useful, interesting, and enhance social and academic endeavors as compared with the no-delay alternatives. Delay of gratification was also positively

related to self-efficacy enhancement. Task-goal orientation was positively related to all of the delay of gratification motivational determinants, and to the motivational regulation strategy of self-efficacy enhancement, and stress-reducing actions.

The conceptualization of delay of gratification as being related to self-regulation received further support from a study by Bembenutty and Zimmerman (2003). Participants were 58 college students in an introductory mathematics course who filled out self-report questionnaires pertaining to motivational variables and self-regulatory variables. The study relied on a path analysis. Although the number of participants was relatively small, the study provided additional support for earlier studies with larger numbers of participants, pointing at the important part that the future dimension of delay of gratification plays in self regulation and motivation. A correlation matrix showed that correlations between delay of gratification and all other motivational variables were significant at $p < .05$. Delay of gratification was most highly correlated with self-regulation (r = .48), with homework completion ($r = .44$), and with self-efficacy ($r = .42$). It was also correlated with intrinsic interest ($r = .31$), outcome expectancy ($r = .32$), and with midterm and final course grades ($r = .28$ and $r = .29$ respectively). The path analysis indicated that delay of gratification predicted self-regulation ($\beta = .34$), and that self-efficacy and outcome expectancy both predicted delay of gratification ($\beta = .41$ and $\beta = .31$ respectively). Thus, delay of gratification, or future-oriented cognitions, was shown to directly influence self-regulation, and was also shown to mediate the relationship between self efficacy and self regulation on the one hand, and between outcome expectancy and self-regulation, on the other.

In summary, academic delay of gratification, which involves consideration of a future dimension on the part of the students, was shown to have an important effect on proximal motivational and self-regulatory variables.

Career Self-Efficacy

Betz and Hackett (1981) were interested in investigating whether self-efficacy theory would enhance existing understanding about the distal goals involved in career choices, and looked at how self-perceptions of efficacy or ability might influence choice of careers (earlier in their research the authors referred to "occupations," and later they expanded the scope of their work, and preferred the term "careers," which has been used throughout this review). Using correlation and regression analyses, the authors examined gender differences in perceived efficacy, and the relationship between career self-efficacy and career options that college students were considering. Participants were 134 female and 101 male undergraduate college students who were asked to complete self-report instruments. Results indicated that whereas the men's career self-efficacy did not differ across traditional male/female occupations, the women's career self-efficacy was significantly lower than men for "traditionally male" careers, and significantly higher than males for "traditionally female" careers. Another finding was that occupational self-efficacy and gender (as well as vocational interest) was predictive of the occupations students had considered as viable options for themselves.

Rotberg et. al.'s (1987) study investigated the interrelationships between career self-efficacy, vocational interests, gender, sex role orientation, ethnicity, and socioeconomic status. The participants were 152 community college students. Students used self-report instruments, and regression analyses were used to interpret the data.

Results indicated that gender and sex role orientation were significant predictors of career self-efficacy (Ethnicity and SES were not predictive of either self-efficacy or range of occupations considered). In addition, career self-efficacy predicted the range of careers considered, and occupational self-efficacy and career interest were interrelated.

Similar results, confirming the importance of self-efficacy, as well as other personal-environmental factors such as gender and age, to prediction of future goals and careers were obtained by Fouad and Smith (1996), based on an expanded model of career self-efficacy of Lent, Brown, and Hackett (1994). Fouad and Smith (1996) decided to test the career self-efficacy model on middle school students in a low-performing school. Participants were 380 7^{th} and 8^{th} grade students in an inner city middle school in a large Midwestern urban city, who were administered a self-report instrument. The data were analyzed through a path analysis.

Fouad et al.'s final model (following one revision) indicate findings consistent with Social-Cognitive Theory (Bandura, 1986) and with Career Self-Efficacy Theory (Betz & Hackett, 1981; Lent et. al.,1994), in respect to interactions among personal-environmental factors, and in respect to the importance of self-efficacy as a predictor for future intentions. All relationships were significant at $p < .05$. First, there were small but significant effects of gender and age on outcome expectancies and interests in mathematics and science. Older children were less interested in mathematics and science ($\beta = -.11$), male students were found to have lower interest in mathematics and sciences than did female students, and female students had higher outcome expectancies than the male students.

Second, there were strong positive paths between present perceptions of self-efficacy and future-oriented outcome expectations (β = .55), and between outcome expectations and intentions (β = .39). There was also a direct influence of self-efficacy on intentions (β = .13), suggesting that self-efficacy influences intentions both in a direct and in an indirect way, through outcome expectations. Third, self-efficacy had a strong direct influence on interests (β = .29), which, in turn, had a large effect on intentions (β = .28). The direct effect of self-efficacy on intentions was β = .13, which suggests again that self-efficacy may influence intentions to pursue math and science not only directly, but indirectly as well, through its relationship to interests and outcome expectations. The authors suggest the need for interventions based not solely on self-efficacy, but on outcome expectations as well.

The studies based on career self-efficacy theory show a significant relationship between proximal motivation variables such as self-efficacy and future goals involving careers.

Goal Setting

Modern Goal Setting Theory (Locke & Latham, 1990) has examined various properties of goals and goal setting processes in terms of Social Cognitive Theory. Goal setting is generally not concerned with life strivings, but rather with more concrete goals, whether relatively proximal or distal, that people set for themselves, or are assigned by others (Locke & Latham, 1990). Researchers in the goal setting area have been particularly interested in work motivation research (see Locke & Latham's 1990 review of the work of Taylor, 1911, 1967; Drucker, 1958, Ford, 1969, Kanfer, 1987 and others), but goal setting research has encompassed other domains as well, such as weight

management (Bandura & Simon, 1977), sports (Donovan & Williams, 2003), military service (Bagozzi, Bergami, & Leone, 2003), instruction (Kanfer & Ackerman, 1989; Kanfer et al., 1994), and education (Schunk, 1983, Zimmerman & Kitsantas, 1999; Bandura & Schunk, 1981). Because of its historical focus on work or tasks, much of the research in this tradition has been done with proximal, rather than distal, goals. However, basing themselves on Social Cognitive Theory, Locke and Latham (1990) have articulated a broad view of goal setting theory about proximal as well as distal goals:

> …a goal or purpose does not have to be in conscious awareness every second during goal-directed action in order for it to regulate action….for example…a student pursuing a Ph.D. degree does not think of that goal every minute. Once the student begins the doctoral program, he or she will normally focus on subgoals such as mastering the material in a given course, finding a thesis topic, or developing plans for reaching these subgoals (e.g. how to study; how to carry out the dissertation research). Getting the degree is the integrating goal behind those subgoals and plans. While not always in conscious awareness, the end goal is easily called into awareness…. (p. 5).

Specifically, goal setting theory, as articulated by Locke and Latham (1990), asks two major questions: 1) What is the relationship between goals and action or task performance?, and 2) What factors affect this relationship? Factors identified so far in the literature as affecting this relationship have included personal (cognitive, motivational), environmental, and behavioral ones, such as performance feedback, expectancy, self-efficacy, valence, strategies, goal choice, goal commitment, personality factors, affect, incentives, goal difficulty, clarity, prioritization, and goal proximity, among others (Locke & Latham, 1990).

Until recently, studies emanating from this tradition that have focused on goal proximity, have tended to view goal proximity in a dichotomous, “either-or”, fashion, and often asked whether proximal goals were more effective than distal goals, or vice-versa

(Locke & Lathtam, 1990). The results of these studies have been largely inconclusive, mainly for two reasons. First, the outcomes measured as a result of the goal proximity manipulations differed in the various studies (e.g. some measured motivational outcomes, such as self-efficacy, others measured performance outcomes, and yet others measured affective outcomes, etc.). Second, as Bandura and Simon (1977) had found out, some research participants who were assigned distal goals actually ended up setting proximal goals to themselves, and this spontaneous generation of proximal goals while operating under a distal goal was likely to introduce confounding elements in this type of research.

Recent goal setting researchers interested in goal proximity have sought to study the relationship, rather than the difference, between proximal and distal goals, and their research confirms Bandura's (1986) hypothesis of the relationship among performance standards, proximal goals, and distal goals.

Donovan and Williams (2003) did a longitudinal study of 100 college-level athletes competing in varsity level indoor track and field events. Participants were asked to fill out one initial questionnaire, and then weekly progress questionnaires for the next eight weeks. In the initial questionnaire, before the competitive season began, participants were asked to indicate, among other things, their goal for the first competition (competition goal), as well as their goals for the entire competitive season (season goals). In the progress questionnaires, participants were asked to indicate their performance in each event they competed in, their causal attributions for their performance for each event, their goal for the next competition, and their goal for the entire season (participants were also asked self-efficacy questions, but because all were highly self-efficacious, there was not enough variability to test this variable). Based on

the participants' responses, several other variables were computed, such as the discrepancy between a student's current competition goal and his/her actual performance level, the amount of revision that occurred in the student's season goal, and the change between the student's goal for the first competition and his/her goal for the next competition. Various regression analyses were used to find the relationships among the variables.

First, consistent with Bandura's (1986) and Bandura and Locke's (2003) notion of goal-performance discrepancies (GPD), students set their distal season goals at a level much higher than their previous best performance. Second, students set goals for the proximal initial competition slightly below the level of their previous best performance (since this was prior to the beginning of the season when they were not in top shape, this can be seen as a very realistic level of proximal goals). This provides evidence of a goal hierarchy, with distal goals set as ideal goals, and proximal goals as somewhat lower, and more readily attainable. Third, holding proximal competition GPD constant, students with a large, negative season GPD (i.e. high distal goal and relatively low performance) tended to revise their proximal competition goals upward, probably as a means of trying to elevate their performance and reduce the discrepancy between current performance levels and their distal season goal. Fourth, consistent with research demonstrating the importance of attribution on self-regulation (Weiner, 1986 see Donovan p. 388), stability attributions were found to significantly influence students' proximal and distal goal revision in response to the presence of GPD's. Students who had large GPD's and stable attributions (e.g. to ability) engaged in goal revision more than students faced with similar GPD's but attributions to unstable causes (i.e. effort or luck). Those with

unstable attributions probably figured that since the reason for the low GPD is unstable, they may have a better chance next time to improve their performance without adjusting their goals.

In a diagram that summarizes the basic relationships among achieved performance, proximal goals and distal goals for the athletes in this study, Donovan and Williams (2003, p. 385) show a clear hierarchical pattern, attesting to the importance of both proximal and distal goals in the athletes' self-regulation. Actual performance scores were the lowest in the hierarchy, followed by proximal goals for the next competition, which were set at a higher-level in the hierarchy, and, finally, followed by distal goals, which represented the highest level of achievement in this hierarchy.

Similar relationships among distal goals, proximal goals and task performance have been identified in the managerial literature. For example, Bateman et. al. (2002) did a qualitative study using self-report measures and personal interviews with 75 business owners or CEO's of U.S., Hungarian, and Thai companies. These business leaders were asked about their goals and strategies in pursuit of their goals. Although the measures and interviews did not cue the participants to any distal-proximal goal connections, the results revealed a consistent hierarchical pattern of goals, with distal (and more general) goals at the top as the driving force behind the proximal (and more specific) goals. This pattern was similar in business leaders of all three nationalities.

Kirpatrick and Locke (1996) wanted to find out whether a combination of a business leader's vision (operationalized as an explanation of the higher-level and more distally-oriented motive for performing a task, such as "improving quality"), coupled with more specific and proximally-oriented task directions from this leader, would result

in more positive motivational outcomes than manipulations involving no vision. Although the construct of "vision" can be seen to be more multi-dimensional than that of distal or future goal, it, nonetheless, arguably contains a distal component—some sort of general end goal or outcome that one is envisioning in a future time. The authors hired actors to act as leaders with vision, or with no vision (i.e. just telling participants what task they need to do). Participants were 282 third-year business students. The authors' results largely confirmed their hypotheses. A series of ANCOVA's and MANCOVA's revealed that the leader's articulation of a vision (i.e. general and distal goal) that emphasized quality improved the participants' attitudes and perceptions, and that the leader's articulation of task-related cues (i.e. proximal goals for task performance) increased the quality and quantity of the task performance, and the participants' perception of task clarity and of intellectual stimulation. The combination of vision plus task-specific cues produced superior performance as well as superior attitudes.

Future-Oriented Motivation: The Relationship Between Personal Future Goals and Proximal Subgoals

Although, as mentioned earlier, specific research on the relationships between proximal and distal, self-determined, goals in educational environments is scarce, there are, nonetheless, some studies that specifically address this relationship. This section will consist of a review of research that has specifically examined the relationships between distal and proximal goals (or subgoals) in educational environments. The available research is very supportive of the Miller and Brickman (2004) model.

In a qualitative study that investigated an early version of the Miller and Brickman (2004) model that specifies the relationships between the future-oriented and

the proximal motivational variables, Brickman and Miller (2001) investigated the relationships among the following variables based on their model: past experiences in sociocultural context (home, school, peers, media), personally valued future goals, system of proximal subgoals, perceived task instrumentality, and present task engagement. This study was carried out at an alternative high school with three students, ages 14 and 15, in the form of case studies. It consisted of interviews, self-reports, and observations.

Results were consistent with the hypothesized earlier Miller and Brickman (2001) model, and with Social Cognitive Theory predictions. The study revealed the important role that the sociocultural factors play in determining future goals, subgoals (i.e. plans of reaching the future goals) and perceptions of ability. For example, although the participants understood that a high school education is needed in order to reach future goals, on the basis of comparisons with family members and on other past and present experiences, the students had different concepts of ability, and different levels of commitment to the goal of finishing high school and reaching more distant goals. The factors of future goals, proximal goals and perception of ability, were, in turn, related to perceptions of instrumentality of school tasks, and to the proximal achievement goals reported. For example, the student who had a positive perception of ability, had a clearer future goal for her occupation and a very positive valuing of finishing high school, also had stronger learning goals, and a more self-determined intrinsic/extrinsic-introjected combination of motives. The other students had lower perceptions of ability, weaker commitment to future and proximal goals, a near lack of learning goals, and an extrinsic motivational outlook. Finally, results from the self-reported measures as well as direct

observations indicated that students' perceptions of instrumentality and their achievement goals were related to their degree of self-regulation and cognitive engagement. Predictably, the student who had high perceived instrumentality and learning goals was much more self-regulated and was found to be much more cognitively-engaged than the two other students who lacked in perceptions of instrumentality and in learning goals.

Although not working directly with the Miller and Brickman (2004) model, Schutz's (1997; 2001) research on distal and proximal goals from a social cognitive perspective provides much support for the Miller and Brickman (2004) model. In a study of distal educational goals, proximal strategies and academic performance, Schutz (1997) asked 480 high school students (grades 10-12) to fill out self-report instruments measuring the valuing of long-term educational goals (e.g. how important it is "to earn a Doctorate"), use of learning and study strategies (LASSI-HS) as indicators of educational subgoals, and self-efficacy about ability to do college work. In addition, GPA's and number of student absences were obtained from school records. A path analysis indicated that the following variables had significant ($p < .05$) positive direct effects on GPA: self-efficacy, educational subgoals (i.e. strategies), and educational goals. Number of absences had significant negative direct effects on GPA, and educational goals predicted educational subgoals. There were also significant indirect effects from educational goals to GPA, test-taking and information processing strategies, and self-efficacy. An indirect effect of educational subgoals on GPA was also found.

In another study addressing environmental and personal influences on distal and proximal goal formation, Schutz et. al. (2001) conducted a qualitative study with 8 preservice teachers, to find out about the development of their goal to become a teacher.

Consistent with Social Cognitive Theory and the Miller and Brickman (2004) model, interviews made it clear that two powerful factors involved in the adoption (or ultimate rejection) of the goal to become a teacher were past experiences in the sociocultural context and actual, enactive, experiences as a teacher in a classroom. Findings indicated that family, teachers, and peers influenced participants by encouraging, discouraging, modeling, suggesting, and exposing them to teaching situations. Enactive teaching experiences were described in terms of critical incidents that helped participants commit to pursuing the goal, or, in some cases, abandon it. The study also found support for the assertion that, depending on personal factors (themselves influenced by the socio-cultural environment), "how the goal is defined influences the subgoals that are developed and the plans, tactics, and strategies that might be used to accomplish those goals" (p. 308).

Summary of Chapter 2

Based on Miller and Brickman (2004), this chapter outlined the three variables of interest in the present study, namely future goals, a system of proximal subgoals, and perceptions of task instrumentality. Miller and Brickman (2004) based their Model of Future-Oriented Motivation and Self-Regulation on Social Cognitive Theory (SCT), and they used Self-Determination Theory (SDT) to define "personally-valued future goals," a prominent variable in their model. The prominence of these two theories in the Miller and Brickman (2004) model necessitated a review of the two theories. Following a review of SCT and SDT, chapter 2 proceeded with a review of the entire Miller and Brickman (2004) motivation model, and included the research questions and rationale for the present study, as well a literature review of the definitions and measurement of the

variables of interest to this study. The chapter ended with a review of the literature pertaining to the relationships between future and proximal motivational factors.

The review revealed that, although there is not much direct evidence to support the directional hypothesis of the present study (namely that students' future goals may predict their system of proximal subgoals, which, in turn, may predict their perceptions of task instrumentality), researchers from various theoretical backgrounds have found solid evidence of a relationship between future and proximal motivational factors. The next two chapters will include the methodology for the present study, and a discussion of the study's results, respectively.

CHAPTER 3

RESEARCH METHODOLOGY

The present study aimed to test some of the predictions from the Miller and Brickman (2004) model of Future Motivation and Self-Regulation, as well as the directions of those predictions. Specifically, the portion of the Miller and Brickman (2004) model that was tested was the hypothesized relationship among future goals, a system of proximal subgoals (including a target subgoal as well as proximal subgoals), and perceived task instrumentality. The present study was designed to test the two plausible theoretical causal models presented in Figures 5 and 5a through path analysis.

Sample

Participants

Participants were 421 student volunteers enrolled in 18 sections of a second-year English course entitled "Literary Heritage" at a large Southern urban university. Students in all the sections of this course whose instructors gave permission were asked to volunteer (there were a total of 26 regular on-campus sections). In each section, the maximum enrollment was 35 students. A total of four hundred twenty-two students volunteered to participate. One student filled out the Scantron answer sheet incorrectly, and was dropped from the study. The demographic description of the students who were retained in the present study (N = 421) was as follows: 88.6% were enrolled as full-time students, 11.4% were enrolled as part-time students, 52.5% were men, and 47.5% were women. 13.5% of the students were black, 75.8% were white, .7% American Indian/Alaska native, 3.1% Asian, 1.2% Mexican-American/Chicano, 1.4% were other Latino, and the rest were "other." Two participants did not report race. ACT scores

were as follows: 3.3% reported ACT scores between 11-15 (or SAT 500-750), 11.9% reported scores between 16-18 (SAT 760-890), 26.8% reported scores between 19-21 (SAT 900-1010), 23% reported scores between 22-24 (SAT 1020-1120), 21.4% reported scores between 25-27 (SAT 1130-1230), and the rest (9.8%) reported scores greater than 27 (SAT greater than 1230). Some students (3.8%) failed to report test scores, and personal discussions with teachers revealed that under special circumstances students may be accepted without these standardized test scores.

Sampling Method

The sampling method was a convenience sample of students enrolled in a second year English Literature course offered on a university campus during Spring 2005 that the investigator was given access to.

Procedures

Ethical Standards

Permission for the present study was sought from and granted by the IRBs of the University of Oklahoma, and the University of Memphis (see copies in Appendix C). Permission was also sought from and granted by the English Department at the University of Memphis, and by the individual teachers teaching the targeted course.

The study was conducted in the students' classrooms. Potential participants were informed of the general nature of the study, as well as of possible adverse effects, which were expected to be no different than those encountered in daily life. They were also told that anonymity and confidentiality would be strictly maintained by adhering to important guidelines including the following: having the regular teacher who teaches the class exit during the administration of the instrument, having only the investigator, a

trained educational professional, administer and collect the instruments at the end of the session, not being required to list any identifying information, such as name or code, on the questionnaires, and having the answer sheets kept in a locked cabinet and destroyed at the end of the study.

Research Protocol

Permission was given by the individual teachers of the Literary Heritage English course to conduct the present study in eighteen sections. Students in those sections were told about the nature of the study, and offered a small incentive in the form of a candy bar for their participation. After signing a consent form (detailing procedures for anonymity, confidentiality, benefits from the study, and negligible potential negative effects), students were asked to complete the "Future-Oriented Student Motivation Survey (FOSS)," an instrument containing five scales, as detailed below.

Instruments

Future-Oriented Student Motivation Survey (FOSS)

Participants were administered the "Future-Oriented Student Motivation Survey (FOSS)," a copy of which is included in Appendix B (see also sample items in Table 1). This instrument included a short demographic portion as well as five scales measuring different aspects of future- and proximally-oriented motivation. Three of the scales had been developed and used previously in the professional literature, and their psychometric properties have been considered to be adequate. These scales were the *Aspirations Index* (Kasser and Ryan, 2004), the *MSLQ* (Pintrich et al., 1991), and the *Perceived Instrumentality Scale* (Miller et al., 1999; Greene et al., 2004). The Aspirations Index was modified by dropping the expectancy question from each goal,

and by the replacement of the indirect commitment question (how much of the goal has been achieved already) with a direct commitment question (asking how committed the person is). The MSLQ was modified by the use of only 8 (out of a total of 15) subscales, and by the addition of three subscales to it, each containing five items. These additional subscales were Social Strategies, Financial Approaches, and Academic Planning. The three additional subscales were designed after extensive interviews with two expert college educators and administrators, both Ph.D.'s, who have taught students and have served in various administrative roles (including chairs of their respective departments) for more than fifty years combined. One of the experts is a professor and administrator in the College of Education at a large Midwestern university, and the other expert is a professor and administrator in the College of Arts and Sciences at a large Southern university. The Perceived Instrumentality Scale was administered unmodified.

Two scales, the *College Graduation Scale*, and the *College Instrumentality Scale*, were developed for this specific study, and were designed to measure two different plausible mediating target subgoals between the distal future goals (as measured by the Modified Aspirations Index) and the proximal subgoals (as measured by the MSLQ). The College Graduation Scale was conceptually the closest to the theoretical formulation of Miller & Brickman (2004), as it sought to gauge the strength of (i.e. students' valuing of and commitment to) the target subgoal of graduating from college. The College Instrumentality Scale was designed to measure an alternative plausible target subgoal, namely extrinsic and intrinsic college instrumentality for achieving the respective extrinsic and intrinsic future goals. Since both target subgoals were theoretically

plausible, it was decided to test them separately in two models in order to see which mediating target subgoal would fit the data better. Moreover, since it was expected that the College Graduation Scale would yield somewhat negatively skewed data (college students were very likely to indicate a strong desire to graduate from college), the College Instrumentality Scale was designed to yield data closer to normality. General descriptions of the major scales were provided earlier in Chapter 2. The purpose of this section is to give a more detailed analysis of the scales' contents, and their psychometric properties.

1. Measuring Personal Future Goals:

The Modified Aspirations Index (Kasser & Ryan, 1993, 1996, 2004)

Because of the focus of this study on the relationships between distal and proximal goals, rather than on individual differences in goal content, the nomotheic approach was taken to the measurement of future goals. The latest version of the Aspirations Index was used in a modified form (Kasser & Ryan 2004), but other versions, that provided adequate evidence of validity and reliability, were examined (Kasser & Ryan 1993, 1996; Ryan et al., 1999). The Aspirations Index was chosen for the measurement of personal future goals not only because it includes seven major (and inclusive) aspirations, but that it conceptually divides them into extrinsic and intrinsic aspirations, and thus allows for more complexity in the data analysis and in our understanding of whether the intrinsic versus extrinsic nature of the aspirations, and not only their individual content, are predictive of the other variables.

Table 1

Sample Items from the Scales used in the Present Study

Scale	Example
Modified Aspirations Index	Life-goal: To grow and learn new things. --How important is this to you? --How committed are you to reaching this goal?
College Graduation Scale	Goal: To graduate from college. --How important is this to you? --How committed are you to reaching this goal?
College Instrumentality Scale	For you, how instrumental is college graduation to achieving the following goals: --Wealth --Personal Growth
Modified MSLQ	I usually study in a place where I can concentrate on my course work.
Perceived Instrumentality Scale	I do my course work this semester because… --My achievement plays a role in reaching my future goals.

The 1996 version of the Aspirations Index included 32 possible aspirations rated on two five-point scales measuring the importance (value) of the aspiration, and the likelihood that it would happen in the future (expectancy). These 32 aspirations represented seven life domains, which, in the factor analysis, loaded on two factors—extrinsic and intrinsic. The extrinsic factor included the life domains of wealth,

attractive image, and fame, and the intrinsic factor included the life domains of health, personal growth, affiliation, and community contribution.

In the Kasser and Ryan articles utilizing this scale (1993, 1996), the reported alpha reliability coefficients for the importance (value) subscales ranged from .59 to .87, with a mean of .76. Alphas for the likelihood subscales ranged from .68 to .86, with a mean of .76.

The most current version of the Aspirations Index (Kasser & Ryan, 2004) includes 35 aspirations (instead of the original 32 items) representing the same 7 life domains. Each life domain is represented by five items in the instrument. For each item representing a goal, three (rather than the original two) questions are asked: a value question (how important is the goal), an expectancy question (to what extent one expects to accomplish it), and an indirect commitment question (how much of the goal one has accomplished already). The current version of the scale was changed from the original 5-point, to a 7-point scale. The authors (Kasser & Ryan, 2004) mentioned that they believed that the change from a 5-point to a 7-point scale has not significantly affected their scale in any way. Also, according to Kasser and Ryan (2004), the scale items have been combined in various ways in the literature, depending on the needs of the particular study.

In the present study, as mentioned, the most current version of the Aspirations Index was used (Kasser & Ryan, 2004), with two modifications: the expectancy question was dropped entirely, since it was not of interest in this study, and the indirect commitment question was changed to a direct commitment question (i.e. how committed are you to reaching this goal?). Thus, each aspiration item is followed by two questions

in the present study: a value question and a direct commitment question. Based on the Miller and Brickman (2004) model and on Social Cognitive Theory (Bandura, 1996; Locke & Latham, 1990), valuing of, and commitment to, goals were thought to be among the most important dimensions in the present study. Also, the change from an indirect to a direct commitment question reflects the present study's underlying assumption, in line with Social Cognitive Theory (see Locke and Latham, 1990, p. 5) that people are aware, to a large extent, of their goal commitment levels. The value and commitment questions were combined and averaged for each of the seven life domains.

2. Measuring the Strength of the Target Subgoal of Graduating from College: The College Graduation Scale

This scale was created specifically for this study. It was modeled after the modified Aspirations Index (Kasser & Ryan, 1993, 1996) described above, and was designed to measure a target subgoal theorized to mediate between the future goals and proximal subgoals, namely, college graduation. The original version tested in the pilot study (see Appendix A) included five college graduation goal items. Each goal was followed by two questions, one pertaining to value (importance), and one pertaining to commitment to the goal. The questions were followed by a seven-point scale, 1 denoting "not at all," and 7 denoting "very" (e.g.: Goal: to graduate from college. 1. How important is this to you? 2. How committed are you to reaching this goal?). Input following the pilot study indicated that the five items were perceived by the participants to be too repetitive, and the scale was subsequently revised. The scale used in the present study included only three college graduation goal items, and each item was followed by the same two questions as before: one about value, and one about

commitment, for a total of 6 questions. The responses for all the questions were averaged. The Alpha reliability indicated by the pilot study was .97.

3. Measuring the Strength of the Target Subgoal of College Instrumentality: The College Instrumentality Scale

This scale was created specifically for the present study as a different way to measure the target subgoal theorized to mediate between future goals and proximal subgoals. It was designed to assess to what extent college was perceived as instrumental for attaining the aspirations listed in the seven life domains by the Aspirations Index (Kasser & Ryan, 1993, 1996). Participants were asked to rate, on a seven-point scale, to what extent they saw college graduation as instrumental to achieving wealth, fame, attractive appearance, meaningful relationships, personal growth, community involvement, and health. The scale includes two subscales: college instrumentality for extrinsic future goals (wealth, fame, appearance), and college instrumentality for intrinsic future goals (relationships, community, growth, health). The pilot study indicated subscale reliabilities of .72 for the extrinsic college instrumentality subscale, and .82 for the intrinsic college instrumentality subscale. The alpha reliability for this scale as indicated by the pilot study (see Appendix A) was .86.

4. Measuring Proximal Subgoals: The Modified MSLQ (Pintrich et al., 1991)

In the present study, proximal subgoals, conceived of as proximal strategic subgoals, were measured by a modified version of the MSLQ (Pintrich et. al., 1991), an instrument designed to tap students' strategies. Strategies were seen as indicators of proximal subgoals. The MSLQ was chosen because it measures the constructs of

interest to this particular study, such as time management, study strategies, and organization, among others. The MSLQ (Pintrich et al., 1991) consists of 15 subscales, and was originally designed to assess six motivational factors (intrinsic goal orientation, extrinsic goal orientation, task value, control beliefs about learning, self-efficacy for learning and performance, and test anxiety), and nine learning strategy factors (rehearsal, elaboration, organization, critical thinking, metacognition, time and study environment management, effort regulation, peer learning, and help seeking) involved in successful academic performance. Pintrich and colleagues (1993) have provided convincing evidence of reliability and validity of the instrument.

In the present study, only eight of the original learning strategy subscales were used, the ones considered to indicate strategic subgoals important for college graduation. These eight subscales, followed by their originally reported alpha reliabilities (Pintrich et al., 1993), are rehearsal (.69), elaboration (.75), organization (.64), critical thinking (.80), metacognition (.79), time and study environment (.76), peer learning (.76), and help seeking (.52). In addition, three subscales were added to the MSLQ specifically for the present study, based on interviews with two expert educators: social strategies (5 items asking about the balance between social activities and school, e.g. “When I have to choose between studying for a test and partying, I often choose studying for the test”), financial approaches (5 items such as “I make sure that all college bills are paid on time”), and academic planning (5 items such as “I check with a college advisor periodically to make sure that I am taking all the courses necessary for graduation”). The pilot study revealed the following alpha reliability coefficients for these three additional subscales: social strategies .73, financial approaches .79, and academic planning .83.

5. Measuring Perceived Task Instrumentality:

The Perceived Instrumentality Scale (Miller et al., 1999; Greene et al., 2004).

In this study, a recent version of the Miller et al. (1999) instrumentality scale was chosen, namely the Perceived Instrumentality Scale used by Greene et al. (2004), because it was designed to measure instrumentality for school work, which was the variable of interest in this study.

Miller et al. (1999) provided convincing evidence for the reliability and validity of the scale. The scale contains five items measuring perceptions of instrumentality for school work (e.g. "I do the work assigned in this class because my achievement plays a role in reaching my future goal"), and was successfully used to predict various motivational outcomes in educational environments by Miller and colleagues. The reported alpha reliability coefficient in the literature was .91 (Miller et al., 1999), and .90 (Greene et al., 2004).

CHAPTER 4

RESEARCH RESULTS

Path analysis was performed to test the theoretical models presented in figures 6 and 7. All analyses were conducted using the SAS System's CALIS procedure. These analyses used the maximum likelihood method of parameter estimation, and all analyses were performed on the variance-covariance matrix. Prior to conducting the path analysis, a preliminary analysis of the data was performed in order to gauge whether the data were appropriate for use in a path analysis. The preliminary analysis was conducted both prior to, and following, mean replacement of the missing values, and included an examination of the missing data, instrument reliabilities, measures of central tendency and normality, and correlation matrix. Following the preliminary analysis, the two models of interest in the present study were presented, and three parallel estimation steps for both models were described in detail. The chapter ends with a description of the final model that was accepted following the model revisions.

Missing Data

Originally, 422 participants volunteered to participate in the study. One participant's data were eliminated from the study because the participant filled the Scantron answer sheet in a very predictable pattern, and because he or she marked all the 200 available items on the Scantron sheet, despite the fact that the FOSS instrument had only 156 available items.

An examination of the remaining raw data revealed that many of the participants (81 out of a total of 421 participants, or approximately 19.5 %) were missing values for one or more scale items. Of the 81 cases with missing values, 60 cases (or approx. 75%

of the cases with missing values) had only one missing value, 17 of the cases (or approx. 21% of cases with missing values) had two missing values, 2 cases (approx. 2.5%) had three missing values, and another 2 cases (approx. 2.5%) had four missing values. Because all the scales and subscales were measured by more than one item, and because of the nature of the scattered missing data, scale averages could be computed for all participants based on the participants' own available data. However, before considering any type of missing data imputation method, an analysis was conducted to gather evidence on whether the missing data were missing at random.

Two-Way Contingency Table Analyses for Missing Data

A number of two-way contingency table analyses were conducted to evaluate whether the missing values in the variables of interest in this study were proportionally distributed by gender, age, student status (part-time or full-time), race, and expected GPA. The analysis was done with the SPSS Crosstabs module. The Pearson Chi-Square results are reported in Table 2. Two of the variables, age and expected GPA, were recoded because of the small number of participants in specific categories. Age was recoded from five, into two, categories: 20 or younger to 30, and over-30. GPA was recoded from four, into two, categories: A/B, and C/D. Two participants failed to indicate race, and one participant failed to indicate expected GPA, hence the different *N*'s in the analyses by race and GPA.

The only demographic variables that were included in the FOSS instrument and were not included in the two-way contingency table analyses were the ACT/SAT scores, and the year one first entered college. The reason for the lack of inclusion of these variables in the missing data analysis was the fact that the ACT/SAT variable had 16

cases missing, and the year first entered college could be confounded with the age of the participants, a variable which was included already in the analysis. Task Instrumentality was the only variable of interest that had no missing values. Chi-square values were mostly not significant (except for the "missing by status" in the Intrinsic College Instrumentality, which was based on only one missing value for the entire subscale), providing evidence that there was no difference in the proportion of participants with missing values and without missing values on the variables of interest. It is important to note that the demographic variables were not of interest in the present study in and of themselves, and were used only to examine the distribution of the missing values in the variables of interest. Based on the results of the missing data analysis, it was concluded that there is evidence that the missing data were missing at random.

Replacement of Missing Values

Following an examination of the missing data, it was decided that the mean replacement method was appropriate for the replacement of the missing data. This decision was aided by a number of factors. First, there was evidence that the missing data were missing at random (see Table 2). Second, as noted earlier, among participants with missing values, the large majority had only one missing value, and most of the others had two missing values. No case had more than four missing values. Moreover, all participants, including those with more than one missing value, had provided enough responses on all the scales and subscales to make it possible to compute an average for each scale and subscale based on the participant's own responses. The fact that all scales and subscales were composed of an adequate number of items (there was no 1-item scale, for example) was also an important factor in deciding to use this substitution method.

Table 2

Results of the Two-Way Contingency Table Analyses Testing the Missing Values

Variable with Missing Values	**Missing by Gender** *df* = 1 *N* = 421		**Missing by Age** *df* = 1 *N* = 421		**Missing by Status** *df* = 1 *N* = 421		**Missing by Race** *df* = 6 *N* = 419		**Missing by GPA** *df* = 1 *N* = 420	
	Chi Sq.	***p***	***Chi Sq.***	***p***	***Chi Sq.***	***p***	***Chi Sq.***	***p***	***Chi Sq.***	***p***
ExtGoals	1.06	.30	.08	.79	.53	.47	6.82	.34	.33	.57
IntGoals	1.52	.22	.33	.57	2.18	.14	4.23	.65	.07	.79
CollGrad	.90	.34	.50	.48	.167	.68	7.10	.31	.52	.47
CollInstExt	1.11	.29	.08	.77	.13	.72	.31	.99	.56	.45
CollInstInt	1.11	.29	.08	.77	7.79	.01*	.31	.99	.56	.45
ProxSubgoals	.135	.71	.24	.62	.147	.70	10.46	.11	.01	.92

* This significant Chi-Square is based on one missing value in the entire subscale

Note: 2-sided asymp. significance for all *p*'s

Most imputation methods have their own advantages and drawbacks. The main drawback of the mean replacement method is that it may sometimes result in reduced variance of a variable (since the mean tends to be closer to itself than to the missing value it replaces), as well as in reduced correlations between the variable whose values were replaced and the other variables. However, on the positive side, "part of the attraction of this procedure [the mean replacement method] is that it is conservative; the mean for the

distribution as a whole does not change and the researcher is not required to guess at missing values" (Tabachnick & Fidell, 1996, p. 63).

Based on the nature of the missing data, mean replacement was employed. SPSS was allowed to compute subscale and scale averages from the available participants' responses (through the Compute module and the MEAN option). In order to gauge whether mean replacement resulted in significant changes in the data, such as changes in alpha reliabilities of the scales and subscales, changes in measures of central tendency and normality, or changes in correlation values, all of these values are reported both prior to, and following, the mean replacement method in Tables 3, 4, 5, and 6, respectively. As can be seen from these tables, the mean replacement method resulted in values that are close, and sometimes identical, to those obtained prior to missing data imputation.

Instrument Reliabilties

Cronbach alpha reliabilities were computed for all scales and subscales on the FOSS instrument, to gauge the internal consistency of the scales. The alpha reliabilities obtained before and after missing data substitution are listed in Table 3 for each subscale and scale.

Modified Aspirations Index

Prior to, and following, missing data substitution, the subscales of the Modified Aspirations Index had an alpha reliability between .82 and .92, and the entire scale had a reliability of .93. The values before and after mean replacement were identical.

Modified MSLQ

Prior to, and following, missing data substitution, the reliabilities of the subscales ranged from .62 to .89, and the reliability of the entire modified MSLQ scale was .93.

The values before and after mean replacement were nearly identical. Minor differences were observed in two subscales: Critical Thinking (.89 prior to mean replacement and .90 following mean replacement), and Time and Study Environment (.75 prior to mean replacement and .74 following mean replacement).

College Graduation and College Instrumentality Scales

The alpha reliability of the College Graduation Scale, both prior to, and following, mean replacement, was identical, .88. The values of the College Instrumentality Scale and subscales, prior to, and following, mean replacement were also identical: the reliabilities of the Extrinsic College Instrumentality subscale, Intrinsic College Instrumentality subscale, and the entire College Instrumentality scale were .62, .80, and .80 respectively, both prior to, and following, mean replacement.

Perceived Instrumentality Scale

The Perceived Instrumentality Scale had no missing data, and its reliability was .92. The reliabilities for the scales and subscales in this study were consistent with previous reliabilities reported in the literature, and were deemed adequate for the present study.

Measures of Central Tendency and Normality

Descriptive information about the variables of interest was obtained through SPSS Frequencies. Tables 4 and 5 include descriptive information about the variables of interest prior to, and following, substitution of the missing values, respectively. As can be seen from Tables 4 and 5, the measures of central tendency and normality are very similar prior to, and following, mean replacement of the missing data. The variable with

Table 3

Alpha Reliabilities of the Scales and Subscales Before and After Mean Replacement

Modified Aspirations Index Alpha Reliabilitites Before and After Mean Replacement			
Wealth	.92 / .92	Relationships	.87 / .87
Fame	.92 / .92	Community	.92 / .92
Appearance	.92 / .92	Health	.92 / .92
Ext. Future Goals	.95 / .95	Int. Future Goals	.93 / .93
Growth	.82 / .82		
Modified MSLQ Alpha Reliabilities Before and After Mean Replacement			
Rehearsal	.77 / .77	Peer Learning	.81 / .81
Elaboration	.81 / .81	Help Seeking	.62 / .62
Organization	.77 / .77	Social Strategies	.73 / .73
Critical Thinking	.89 / .90	Financial Approaches	.81 / .81
Metacognition	.81 / .81	Academic planning	.79 / .79
Time & Environment	.75 / .74	MSLQ	.93 / .93
College Graduation, College Instrumentality, and Perceived Instrumentality Scales Alpha Reliabilities Before and After Mean Replacement			
College Graduation Scale	.88 / .88	College Instrumentality Scale	.80 / .80
Extrins. College Instrumentality	.62 / .62	Perceived Instrumentality Scale	.92*
Intrins. College Instrumentality	.80 / .80		

Note: The values on the left are alpha reliabilities before mean replacement, and the ones on the right are alpha reliabilities after mean replacement
* No values were missing in this scale

the most pronounced (negative) skew and kurtosis was college goal (skew of -2.96, kurtosis of 10.62 in Table 4; skew of -2.94 and kurtosis of 10.23 in Table 5), and that was expected in view of the fact that most college students are likely to indicate that they very strongly want to graduate from college. Other variables were slightly skewed or kurtotic, as can be seen in the two tables, but their deviation from normality was of small magnitude. In view of the expected deviation from normality in variables related to college graduation goals among the college student population sampled, the variables were left untransformed (see Ullman, 1996, for a similar opinion, p. 790).

The present path analytic study employed the Maximum Likelihood estimation (ML) method. Although the ML estimation is considered fairly robust against small to moderate violations of normality (McDonald & Ho, 2002; Anderson & Gerbing, 1988; Joreskob & Sorbom, 1989), moderate to major violations can adversely affect the chi-square statistic that serves as an important measure of model fit. However, the particular way in which the chi-square is affected under conditions of data non-normality still make the ML estimation method suitable for the present study. According to Curran, West, and Finch (1996), "using the normal theory chi-square statistic as a measure of model fit under conditions of non-normality will lead to an inflated Type I error rate for model rejection. Consequently, in practice, a researcher may mistakenly reject or opportunistically modify a model because the distribution of the observed variables is not multivariate normal rather than because the model itself is not correct." In other words, the two concerns with using the chi-square statistic under conditions of non-normality are a) that a model might be mistakenly rejected when it is correct, and b) that a model might be opportunistically modified until an acceptable chi-square level is

Table 4

Measures of Central Tendency and Normality Before Mean Replacement

Scale/ Subscale	**Mean**	**Medi-an**	**Mode**	***SD***	**Skew**	**St. error skew**	**Kur-tosis**	**St. error kurt.**
ExtGoals *N* = 404	3.92	3.93	3.60	1.08	-.02	.12	-.50	.24
IntGoals *N* = 403	5.86	5.93	6.00*	.63	-.80	.12	1.32	.24
CollGrad. *N* = 415	6.68	7.00	7.00	.65	-2.96	.12	10.62	.24
ColInstExt *N* = 420	3.53	3.33	3.00	1.21	.39	.12	-.02	.24
ColInstInt *N* = 420	4.05	4.25	4.50	1.46	-.16	.12	-.74	.24
MSLQ *N* = 370	4.43	4.43	4.21*	.79	-.10	.13	.09	.25
TaskInst *N* = 421	5.72	6.00	7.00	1.33	-1.18	.12	1.14	.24

* Multiple modes exist. The smallest value is shown.

achieved, even though the model might be basically correct, and in no need of modification.

In the present study, these two concerns have been addressed in a number of ways. First, model fit decisions were not based solely on the chi-square statistic, but on other goodness of fit indices as well, such as the GFI, NFI, NNFI, CFI, and RMSEA, all of which were reported in the present study. Secondly, any decision to remove or add a

Table 5

Measures of Central Tendency and Normality After Mean Replacement

Subscale/ Scale	**Mean**	**Medi-an**	**Mode**	***SD***	**Skew**	**St. error skew**	**Kur-tosis**	**St. error kurt.**
ExtGoals	3.95	3.97	3.60	1.09	-.04	.12	-.52	.24
IntGoals	5.85	5.90	6.00*	.64	-.78	.12	1.25	.24
CollGrad.	6.68	7.00	7.00	.66	-2.94	.12	10.23	.24
ColInstExt	3.54	3.33	3.00	1.22	.34	.12	-.02	.24
ColInstInt	4.05	4.25	4.50	1.46	-.16	.12	-.75	.24
MSLQ	4.38	4.37	4.89	.80	-.12	.12	.03	.24
TaskInst	5.72	6.00	7.00	1.33	-1.18	.12	1.14	.24

Note: $N = 421$ for all variables.

* Multiple modes exist. The smallest value is shown.

path was based on strong theoretical grounds, rather than on chance trial-and-error opportunities. In addition, decisions to remove paths were aided by the model parameter estimates, which have been found to be unbiased even under conditions of non-normality (Enders, 2001; Curran et. al., 1996; McDonald & Ho, 2002).

Thirdly, the problem of non-normality, especially with the variable college graduation target subgoal, was foreseen and taken into account before designing the present study. Based on knowledge of the target student sample and on an earlier pilot study that indicated even higher skew and kurtosis for this variable than in the present

study (see pilot study in Appendix A), it was decided to test two, rather than one, related models in the present study. The two models were designed to be very similar in most respects, except that they were designed to test two different, but theoretically plausible, target subgoals, as mediating between future goals and proximal subgoals. Initial Model 1 (regarded as the closest conceptualization of Miller & Brickman, 2004, and depicted in Figure 6) was designed to test college graduation as the target subgoal variable, and Initial Model 2 (see Figure 7) was designed to test college instrumentality as the target subgoal variable (see Chapter 3 for a full discussion of these two variables and the subscales measuring them). As an additional precaution, identical procedures were followed for both model estimations, and models were compared at each step. Finally, care was taken to limit model modifications to very few modifications per model, to prevent "capitalization on chance characteristics of the data" (MacCallum, Roznowski, Necowitz, & Lawrence, 1992).

McDonald and Ho (2002) discussed various estimation methods available and their benefits and drawbacks (e.g. the ADF estimation method requires extremely large samples), and they arrived at the following conclusion: "A mild dilemma [in recommending an alternative to the ML estimation method when data deviate from normality] stems from the fact that ML estimation and its associated statistics seem fairly robust against violations of normality…. Accordingly, we hesitate to make firm recommendations for the resolution of this dilemma…the investigator [should] see if a problem [with normality] appears to exist and to report it to the reader. But in many cases the sample size will require the investigator to rely on the robustness of ML/GLS methods" (p. 70). Curran et al. (1996) were similarly careful about recommending a

different estimation technique than the ML to deal with non-normality, and they cautioned that other methods posed their own problems and drawbacks.

It was decided that for the present study, the benefits of using the established and relatively robust ML estimation method outweigh potential problems, especially in view of the fact that two similar alternative models were tested (one with distributions close to normality), and in view of the fact that care has been taken to report all pertinent statistics and decisions regarding the data analysis and the methodology used in this study.

Relationships among the Variables of Interest

Bivariate scatterplots conducted on pairs of variables chosen at random (a procedure recommended by Ullman, 1996) indicated linear relationships in the data. No curvilinear relationships were observed. Table 6 presents the Pearson moment correlations among the variables of interest both prior to, and following, missing value substitutions. The differences between the two tables are small. The correlations following missing value substitution either stayed the same, or showed a slight improvement over the correlations without substitutions. The one exception is the correlation between intrinsic college instrumentality and intrinsic future goals, which showed a slight decline following missing values substitutions (from $r = .26$ to $r = .25$).

Based on the careful examination of the nature of the missing data, it was decided that the missing data substitution method was acceptable, and the rest of the analyses and verbal descriptions in this chapter will be conducted with, and will refer to, variables whose missing values were substituted by the mean replacement method.

The correlations were very consistent with the Miller & Brickman (2004) model. Nearly all the variables were significantly inter-correlated, and some of the relationships seemed stronger than others, mostly in expected directions. Following the theoretical predictions of Miller and Brickman (2004), future goals correlated significantly with the target subgoal of college graduation. At the same time, in line with Self-Determination Theory (Ryan & Deci, 2000), one of the major theories underlying the Miller & Brickman (2004) model, the relationship between extrinsic future goals and the college graduation target subgoal ($r = .12$, $p < .05$) seemed to be weaker than the relationship between intrinsic future goals and the college graduation target subgoal ($r = .39$, $p < .01$).

The same pattern, of extrinsic variables (i.e. extrinsic future goals and extrinsic college instrumentality) having a seemingly weaker relationship with the variables of interest, and of intrinsic variables (i.e. intrinsic future goals and intrinsic college instrumentality) having a seemingly stronger relationship with the variables of interest, was noted throughout the correlation matrix. On the other hand, also consistent with Kasser and Ryan (1993, 1996), extrinsic and intrinsic goals were not mutually exclusive, and they correlated with each other. Extrinsic future goals correlated with intrinsic future goals ($r = .33$, $p < .01$), and extrinsic college instrumentality correlated with intrinsic college instrumentality ($r = .47$, $p < .01$).

Future goals correlated significantly with college instrumentality. Extrinsic future goals correlated significantly with both extrinsic college instrumentality ($r = .45$) and with intrinsic college instrumentality ($r = .34$). Intrinsic future goals also correlated significantly with with both extrinsic college instrumentality ($r = .19$, $p < .01$), and intrinsic college instrumentality ($r = .25$, $p < .01$). As expected, the relationship between

Table 6

Correlations among the Variables Before Mean Replacement (Top), and After Mean Replacement (Bottom)

Variable	1	2	3	4	5	6	7
1. Ext. Goals	1						
2. Int. Goals	.32**	1					
3. Coll. Grad.	.12*	.39**	1				
4. Coll. Instr. Ext.	.45**	.19**	.07	1			
5. Coll. Instr. Int.	.33**	.26**	.17**	.46**	1		
6. Prox. Subgoals	.17**	.50**	.35**	.17**	.26**	1	
7. Task Instr.	.16**	.44**	.42**	.21**	.35**	.57**	1

Variable	1	2	3	4	5	6	7
1. Ext. Goals	1						
2. Int. Goals	.33**	1					
3. Coll. Grad.	.12*	.39**	1				
4. Coll. Inst. Ext.	.45**	.19**	.07	1			
5. Coll. Inst. Int.	.34**	.25**	.18**	.47**	1		
6. Prox. Subgoals	.21**	.52**	.37**	.20**	.30**	1	
7. Task Instr.	.17**	.46**	.42**	.22**	.35**	.58**	1

* $p < .05$ (2-tailed)

** $p < .01$ (2-tailed)

intrinsic future goals and intrinsic college instrumentality was stronger than that between intrinsic future goals and extrinsic college instrumentality; and the relationship between extrinsic future goals and extrinsic college instrumentality was stronger than that between extrinsic future goals and intrinsic college instrumentality. Intrinsic college instrumentality also correlated with college graduation ($r = .18$, $p < .01$).

As theorized by Miller and Brickman (2004), the college graduation target subgoal correlated with the proximal subgoals ($r = .37$, $p < .01$), as well as with task instrumentality ($r = .42$, $p < .01$), and proximal subgoals were highly correlated with task instrumentality ($r = .58$, $p < .01$). In addition, extrinsic and intrinsic future goals correlated with proximal subgoals ($r = .21$ and $r = .52$, $p < .01$ respectively), as well as with task instrumentality ($r = .17$, and $r = .46$, $p < .01$, respectively). Both intrinsic and extrinsic college instrumentality correlated significantly with Proximal Subgoals ($r = .20$, and $r = .30$, $p < .01$, respectively), as well as with task instrumentality ($r = .22$, and $r = .35$, $p < .01$, respectively). The Miller and Brickman (2004) model was well supported by the correlational data.

Models Tested

Path analysis was performed to test how well the two theoretical models proposed in Figures 6 and 7 fit the data. All analyses were conducted using the SAS System's CALIS procedure (Hatcher, 1994). In Initial Model 1 (Figure 6), extrinsic future goals and intrinsic future goals (as measured by the modified Aspirations Index) predict the target subgoal of college graduation (as measured by the College Graduation Scale), which, in turn, predicts the adoption of proximal subgoals (as measured by the modified MSLQ). The proximal subgoals, in turn, predict task instrumentality (as measured by

the Perceived Instrumentality Scale). In addition, direct effects were hypothesized: both intrinsic and extrinsic future goals were hypothesized to predict the proximal subgoals and task instrumentality directly. Extrinsic and intrinsic future goals are modeled as correlating, based on the moderate correlations between them in the pilot study (see Appendix A) and in the present study. Theoretically, as well, these future goals, although shown to lead to different well-being outcomes (Kasser & Ryan, 1993, 1996), have not been seen as mutually exclusive.

In Initial Model 2 (Figure 7), extrinsic future goals and intrinsic future goals (as measured by the Aspirations Index) predict extrinsic college instrumentality and intrinsic college instrumentality respectively (as measured by the College Instrumentality Scale), and these, in turn, predict the adoption of proximal subgoals (as measured by the modified MSLQ). Finally, as in Initial Model 1, the proximal subgoals predict task instrumentality (as measured by the Perceived Instrumentality Scale). The same additional direct effects were hypothesized in Initial Model 2 as in Initial Model 1: intrinsic and extrinsic future goals were hypothesized to predict the proximal subgoals and task instrumentality directly. As in Initial Model 1, extrinsic and intrinsic future goals were modeled as correlating. These path analyses used the maximum likelihood (ML) method of parameter estimation, and all analyses were performed on the variance-covariance matrix.

Goodness of fit indices for the various models are presented in Table 7. The chi-square statistic included in this table provides a test of the null hypothesis that the reproduced covariance matrix has the specified model structure, in other words, that the model "fits the data." Table 7 also provides four additional goodness of fit indices: the

goodness of fit index, or the GFI, the normed fit index, or NFI (Bentler & Bonett, 1980), the non-normed fit index, or NNFI (Bentler & Bonett, 1980), the comparative fit index, or CFI (Ullman, 1996), and the Root Mean Square Error of Approximation, or RMSEA (Byrne, 2001). The GFI may range in value from 0 to 1, where 0 represents the goodness of fit associated with a "null" model (one specifying that all variables are uncorrelated), and 1 represents the goodness of fit associated with a "saturated" model (a model with 0 degrees of freedom that perfectly reproduces the original covariance matrix). Values on the GFI, NFI, NNFI, and CFI over .9 indicate an acceptable fit between model and data.[7] RMSEA values of less than .05 indicate good fit.

The "null models" in Table 7 represent a hypothetical path model in which none of the variables are related to any of the other variables. This null model chi-square is useful as a baseline against which the chi-square values obtained for the other models can be compared. If the theoretical model achieves a large reduction in chi-square compared to the null model (while considering the degrees of freedom), then the theoretical model gains support. The "initial" models in Table 7 represent the theoretical Models 1 and 2 in the present study, as depicted in Figures 6 and 7 respectively. The two models were estimated in a parallel manner for each step, first Model 1, and then Model 2. The two models' estimations will be detailed for each step, approximating the estimation procedure followed during the model estimation process.

[7] Most fit indexes have strengths and drawbacks. For example, Ullman (1996) reported that the NNFI may underestimate fit in samples with small numbers, although it is not clear how small. In this study, all four indexes will be consulted, including the RMSEA indicator, before making judgments regarding model fit.

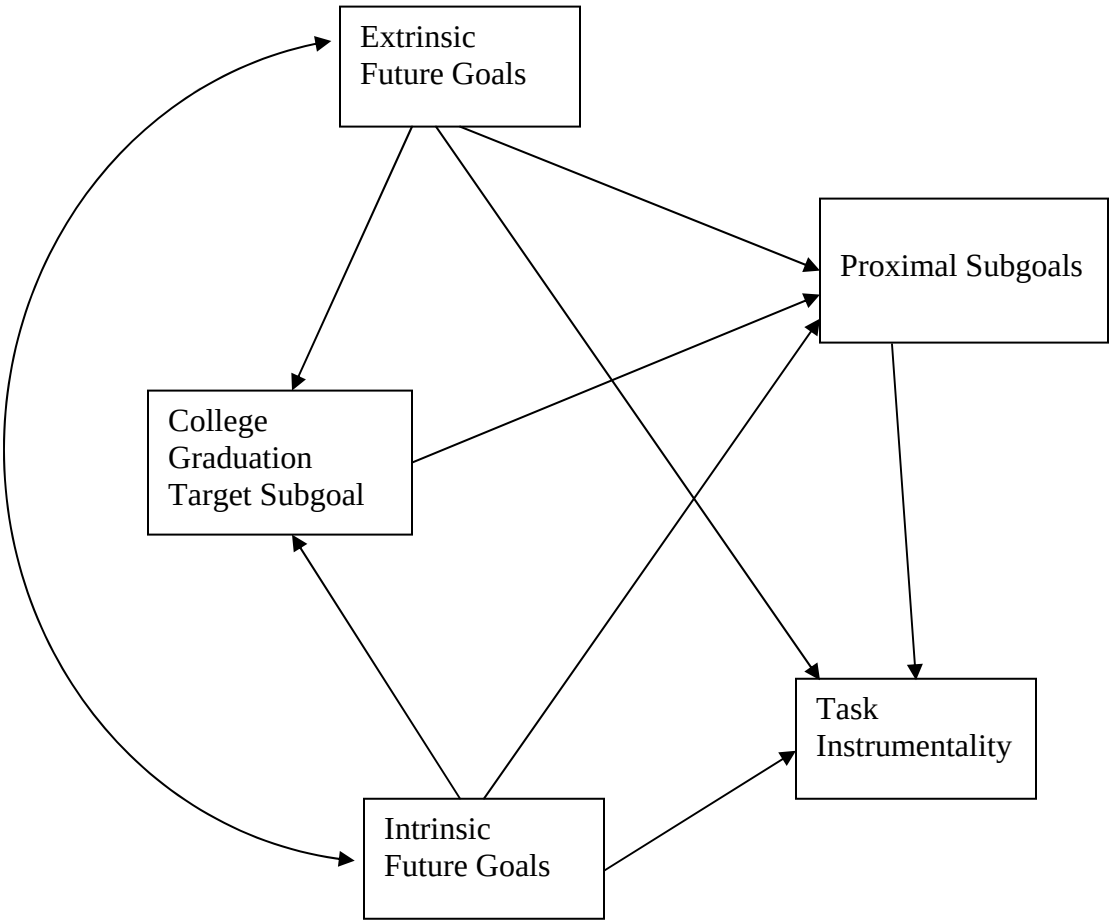


Figure 6. Initial Model 1. Extrinsic and intrinsic future goals predict the college graduation target subgoal, which, in turn, predicts the adoption of proximal subgoals. The adoption of proximal subgoals predicts task instrumentality. In addition, direct effects are modeled from extrinsic and intrinsic future goals to both the proximal subgoals, and to task instrumentality. The extrinsic and intrinsic future goals correlate.

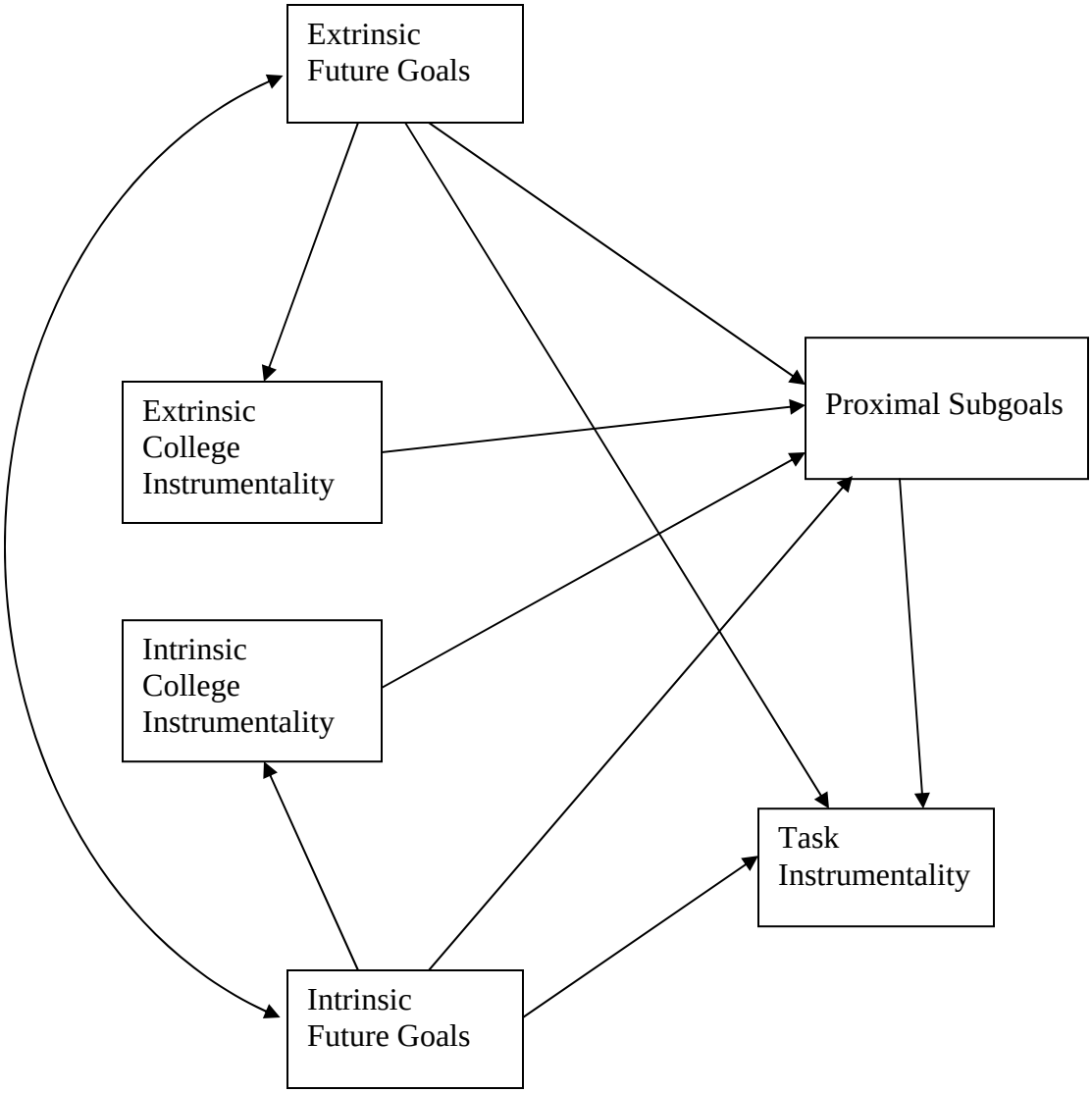


Figure 7. Initial Model 2. Extrinsic and intrinsic future goals predict extrinsic and intrinsic college instrumentality, which, in turn, predicts the adoption of proximal subgoals. Proximal subgoals predict task instrumentality. In addition, direct effects are modeled from extrinsic and intrinsic future goals to both the proximal subgoals, and to task instrumentality. The extrinsic and intrinsic future goals correlate.

Step 1: Estimation of Initial Models 1 and 2

Initial Model 1

Estimation of Initial Model 1 revealed a significant model chi-square value, χ^2 (1, N = 421) = 22.11, p < .001, indicating that the observed and model-implied covariance matrices may be significantly different. Although the values of the GFI, NFI and CFI all exceeded .9, the NNFI value for this model was .549, and the RMSEA was .22, much higher than the desired < .05 value, indicating that the fit between the model and data could probably be improved. A comparison between this model and Initial Model 2 revealed somewhat more pronounced problems in Initial Model 2.

Initial Model 2

Estimation of Initial Model 2 revealed a significant model chi-square value, χ^2 (5, N = 421) = 118.10, p < .001, as well as other evidence of a poor-fitting model. Although the GFI was just above .9, all the other goodness of fit indices reported in Table 7 were lower than the adequate .9 level, indicating inadequate fit. The NFI was .812, the NNFI was .447, and the CFI was .816. Moreover, the RMSEA was .23, much higher than the optimal level of < .05.

Despite a seemingly better fit in Initial Model 1 than in Initial Model 2, both Initial Models 1 and 2 were rejected, and an attempt was made to identify modifications that would improve the model fit in both models. An examination of the paths' standardized coefficients in both models revealed that one path in Initial Model 1 and two paths in Initial Model 2 should be dropped. Path values for all the estimated paths are listed in Tables 8 and 9 respectively for Model 1 and Model 2.

Table 7

Goodness of Fit Indices for the Two Models and their Revised Versions

Model	**Chi-square**	***df***	***p***	**GFI**	**NFI**	**NNFI**	**CFI**	**RMSEA**
Null Model 1	478.70	10	.001	0.000	--	--	--	--
Initial Model 1	22.11	1	.001	.979	.953	.549	.955	.22
Revised Model 1	22.12	2	.001	.979	.953	.785	.957	.15
Revised Model 1a	< .001	1	.997	.999	.999	.999	.999	< .001
Null Model 2	628.07	15	.001	0.000	--	--	--	--
Initial Model 2	118.10	5	.001	.919	.812	.446	.815	.23
Revised Model 2	118.26	7	.001	.919	.811	.611	.818	.19
Revised Model 2a	100.05	6	.001	.934	.841	.617	.847	.19

Note. $N = 421$. GFI goodness of fit index, NFI normed fit index, NNFI non-normed fit index, CFI comparative fit index, RMSEA root mean square error of approximation.

Revised Model 1: identical to Initial Model 1, except that a non-significant path from Extrinsic Future Goals to Task Instrumentality was removed.

Revised Model 1a: identical to Revised Model 1a, except that a path was added from College Graduation Target Subgoal to Task Instrumentality.

Revised Model 2: identical to Initial Model 2, except that two non-significant paths, from Extrinsic College Instrumentality to System of Proximal Subgoals and to Task Instrumentality, were removed.

Revised Model 2a: identical to Revised Model 2a, except that a path was added from Intrinsic College Instrumentality to Work Instrumentality.

Modification Considerations--Initial Model 1

The path coefficients in Initial Model 1 were reviewed to see if any of the paths in the initial model should be deleted. The *t* values for most path coefficients proved to be statistically significant ($p < .001$) with most *t* values exceeding 4.42. Most standardized path coefficients exceeded .20 in absolute magnitude. Three paths, however, were not significant.

The first non-significant path was the direct path predicting task instrumentality from extrinsic future goals, standardized coefficient = .003, $t = -.07$. The second non-significant path was another direct path predicting the system of proximal subgoals from extrinsic future goals, standardized coefficient = .05, $t = 1.08$. The third non-significant path was that predicting the college graduation target subgoal from extrinsic future goals, standardized coefficient = .004, $t = -.08$.

The first non-significant path, predicting task instrumentality from extrinsic future goals, was a good candidate for deletion, based not only on the clear lack of significance, but on theory and on correlations (see Table 6). First, Self-Determination Theory (Ryan & Deci, 2000) predicts less than optimal outcomes from extrinsic orientations, and second, the correlations in Table 6 indicate a relatively weak correlation of $r = .17$ ($p < .001$) between task instrumentality and extrinsic goals.

Although the second non-significant path, predicting proximal subgoals from the extrinsic future goals, was also a good candidate for deletion, it was deemed to be much too close to significance (a *t* value of 1.96 is needed for *t* to be significant at $p < .05$) to be deleted. It was thought that the path may reach significance in the next model modification. Also, the correlations in Table 6 indicated a somewhat stronger

Table 8

Standardized Coefficients and t Values for the Paths in all the Versions of Model 1

Model 1 Paths	Initial Model 1		Revised Model 1		Revised Model 1a	
	St. Coeff.	***t***	**St. Coeff.**	***t***	**St. Coeff.**	***t***
Pred. Task Instrumentality From Prox. Subgoals	.46	10.18*	.46	10.19*	.42	9.22*
Pred. Task Instrumentality From Ext. Future Goals	.003	-.07	dropped	--	dropped	--
Pred. Task Instrumentality From Int. Future Goals	.22	4.65*	.22	4.80*	.16	3.60*
Pred. Prox. Subgoals From College Graduation	.20	4.42*	.20	4.42*	.20	4.42*
Pred. Prox. Subgoals From Ext. Future Goals	.05	1.08	.05	1.08	.05	1.08
Pred. Prox. Subgoals From Int. Future Goals	.43	9.14*	.43	9.14*	.43	9.14*
Pred. College Grad. Subg. From Ext. Future Goals	.004	-.08	-.004	-.08	-.004	-.08
Pred. College Grad. Subg. From Int. Future Goals	.39	8.10*	.39	8.10*	.39	8.10*
Pred. Task Instrumentality From College Grad. Subg. (added only to Revised Model 1a)	na	na	na	na	.20	4.77*

* $p < .001$ level (two-tailed)
Note: na = not available. Pearson product-moment correlations between future intrinsic and future extrinsic goals were $r = .33$ for all models, $p < .01$

Table 9

Standardized Coefficients and t-Values for the Paths in all the Versions of Model 2

Model 2 Paths	Initial Model 2		Revised Model 2		Revised Model 2a	
	St. Coeff.	***t***	**St. Coeff.**	***t***	**St. Coeff.**	***t***
Pred. Task Instrumentality From Prox. Subgoals	.46	10.17*	.46	10.16*	.42	9.30*
Pred. Task Instrumentality From Ext. Future Goals	-.003	-.07	dropped	--	dropped	--
Pred. Task Instrumentality From Int. Future Goals	.22	4.62*	.22	4.80*	.20	4.40*
Pred. Prox. Subgoals From Ext. College Instr	.03	.75	.03	.67	.03	.67
Pred. Prox. Subgoals From Int. College Instr.	.18	4.15*	.17	4.10*	.17	4.10*
Pred. Prox. Subgoals From Ext. Future Goals	-.02	-.40	dropped	--	dropped	--
Pred. Prox. Subgoals From Int. Future Goals	.47	10.61*	.47	10.98*	.47	10.98*
Pred. Ext. College Instr. From Ext. Future Goals	.45	10.34*	.45	10.34*	.45	10.34
Pred. Int. College Inst. From Int. Future Goals	.25	5.21*	.25	5.21*	.25	5.21*
Pred. Task Instrumentality From Int. College Inst. (added only to Revised Model 2a)	na	na	na	na	.17	4.33*

* $p < .001$ level (2-tailed).
Note: na = not available. Pearson product-moment correlations between extrinsic and intrinsic future goals were $r = .33$ for all models, $p < .01$

relationship between proximal subgoals and extrinsic future goals ($r = .21$, $p < .01$) than was the case with the previous variables in the non-significant path.

The third non-significant path, the one predicting college graduation target subgoal from extrinsic future goals, was considered an integral part of the model, and dropping it would render the model theoretically un-interpretable.

Modification Considerations--Initial Model 2

The path coefficients in Model 2 were reviewed to see if any of the paths in the initial model should be deleted. Except for three paths, all other standardized path coefficients exceeded .22 in absolute magnitude, and the *t* values for all other paths coefficients were above 4.15, statistically significant ($p < .001$).[8] The three paths that did not reach significance were nearly identical to the three paths that did not reach significance in Initial Model 1. Of the three paths that did not reach significance, one was theoretically critical to the model interpretation (the path from extrinsic college instrumentality to proximal subgoals, standardized coefficient = .03, $t = .75$), and could not be dropped. The other two paths, however, were good candidates for being dropped on theoretical grounds, and also based on their weak correlations (see a fuller discussion above, under "modification considerations regarding model 1"). Just as in Initial Model 1, they were the direct path predicting task instrumentality from extrinsic future goals, standardized coefficient = -.003, $t = -.07$, and the direct path predicting proximal subgoals from extrinsic future goals, standardized coefficient = -.02, $t = -.40$.

[8] These *t* – tests are statistically significant at the $p < .05$ level whenever their absolute value exceeds 1.96 (two-tailed test), at the < .01 level if *t* exceeds 2.58, and at the < .001 level if *t* exceeds 3.30.

Decisions about Initial Models 1 and 2

Both models had a similar non-significant path that was essential to model interpretation. The essential path was left intact, even if it was non-significant. Both models also had two identical non-significant paths of direct effects external to the basic mediated model presented: one predicting task instrumentality from extrinsic future goals, and the other predicting the system of proximal subgoals from extrinsic future goals. However, one of these non-significant paths, the one predicting proximal subgoals from extrinsic future goals, was close to significance in Initial Model 1, but was not close to significance in Initial Model 2. It was decided that in Initial Model 1, the path close to significance would be retained, and only one path would be dropped—the one predicting task instrumentality from extrinsic future goals. However, in Initial Model 2, it was decided to drop both paths, as none of them was close to significance.

Step 2: Estimation of Revised Models 1 and 2

Revised Model 1

After dropping one non-significant path predicting task instrumentality from extrinsic future goals (see Tables 8 and 9 for steps and path values), estimation of Modified Model 1 still revealed a significant model chi-square value, χ^2 (2, N = 421) = 22.12, $p < .001$, indicating that the observed and model-implied covariance matrices may be significantly different. The values of the GFI, NFI and CFI all exceeded .9, the NNFI value for this model improved but was still low at .785, and the RMSEA was .15, an improvement from the previous Model 1, but still higher than the desired < .05 value, indicating that the fit between the model and data could probably be improved. A

comparison between this model and Revised Model 2 revealed similarly small improvements to both models as a result of removing the non-significant paths.

Revised Model 2

After dropping two non-significant paths, one predicting task instrumentality from extrinsic future goals, and the other predicting proximal subgoals from extrinsic future goals, Revised Model 2 still revealed a significant model chi-square value, χ^2 (7, N = 421) = 118.26, $p < .001$ indicating that the observed and model-implied covariance matrices may be significantly different. The value of the GFI was again just over .9, and the NFI and CFI did not change much from the low values in Initial Model 2 (NFI = .81, CFI = .82). The NNFI improved but was still low at .61, and the RMSEA was .19, an improvement from the previous Initial Model 2, but still higher than the desired < .05 value, indicating that the fit between the model and data could probably be improved.

Modification Considerations--Revised Models 1 and 2

An examination of the standardized coefficient values of the paths in both models (see Tables 8 and 9) indicated the following: First, in Revised Model 1, the non-significant path that was retained from Initial Model 1, predicting proximal subgoals from extrinsic future goals, did not improve in any way (standardized coefficient = .05, t = 1.08, not significant). Second, in both Revised Model 1 and Revised Model 2, the essential but non-significant path that was retained (in Initial Model 1—the path predicting college graduation from extrinsic future goals, and in Initial Model 2—the path predicting proximal subgoals from extrinsic college instrumentality) remained non-significant, although in Revised Model 1 it remained entirely unchanged, and in Revised Model 2 only its t value dropped somewhat from t = .75 in Initial Model 2, to t = .67 in

Revised Model 2. Third, all other path standardized coefficients and *t* – values remained very similar to what they were in the Initial Model 1 and Initial Model 2, with just a few minor changes (see Tables 8 and 9).

Dropping of the non-significant and non-essential path that was left in Revised Model 1 (the direct path predicting the system of proximal subgoals from extrinsic future goals) was considered, but again rejected. The reasons for not dropping this path were twofold. First, it was again considered close to significance (standardized coefficient = .05, $t = 1.08$), and second, the removal of the exact same path from the original Initial Model 2 did not result in any significant improvement to Initial Model 2.

Decisions about Revised Models 1 and 2

Based on a careful analysis of the models and their paths, it was decided that there was no theoretical basis for the removal of any other paths. Thus, it was decided to Re-examine the Miller and Brickman (2004) model, in order to find possible theoretical clues to a path that may be missing in the current models, and that might be added. This re-examination revealed that, indeed, a direct path predicted by Miller and Brickman (2004) may have been left out inadvertently in the path models under consideration.

In their original formulation, Miller and Brickman (2004) indicated that future goals influence the system of proximal subgoals, which, in turn, influences perceptions of instrumentality (labeled Task Instrumentality in the present study). When Miller and Brickman (2004) mentioned a "system of proximal subgoals," they were referring to two types of proximal subgoals: one or more target subgoals (which are somewhat more distal, although not as distant as the future goals), and then all the strategic and very proximal goals in their service. That is why all the versions of Model 1 and Model 2

split the “system of proximal subgoals” into a target subgoal (either college graduation in Model 1 or college instrumentality in Model 2), and the proximal subgoals associated with it. Although, in line with Miller and Brickman (2004), both Models 1 and 2 included a direct path predicting task instrumentality from proximal subgoals, there was no direct path predicting task instrumentality from the respective target subgoal. It became clear that what was needed and missing, according to the Miller and Brickman (2004) model, was a direct path between the respective target subgoal in each model, and task instrumentality.

The next step was to examine the correlations in Table 6, to find additional evidence for the desirability of adding such a path. The correlation between college graduation, the target subgoal in Model 1, and task instrumentality was the strongest at $r = 42$, $p < .01$, and the correlation between intrinsic college instrumentality, the target subgoal in model 2, and task instrumentality was $r = .35$, $p < .01$, somewhat weaker, but also significant.

Accordingly, a direct path was added in both models between the respective models’ target subgoals and task instrumentality. In Revised Model 1, a path was added predicting task instrumentality from the target subgoal of college graduation. In Revised Model 2, a path was added predicting task instrumentality from the target subgoal of intrinsic college instrumentality (theoretically and practically, extrinsic variables performed relatively poorly, so there was no compelling reason to add a path from extrinsic college instrumentality).

Step 3: Estimation of Revised Models 1a and 2a

Revised Model 1a

After adding a path predicting task instrumentality from college graduation target subgoal (see Tables 8 and 9 for steps and path values), the estimation of Revised Model 1a revealed that the hypothesized model fit the data quite well. The chi-square was non-significant, χ^2 (1, N = 421) = < .001, p < .997, indicating that the observed and model-implied covariance matrices were not significantly different. This time, the values of all the indices, including the GFI, NFI, NNFI and CFI all exceeded .95, and the RMSEA was < .001, clearly within optimal levels of < .05, indicating a good fit.

Revised Model 2a

After adding a path predicting task instrumentality from intrinsic college instrumentality, the estimation of Model 2a showed more improvement than in step number 2, but was still problematic. The chi-square was still significant, χ^2 (6, N = 421) = 100.05, p < .001 indicating that the observed and model-implied covariance matrices may be significantly different. The four additional goodness of fit indices, the GFI, NFI, NNFI and CFI all improved somewhat, but not in a major way (GFI = .934, NFI = .84, NNFI = .62, CFI = .85). None of the indices other than the GFI reached optimal levels of > .9. The RMSEA remained .19, still higher than the desired < .05 value, indicating that the fit between the model and data was probably not optimal.

Decisions about Revised Models 1a and 2a

During all the steps of model estimation, Model 1 showed a superior fit over Model 2. Following two revisions of both Model 1 and Model 2, Model 1a revealed a superior fit on all goodness of fit indices. Based on this fact, and also on the fact that

Model 1a was closest to the original Miller and Brickman (2004) conceptualization of the Model of Future-Oriented Motivation and Self-Regulation, it was decided to accept Model 1a as the final model. Continuing to improve Model 2a was not considered a viable option, in view of the undesirability of multiple modifications that risk capitalizing on chance characteristics of the data (MacCallum et al., 1992; Ullman, 1996).

As mentioned in the previous section, an estimation of Revised Model 1a showed evidence of a good fit with the data, and the chi-square was non-significant, χ^2 (1, N = 421) = < .001, p < .997, indicating that the observed and model-implied covariance matrices were not significantly different. The values of all the indices, including the GFI, NFI, NNFI and CFI all exceeded .95, and the RMSEA was < .001, clearly within optimal levels of < .05, indicating a good fit.

An examination of the predicted paths in Revised Model 1a revealed that the hypothesized paths were generally well supported with one exception: among future goals, extrinsic goals were not predictive of any of the variables in the model. In their original model, Miller and Brickman (2004) did not hypothesize about the specific impact of extrinsic versus intrinsic future goals, but rather about future goals in general.

Although Self Determination Theory (Ryan and Deci, 2000; Kasser and Ryan, 1993, 1996), one of the theories underlying Miller and Brickman (2004), predicts differential effects of extrinsic and intrinsic future goals on people's well-being, the scarcity of research on the differential impact of these future goals on educational subgoals made it unclear whether such a difference would be observed in the context of the present study.

Final Model: Revised Model 1a

In both models tested (Initial Models 1 and 2, see Figures 6 and 7), Miller and Brickman's (2004) original construct of future goals was operationalized as extrinsic future goals, and intrinsic future goals, in order to explore whether differences between extrinsic and intrinsic future goals might be observed in predicting students' subgoals and perceptions of task instrumentality in academic environments. Results indicated differences consistent with Self Determination Theory: extrinsic future goals were not predictive of either proximal subgoals or perceptions of task instrumentality, while intrinsic future goals predicted many hypothesized paths, both directly and indirectly.

All path results are summarized below (see also Tables 8 and 9 for a summary of the paths of all models). On the other hand, in all models tested, there was a correlation between extrinsic and intrinsic future goals (r = .33), indicating that extrinsic and intrinsic goals may coexist, and that they are not mutually exclusive. The final model, Model 1a, indicated that task instrumentality was significantly and positively predicted by proximal subgoals (standardized coefficient = .42, t = 9.22), intrinsic future goals (standardized coefficient = .16, t = 3.60), and, in addition, by the college graduation target subgoal (standardized coefficient = .20, t = 4.77), but not by extrinsic future goals (in Initial Model 1, standardized coefficient = .003, t = -.07. This path was subsequently dropped). The predictors accounted for 40% of the variance in task instrumentality (see Tables 10 and 11 for the values of R^2 for all equations in all models tested). Proximal subgoals were predicted by college graduation target subgoal (standardized coefficient = .20, t = 4.42), and by intrinsic future goals (standardized coefficient = .43, t = 914), but not by extrinsic future goals (standardized coefficient = .05, t = 1.08),

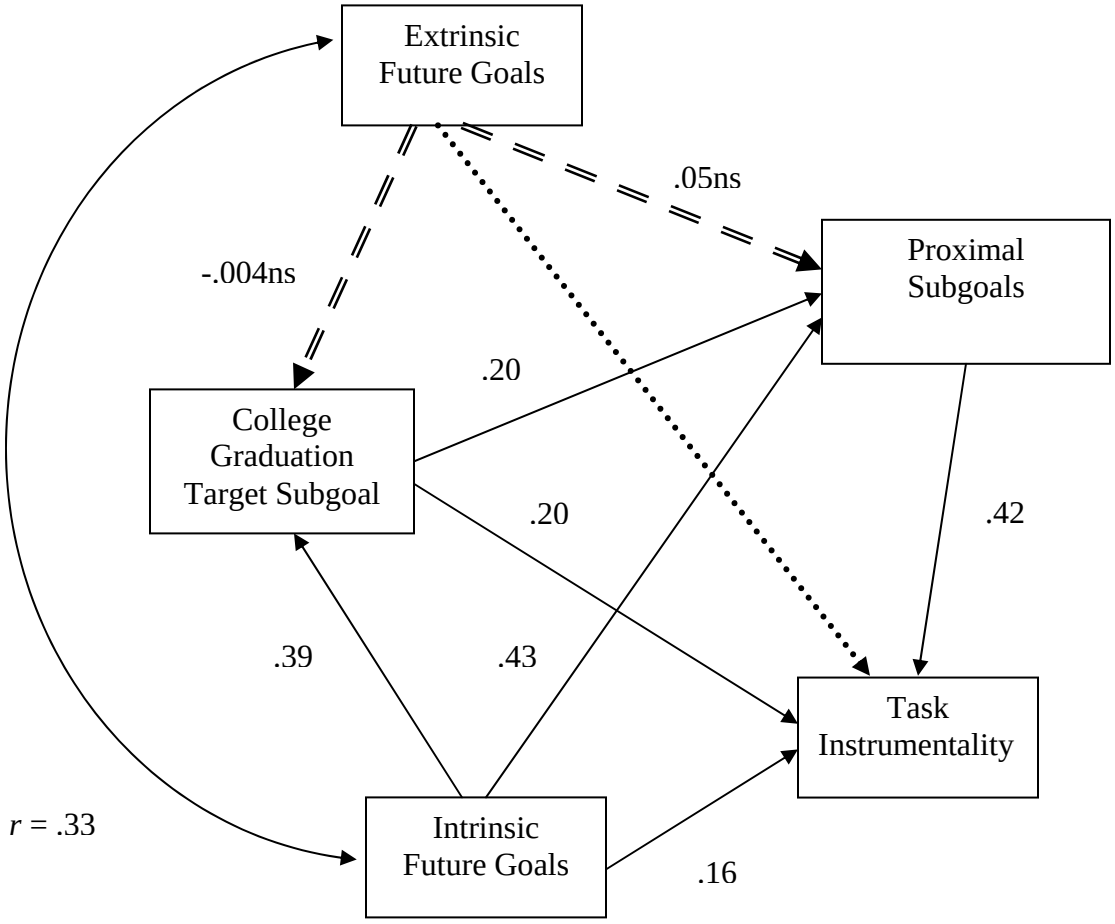


Figure 8. Final Model: Revised Model 1a. The dotted line indicates a non-significant path that was removed during the first model modification predicting proximal subgoals from extrinsic future goals. The broken lines indicate non-significant paths that were left in the model. The path predicting task instrumentality from the college graduation target subgoal was added during the second, and final, model modification. The numbers indicate standardized path analysis coefficients with the exception of *r*, which indicates the Pearson product-moment correlation between intrinsic and extrinsic future goals. The letters ns indicate that a path is non-significant.

and the predictors accounted for 30% of the variance in the proximal subgoals. Finally, the college graduation target subgoal was predicted by intrinsic future goals (standardized coefficient = .39, t = 8.10), but not by extrinsic future goals (standardized coefficient = .004, t = -.08). This predictor accounted for 15% of the variance in the target subgoal of college graduation.

Table 10.

R^2 values in all the Versions of Model 1

Equation	Model 1	Revised Model 1	Revised Model 1a
1	Proximal Subgoals Extrinsic Future Goals Intrinsic Future Goals --- Task Instrumentality **R^2 = .37**	Proximal Subgoals Intrinsic Future Goals --- Task Instrumentality **R^2 = .37**	Proximal Subgoals College Graduation Intrinsic Goals --- Task Instrumentality **R^2 = .40**
2	College Graduation Extrinsic Future Goals Intrinsic Future Goals --- Proximal Subgoals **R^2 = .30**	College Graduation Extrinsic Future Goals Intrinsic Future Goals --- Proximal Subgoals **R^2 = .30**	College Graduation Extrinsic Future Goals Intrinsic Future Goals --- Proximal Subgoals **R^2 = .30**
3	Extrinsic Future Goals Intrinsic Future Goals --- College Graduation **R^2 = .15**	Extrinsic Future Goals Intrinsic Future Goals --- College Graduation **R^2 = .15**	Extrinsic Future Goals Intrinsic Future Goals --- College Graduation **R^2 = .15**

Note: Set of predictors are listed above the dotted lines, predicted variables are listed below the dotted lines.

Table 11

R^2 Values in all the Versions of Model 2

Equation	Model 2	Revised Model 2	Revised Model 2a
1	Proximal Subgoals Extrinsic Future Goals Intrinsic Future Goals --- Task Instrumentality **R^2 = .36**	Proximal Subgoals Intrinsic Future Goals --- Task Instrumentality **R^2 = .36**	Proximal Subgoals Intrinsic College Instr. Intrinsic Future Goals --- Task Instrumentality **R^2 = .39**
2	Extrinsic College Instr. Intrinsic College Instr. Extrinsic Future Goals Intrinsic Future Goals --- Proximal Subgoals **R^2 = .30**	Extrinsic College Inst. Intrinsic College Inst. Intrinsic Future Goals --- Proximal Subgoals **R^2 = .30**	Extrinsic College Instr. Intrinsic College Instr. Intrinsic Future Goals --- Proximal Subgoals **R^2 = .30**
3	Extrinsic Future Goals --- Extrinsic College Instr. **R^2 = .20**	Extrinsic Future Goals --- Extrinsic College Instr. **R^2 = .20**	Extrinsic Future Goals --- Extrinsic College Instr. **R^2 = .20**
4	Intrinsic Future Goals --- Intrinsic College Instr. **R^2 = .06**	Intrinsic Future Goals --- Intrinsic College Instr. **R^2 = .06**	Intrinsic Future Goals --- Intrinsic College Instr. **R^2 = .06**

Note: Set of predictors are listed above the dotted lines, predicted variables are listed below the dotted lines.

CHAPTER 5

DISCUSSION AND CONCLUSION

A major contribution of the present study is to our understanding of the way in which distal future goals may predict students' proximal subgoal systems, and their perceptions of task instrumentality in academic environments. In addition, the present study has also made a major contribution to our understanding of the differential ways in which personally-valued extrinsic versus intrinsic future goals may predict students' motivation to adopt pertinent systems of proximal subgoals leading to college graduation, and to perceive school tasks as instrumental to their future.

Based on Miller and Brickman's (2004) model of Future-Oriented Motivation and Self-Regulation, which draws primarily from Social Cognitive Theory (Bandura, 1986) and from Self Determination Theory (Kasser and Ryan, 1993, 1996), two similar models were tested, to find out whether the predictions of Miller and Brickman (2004) were accurate, and, in addition, whether Miller and Brickman's (2004) hypothesized influence of future goals on proximal subgoal systems and on task instrumentality would yield differential results if future goals were treated differentially as either extrinsic or intrinsic future goals, with their own respective paths.

Among the two models tested, the only difference was the nature of the target subgoal chosen to mediate between the hypothesized influence of the future goals (both extrinsic and intrinsic) and the proximal subgoals. Initial Model 1 in the present study (Figure 6), the closest conceptually to the Miller and Brickman (2004) model, tested college graduation as the mediating target subgoal, and Initial Model 2 in the present

study (Figure 7) tested college instrumentality (both extrinsic and intrinsic) as the mediating target subgoal.

Following two modifications of each model, Revised Model 1a (Figure 8) emerged as the one that showed the best evidence of fit with the data. That was the model that tested college graduation as the target subgoal mediating between future goals and proximal subgoals, and the one conceptually closest to Miller and Brickman (2004). The discussion that follows will address this model.

Consistent with Social Cognitive Theory (1986) and with Miller and Brickman (2004), future goals had a significant direct and mediated effect on proximal subgoals and on perceptions of task instrumentality. Consistent with Self Determination Theory (Kasser and Ryan 1993, 1996), the extrinsic and intrinsic nature of the specific future goals had differential effects on students' college graduation target subgoal, on their proximal subgoals, and on their perceptions of task instrumentality.

Perceptions of task instrumentality were directly and indirectly related to proximal subgoals, college graduation target subgoal, and intrinsic future goals, but not to extrinsic future goals. Proximal subgoals were directly related to the college graduation target subgoal, and both directly and indirectly to intrinsic future goals, but not to extrinsic future goals. Finally, the college graduation target subgoal was directly related to intrinsic, but not to extrinsic, future goals.

Taken together, these results indicate that the hypothesized relationships in the predicted directions between distal future goals, system of proximal subgoals and task instrumentality are plausible ones, and that a focus on intrinsic, rather than extrinsic, future goals, may be more predictive of the adoption of a robust subgoal system and of

adaptive perceptions of task instrumentality in college environments. However, much more research is needed before firmer conclusions can be drawn. This chapter will proceed with a summary of the present study's limitations and suggestions for future research, followed by a summary of the study's contributions and educational implications.

Limitations of the Study and Directions for Future Research

Limitations of the study include the nature of correlational and causal-comparative methodology, the use of convenience samples, the study design, the nature of one of the instruments used in the study, the characteristics of self-report measures in general and questionnaires in particular, and, finally, the use of a Likert-type scale. Each one of these limitations will be addressed below.

The correlational and causal-comparative methods used in this study do not provide cause-and-effect evidence among the variables examined, as only a true experimental method can establish cause-and-effect. However, these non-experimental methods can provide evidence for the possible direction in which future goal variables might influence proximal subgoal systems and task instrumentality, and this evidence may be very helpful for planning future experiments designed to determine causality. It is also important to note that even though the data were shown to fit the predicted model well, that in itself is not an indication that the data would not fit other types of relationships, or variable configurations. On the other hand, the two models tested in the present study followed sound theoretical predictions, and the accepted final model can be trusted to provide a very plausible variable and path configuration. There is a need for future research that continues investigating the relationships among future goals,

proximal subgoal systems, and task instrumentality in causal-comparative ways, and there is especially a need for future experimental research that tests whether observed predictions follow a cause-and-effect pattern. There is also a need for applied research to determine whether observed relationships in all types of studies (experimental as well as non-experimental) can be applied to interventions designed to foster a robust and sound goal systems and positive and adaptive perceptions of task instrumentality.

Although the size of the sample in the present study was adequate for the study's purpose ($N = 421$), the sampling method and the study design, involving a convenience sample and data collection during one limited period of time in one university department, will reduce the generalizability of the study. Additional studies will be needed before findings can be generalized to other disciplines, educational environments, and populations. At the college level, future research is needed especially in professional programs such as law, engineering or medicine, to determine whether intrinsic future goals are still the most predictive of adaptive outcomes, or whether extrinsic future goals play an important role as well. Additional research is needed at the elementary and high school levels, as well as in private, and in public, schools. Longitudinal designs can be particularly beneficial in tracing any possible changes in students' goal systems and perceptions of task instrumentality as they move from one school level to another.

One of the major findings in the present study was the fact that among future goals, intrinsic goals were the only ones that predicted an adaptive subgoal system and perceptions of task instrumentality, whereas extrinsic goals were not predictive of any of the variables of interest. However, these results were based on the Aspirations Index

instrument, which is designed to measure the three major extrinsic aspirations of wealth, fame, and appearance. It may be conceivable that the instrument has not tapped other possible extrinsic aspirations of interest to college students (such as, perhaps, pleasing one's parents, e.g. Miller et al., 1996) that may have resulted in more significant relationships between extrinsic aspirations and the variables of interest in the present study. Future research utilizing additional extrinsic goals and testing them in various educational environments may be better able to determine whether extrinsic goals are predictive of adaptive subgoal systems and of positive perceptions of instrumentality.

Self-report measures in general, and questionnaires in particular, have limitations as well. Limitations of self-report measures include, for example, the possibility that participants' answers may reflect their perceptions of social desirability rather than their true beliefs, and the possibility that participants do not consider their answer seriously, but rather rush through in order to get to the next activity (for a discussion of the weaknesses of self-report measures see Aaronson, Ellsworth , Carlsmith & Gonzales, 1990, p. 244-261). The method employed in the present study, the self-report questionnaire, however, does have some advantages over other methods. For example, unlike behavioral methods or interview methods, it can provide a much higher level of anonymity, especially if, as in this case, participants are not asked to list any identifying information. A greater level of anonymity is beneficial not only because of ethical issues, but also because of the lessened chance that participants may answer in socially-desirable ways. Another great advantage of the questionnaire pertains to standardization: any instructions, wording, order of the items, etc., can be kept constant across participants, thus minimizing error and experimenter bias in interpretation.

Finally, the questionnaire used in this study utilizes a Likert-type scale, and this type of scale, where participants' responses are averaged on any one issue, has been criticized for the fact that people with very different attitudes on an issue may have the same average score. For example, on a Likert-type scale of 1 to 7, given three items, one participant may mark 1 + 1 + 7, and another may mark 3 + 3 + 3, and their average score would be identical (Aronson et al., 1990). However, the limitations posed by the use of a self-report questionnaire measure utilizing a Likert-type scale are somewhat ameliorated by the fact that other studies pertaining to variables similar to those analyzed in the present study and utilizing different methodologies have come to conclusions supporting the hypothesis of the present study (e.g. Brickman & Miller, 2001; Schutz et al., 2001).

The Present Study's Contribution

Although research is available in the areas of distal and proximal motivation, until recently, researchers in these areas have not tried to integrate their findings (Husman & Lens, 1999; Kauffman & Husman, 2004). One tradition has focused mainly on research dealing with future motivation (e.g. Little, 1983; Markus & Nurius, 1986; Nuttin, 1985, Nurmi, 1989; Zaleski, 1994b), and another tradition has focused mainly on research dealing with proximal motivation (e.g. Schunk, 1989; Zimmerman & Martinez-Pons, 1990; Elliot & Dweck, 1988, Atkinson, 1965, Nicholls, 1984). The present study has continued the most recent trend to combine these two areas of research (Kauffman & Husman, 2004), and has made a contribution by providing evidence that distal future goals may have a significant impact on proximal subgoals and on task instrumentality (also a proximal variable).

Even among researchers who have devoted resources to studying the specific relationship between future goals and proximal subgoals, few have carried out research pertaining to educational environments (a few noted exceptions are Brickman & Miller, 2001; Schutz, 1997 and Schutz and his colleagues, 1994, 2001). Most of the research about the relationship between distal and proximal goals to date has been done under the umbrella of goal-setting theory, itself based on work motivation theory and research. These research studies have tended not to employ personally-valued future goals as their distal goals, but rather assigned or personal goals for specific projects (Locke & Latham, 1990). The present study is among the first to test a specific hypothesis involving personally-valued future goals and their predicted relationship to a system of proximal subgoals and task instrumentality in an educational setting. Results show a plausible causal path between the adoption of personally-valued future goals, proximal subgoals, and task instrumentality, at the college level.

However, as Kasser and Ryan (1993, 1996) noted, not all personally-valued future goals are equally likely to predict similarly positive outcomes. These researchers noted that extrinsic future goals were associated with diminished well-being in the present, while intrinsic future goals were associated with relatively high levels of well-being in the present. The present study is among the first to find evidence for a similar differential effect of extrinsic and intrinsic future goals in a different context than the studies above, namely, when future goals were used to predict proximal subgoals and task instrumentality among college students.

Although this finding should be treated with caution until further evidence emerges, there is some indirect evidence that lends it additional support. Writing from a

goal orientation theoretical perspective, Nicholls et al. (1985) examined whether high school students' (relatively proximal) personal goals in school were related to their perceptions of what the aims of education should be. As mentioned in Chapter 2 of the present study, the authors found that these future-oriented cognitions were related to students' personal goals for school in the present. Despite the fact that Nicholls et al.'s (1985) construct of "aims of education" differed considerably from the present study's construct of "personally-valued future goals," their findings were in the same direction of those in the present study. The authors found that high school students who perceived the aim of education to be furthering one's wealth and status tended to have maladaptive personal school goals such as work avoidance, and they also tended to have ego, rather than task, orientations. On the other hand, students who perceived the aim of education to be commitment to society or understanding of the world, tended to have adaptive personal school goals such as working hard, and they also tended to have task, rather than ego, orientations. These results are consistent with Self Determination Theory (Ryan & Deci, 2000).

In the present study, consistent with Kasser and Ryan (1993, 1996), personally-valued intrinsic future goals were the pivotal point in predicting many positive factors both directly and indirectly, while personally-valued extrinsic future goals were not predictive of any factor in the model tested. The personally-valued intrinsic future goals that the present study tested were individual growth, relationships, community involvement, and health. The personally-valued extrinsic future goals tested were wealth, fame, and appearance. The intrinsic future goals were directly predictive of the adoption of the target subgoal of college graduation, directly and indirectly predictive of the

adoption of proximal goals conducive to college graduation, and directly and indirectly predictive of students' perceptions of task instrumentality while at college, while the extrinsic future goals were unrelated to any of these factors.

The present study also contributed to our understanding of factors that predict task instrumentality. Perceptions of task instrumentality have been found to have many adaptive educational outcomes (e.g. Greene et al., 2004; Raynor, 1970, 1974; Vansteenkiste et al., 2004). Until recently, most studies of perceived task instrumentality have used task instrumentality as the predictor variable, which has made it hard to find out what it is that predicts task instrumentality itself (e.g. Simons et al., 2003; Malka & Covington, 2004). Because of the importance of perceptions of task instrumentality in educational environments, there is a need to find what it is that influences task instrumentality itself.

Recently, based on Miller and Brickman (2004), Greene et al. (2004) have identified classroom context variables as important direct and indirect predictors of perceived task instrumentality. Specifically, they found that students' perceptions of the classroom climate as being supportive of autonomy and as consisting of mastery evaluations predicted (through self-efficacy) the students' perceptions of task instrumentality. In addition, they found a direct, as well as an indirect (through self-efficacy), effect of motivating task perceptions (i.e. perceptions of classroom tasks as meaningful, relevant and interesting) on perceived instrumentality. Earlier, Midgley & Maehr (1991) suggested that students' motivation regarding the tasks that they are asked to engage in may not be influenced only by classrooms and teachers, but by school-level factors, as well: "teachers alone do not decide what students do in the classroom. These

decisions are also made in direct and subtle ways at the school level when curricular issues are discussed, excellent-teacher awards are presented, news reports are filed, textbooks are chosen, and resources are allocated" (p. 412). Finally, in three case studies, Brickman and Miller (2001) found that students' past experiences in the larger sociocultural context (e.g. home, school, peers, media) were also related to their perceptions of task instrumentality, possibly through the students' future goals, proximal goals, and perceptions of ability.

The present study's contribution in the area of task instrumentality was to find evidence that student-level goal systems predicted task instrumentality. More specifically, the present study found that the adoption of proximal subgoals had a direct effect, intrinsic future goals had both a direct and an indirect effect (through proximal subgoals), and, finally, the college graduation subgoal had a direct, as well as an indirect effect (through proximal subgoals) on task instrumentality. According to the causal model tested, the present study suggests that the students' own proximal subgoals were the main route through which other variables predicted perceived task instrumentality. Thus, to the possibility that task instrumentality may be influenced by community-, school-, and classroom- level factors, we may now add the possibility that task instrumentality may also be influenced by the students' own intrinsic future goals, and by their own proximal subgoal systems.

Another important contribution of the present study was the empirical testing of a portion of the Model of Future-Oriented Motivation and Self-Regulation proposed by Miller and Brickman (2004). This model is relatively new, and it attempts to integrate two previously separate bodies of motivational theory and research, namely future-

oriented and proximally-oriented motivation and self-regulation. It is important to test its major assumptions and either provide evidence of its validity, or suggest possible improvements. The present study found that the portion of the Future-Oriented Motivation and Self-Regulation (Miller & Brickman, 1004) model tested fit the data quite well. In addition, the present study also found that when the personally-valued future goals that Miller and Brickman (2004) referred to were examined differentially as extrinsic and intrinsic goals, only the paths from intrinsic future goals yielded significant values, while the paths from extrinsic future goals to other variables depicted were not significant.

Educational Implications

Assuming that the causal model tested in this study is sound, the implications of the present study's results for education professionals (as well as for parents) are at least three-fold. These implications relate to the importance of task instrumentality in academic environments, the need for a re-examination of study skills and remedial programs in light of the emerging evidence of the importance of a clear system of personal goals and subgoals in educational environments, and the encouragement of intrinsic future goals whenever possible.

Task Instrumentality

One of the important goals of the present study was to identify factors potentially influencing task instrumentality. The contribution of perceived task instrumentality to achievement and to other motivational factors in academic settings has been widely recognized (e.g. Greene et al., 2004; Raynor, 1970, 1974; Vansteenkiste et al., 2004; Miller & Brickman, 2004, Brickman & Miller, 2001). This study suggests that besides

functioning as a helpful incentive when a student has to do school work that is not inherently pleasurable (Miller & Brickman, 2004; Greene et al., 2004), task instrumentality can also serve as an early warning signal that can alert teachers and parents that their student may be having a more serious motivational problem. The present study found that all the paths leading to perceptions of task instrumentality from intrinsic future goals, from the target subgoal, and from the proximal subgoals were significant. In other words, problems with task instrumentality (e.g. not seeing the reason why one should do a school assignment, or thinking that all assignments are worthless) may be related to much larger problems, such as a lack of appropriate strategic proximal subgoals, a lack of appropriate target subgoal or subgoals, a lack of appropriate intrinsic future goals, or a combination of these factors. Accordingly, when a student exhibits signs of weak or non-existent task instrumentality, educators should take it seriously, and look beyond the specific assignment that was not turned in, to identify other possible underlying problems. Such problems may include not only the student-level goal factors identified by the present study, but classroom- and school-level factors identified by other studies, as well (e.g. Greene et al., 2004; Midgley & Maehr, 1991; Brickman & Miller, 2001). In dealing with task instrumentality problems on the part of students, educators may start by addressing student-level factors such as discussing the student's intrinsic future goals, target subgoal or subgoals, and proximal subgoals. If needed, educators may then widen their intervention to include classroom-, school-, and community-level factors, to the extent possible.

Clarification of Personal Goals and Subgoals

The high dropout rates in high schools and colleges in the United States (NCES, 2004), especially among poor students, raise the possibility that at least some of the students do not have an awareness of their own goals, have not done much thinking about aligning their future and proximal goals and subgoals in any coherent way, and have no idea where they are headed. The present research has indicated that the direction in which goals affect students is from distal future intrinsic goals, to a system of proximal subgoals, which may include target subgoals, as well as proximal strategic subgoals. Based on this knowledge, it may be possible to design goal-based interventions targeting at-risk students, that would explain how a goal system works, and help them identify their own long-term intrinsic goals, set target subgoals along the way, and adopt proximal subgoals making it possible to reach the target subgoals leading to the more distal future goals. For students with no adaptive long-term intrinsic goals, it may be possible to design an intervention to foster such beneficial goals.

Students at risk of dropping out of school are often offered courses in remedial or study skills (NCES, 2004). According to the same NCES (2004) report, most college students enrolled in these remedial courses end up dropping out. The present study points at a possible reason. Study skills are the types of things included in strategic proximal subgoals that students normally set for themselves, such as study in a quiet place, study with a friend for a test, summarizing main ideas to oneself, etc. In the present study, these types of proximal subgoals were shown to be predicted by two variables: intrinsic future goals, and college graduation target subgoal. It may well be the case that students exhibiting problems in the proximal subgoal area may have

problems that start with a lack of focus on the larger goals at hand. They may also benefit from an intervention that helps them clarify their intrinsic future goals and their system of proximal subgoals on the way to achieving their future goals. Once the future goals and target subgoals are in place, these students may be in a much better position to act on improving their strategic proximal subgoals.

Focus on Intrinsic Future Goals

The present study has found that the major predictor of a positive educational goal system and task instrumentality, is the adoption of intrinsic, rather than extrinsic, future goals. Although these results need to be treated with caution until more evidence becomes available, it is interesting to note that whereas some studies have identified possible drawbacks to extrinsically-focused future goals (e.g. Kasser & Ryan, 1993, 1996; Ryan et al., 1999; Nicholls et al. 1985), there are almost no studies identifying drawbacks to intrinsically-focused future goals. In the present study, the paths from the intrinsic future goals to all other variables were significant, whereas the paths from extrinsic future goals were not significant. At the same time, intrinsic and extrinsic future goals were not mutually exclusive. In the two models tested, extrinsic and intrinsic future goals had a moderate correlation, implying a relationship. The implication may be that while people may have a mix of extrinsic and intrinsic future goals, in order to be successful in an academic environment they may need a stronger focus on intrinsic goals such as personal growth, relationships, community involvement, and health.

For educators, these findings may imply that they should encourage students to excel not by pointing out how much higher their salaries would be if they graduated

from their respective schools, but rather by pointing out, for example, how much they would know, or how they might be able to contribute to society. The great importance accorded to educational improvement in the United States (e.g. United States Department of Education reports, 1983, 1994, 2001), coupled with the recognized potential of intrinsic future goals in particular, and of intrinsic factors in general, to improve schools, have already led many educators and researchers to design programs of school improvement that emphasize intrinsic elements.

For example, Huffman and Hipp (2003) have advocated the creation of "Professional Learning Communities," or PLC, defined as "a school's professional staff members who continuously seek to find answers through inquiry and act on their learning to improve student learning" (p. 4). This definition fits three important intrinsic future goals identified by Self-Determination Theory (Kasser and Ryan, 1993, 1996), namely personal growth ("learning"), meaningful relationships (all "professional staff members" in the school), and community contributions ("to improve student learning"). Brown (1997) has designed a program for 6 to 12-year-old inner city children entitled "Fostering Communities of Learners" (FCL) whose four underlying principles are agency, reflection, collaboration, and culture. A close look at the program's principles reveals that it, too, focuses on improving education through intrinsically-focused elements, such as personal growth ("agency," "reflection"), meaningful relationships ("collaboration"), and community contributions (the mutual construction and creation of a common "culture"). Similar intrinsic elements have been echoed by other educational researchers working on school restructuring based on constructivist and democratic principles (e.g. O'Hair & Odell, 1995; O'Hair & Reitzug, 1997; Newmann & Wehlage,

1993). For example, Newmann and Wehlage (1993) have called for school restructuring based on learning environments that include "five standards of authentic instruction." These standards include the promotion of higher order thinking and depth of knowledge (similar to the intrinsic goal of personal growth), social support for student achievement and substantive conversation (similar to the intrinsic goal of meaningful relationships), and connectedness to the world beyond the classroom (very similar to the intrinsic goal of community contributions). Authentic instruction, according to the authors, includes authentic teaching, learning, and assessment.

Finally, intrinsic factors have been instrumental in conceptualizing the creation of smaller and more caring educational environments. For example, Mertens, Flowers, and Mulhall (2001) have advocated dealing with the problem of the impersonality of large schools by creating "learning communities" within such schools through appropriate interdisciplinary "teaming practices," again an intrinsic motivation element focusing on personal growth, meaningful relationships, and community contributions. The authors' explained that such teaming practices may help both large and small schools improve. Recently, an even more autonomous and intrinsically-motivated teaming practice has emerged, based on Wenger and Snyder's (2000) description of "communities of practice," whose members join based on common interests and knowledge, and on a motivation to contribute to their immediate, and to the larger, community.

Many schools have been involved in serious deliberations about different ways to emphasize intrinsic future goals and other intrinsic factors following the devastating shooting incident at Columbine High School in 1999 and the increased levels of school violence in the country (see Raywid & Oshiyama, 2000). These deliberations have often

involved both higher-level school restructuring ideas as well as more practical issues, such as requiring school uniforms in order to lessen the impact of extrinsic goals focusing on appearance (e.g. Anderson, 2002). On the other hand, some schools facing financial pressures have decided to accept commercial programming on their campuses (Johnston, 2001), thus unduly emphasizing extrinsic goals. Since the present study's results identify intrinsic goals as the main starting point for other positive and adaptive subgoals, educators should consider emphasizing intrinsic, and deemphasizing extrinsic, future goals among their students and in their schools, while keeping in mind that intrinsic and extrinsic goals are not mutually-exclusive, and that research results on the intrinsic and extrinsic aspects of goals are not yet conclusive.

Conclusion

The goal of the present study was to test a portion of the Miller and Brickman (2004) Model of Future-Oriented Motivation and Self-Regulation, in order to find out whether students' distal future goals are related to their adoption of proximal subgoal systems and to their perceptions of task instrumentality. The results supported Miller and Brickman's (2004) hypothesis that future goals predict systems of proximal subgoals, and that these, in turn, predict perceptions of task instrumentality and can be very helpful in designing interventions to help at-risk students stay in school and succeed academically.

In line with Self-Determination Theory (Kasser & Ryan, 1993, 1996), the present study also found that future goals had a differential relationship to the variables of interest: while extrinsic future goals were not significant predictors of any of the other variables, intrinsic future goals were significant direct and indirect predictors of

proximal subgoal systems and of perceptions of task instrumentality. This finding suggests that, pending additional research, educators should consider emphasizing intrinsic future goals (and other intrinsic factors) such as personal growth, meaningful relationships, and community contributions, in school environments, in order to better facilitate the development of students' future goals, proximal subgoals, and perceptions of task instrumentality.

In their article about future-oriented motivation and self-regulation, Miller and Brickman (2004) urged that "Those interested in proximal research issues and those with more future-oriented research agendas need to join forces in studying the phenomenon of academic motivation and self-regulation, and in planning interventions designed to improve the lives of the countless students who fail to see the relevance of schooling in their lives" (p. 29). By finding a meaningful and significant connection between future goals, proximal subgoal systems, and perceived task instrumentality, the present study lends additional support to the need for continued attempts at integrating future-oriented and proximally-oriented motivation and self-regulation.

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Appendix A

Pilot Study

Pilot Study Sample

Description of Sample Population

The population from which the pilot study sample was drawn was undergraduate students at a large Southern urban university. The following demographic description of the student population is based on the university's enrollment data for the 2003-2004 school year. Enrollment for Fall 2003 was 19,911 students, 15,209 of whom were undergraduates, 4,257 were graduates, and 445 were law school students. 68% were enrolled as full-time students, 32% were enrolled as part-time students, 40% were men, and 60% were women. 33% of the students were black, 58% were white, and 9% were "other." Average entering ACT score was 22.

Participants

Eighty-one students originally volunteered to participate in the pilot study during Summer 2004, all freshmen in a second semester required composition class. Two of the participants were excluded because of extensive missing data (they omitted 67 and 58 items respectively), and the rest of the missing values seemed to follow a random pattern, and were substituted by means of the participants' responses on the other scale's items. More detail about the missing data is provided under the heading "Pilot Study Goals" below. Freshmen were chosen in order to get the widest possible picture of future and proximal goals. The demographic description of the students who participated in the pilot study (N = 79) was as follows: 88.6% were enrolled as full-time students, 10.1% were enrolled as part-time students (1.3% marked the wrong answer), 44.3% were men, and 55.7% were women. 36.7% of the students were black, 49.4% were white, 3.8% Asian, 1.3% Hispanic, and 7.6% were "other." ACT scores were as

follows: 3.8% reported ACT scores between 11-15 (or SAT 500-750), 8.9% reported scores between 16-18 (SAT 760-890), 24.1% reported scores between 19-21 (SAT 900-1010), 20.3% reported scores between 22-24 (SAT 1020-1120), 13.9% reported scores between 25-27 (SAT 1130-1230), and the rest (17.7%) reported scores greater than 27 (SAT greater than 1230).

Sampling Method

The sampling method in the pilot study was a convenience sample of the classes that I was given access to, and comprised 100% of the ENGL 1020 composition sections offered during summer 2004 (with the exception of one 1020 section that was offered online).

Procedures

Ethical Standards

Permission for the study was sought and granted by the IRBs of the University of Oklahoma, and the University of Memphis (See copies of the permission forms in Appendix C). The study was conducted in the students' classrooms, with the permission of the department chair, and the individual teachers. Potential participants were informed of the general nature of the study, as well as of possible adverse effects, which were expected to be very minimal. They were told that anonymity and confidentiality would be strictly maintained by 1) having the regular teacher who teaches the class exit during the administration of the instrument, 2) having a trained educational professional (i.e., me) administer and collect the instruments at the end of the session, 3) not having any identifying information, such as name or code, listed on the questionnaires, and 4) destroying all marked instruments at the end of the study.

Research Protocol

During Summer 2004, when the pilot study was conducted, five English composition 1020 classes were offered to students on campus (there was another 1020 class offered, but it was an online course). Students in all five sections (i.e. 100% of the 1020 classes during the summer session) were asked to participate. They were offered a small incentive in the form of a candy bar. After signing a consent form (detailing procedures for anonymity, confidentiality, benefits from the study, and negligible negative effects), students were asked to complete the "Future-Oriented Student Motivation Survey (FOSS)," an instrument containing five subscales, as detailed below.

Instruments

Future-Oriented Student Motivation Survey (FOSS)

Participants were administered the "Future-Oriented Student Motivation Survey" (FOSS). This instrument included a short demographic portion as well as five scales measuring different aspects of future- and proximal-oriented motivation. Three of the scales had been developed and used previously in the professional literature, and their psychometric properties have been considered to be adequate. These scales are the *Aspirations Index* (Kasser and Ryan, 1993, 1996), the *MSLQ* (Pintrich, Smith, Garcia, & McKeachie, 1991), and the *Perceived Instrumentality Scale* (Miller et al., 1999; Greene et al., in press). The Aspirations Index was modified by the addition of a commitment question regarding all the aspirations listed, and the MSLQ was modified by the use of only 8 (out of a total of 15) subscales, and by the addition of three subscales to it, each containing five items. These additional subscales were Social Strategies, Financial Approaches, and Academic Planning. Sample items for these additional scales are

included below, under the heading "Measuring the System of Proximal Subgoals." The Perceived Instrumentality Scale was administered unmodified. Two scales, the *College Graduation Scale*, and the *College Instrumentality Scale*, were developed for this specific study. The purpose of this section is to give a more detailed analysis of the scales' item contents, and their psychometric properties.

1. Measuring Personal Future Goals:

The Modified Aspirations Index (Kasser & Ryan, 1993, 1996)

Because of the focus of this study on the relationships between distal and proximal goals, rather than on individual differences in goal content, the nomotheic approach was taken to the measurement of future goals. The latest version of the Aspirations Index was used (Kasser & Ryan 1993, 1996; Ryan et al., 1999. Available http://www.psych.rochester.edu/SDT/measures/aspir.html). The Aspirations Index was chosen for the measurement of personal future goals because it includes not only seven major (and inclusive) aspirations, but that it conceptually divides them into extrinsic and intrinsic aspirations, and thus allows for more complexity in the data analysis and in our understanding of whether the intrinsic versus extrinsic nature of the aspirations (and not only their individual content) are predictive of the other variables.

The 1996 version of the Aspirations Index included 32 possible aspirations rated on two five-point scales measuring the importance (value) of the aspiration, and the likelihood that it would happen in the future (expectancy). These 32 aspirations represented seven life domains, which, in the factor analysis, loaded on two factors—extrinsic and intrinsic. The extrinsic factor included the life domains of wealth, attractive image, and fame, and the intrinsic factor included the life domains of health,

personal growth, affiliation, and community contribution. An example of an aspiration item representing an extrinsic factor (wealth) was "Be wealthy and materially successful," and the item was followed by two questions, asking participants how important this aspiration was for them, and how likely it is that they would attain it. An example of an aspiration item representing an intrinsic factor was "Have satisfying relationships with family and friends," and was also followed by two questions pertaining to value and expectancy of achievement.

In the Kasser and Ryan articles (1993, 1996), the reported alpha reliability coefficients for the importance (value) subscales ranged from .59 to .87, with a mean of .76. Alphas for the likelihood subscales ranged from .68 to .86, with a mean of .76. The present pilot study, based on the most current version of this instrument revealed much higher alpha reliability coefficients, as reported below.

The most current version of the Aspirations Index (available online at the URL listed above) includes 35 aspirations (instead of the original 32 items) representing the same 7 life domains. Each life domain is represented by five items in the instrument. Three other changes are apparent from the earlier version: a) The items were reworded to make them clearer, b) the items in the current version are followed by three, rather than two, questions (the third question pertains to how much of the aspiration has been achieved already, a commitment indicator), and c) the scale was changed from a 5-point, to a 7-point scale. The authors (Kasser & Ryan, 2004) mentioned that they believed that the change from a 5-point to a 7-point scale had not significantly affected their scale in any way. According to Kasser and Ryan (2004), the scale items have been combined in various ways in the literature, depending on the needs of the particular study.

In the pilot study the most current version of the Aspirations Index was used (Kasser & Ryan, 2004), with one modification: each item was followed by two, rather than three, questions, and the questions referred to a) the value (importance) of the aspiration (this item was identical to the one used by Kasser & Ryan, 2004), and b) the *commitment* to pursuing the particular aspiration (this item was created for the present study). Based on the Miller and Brickman (2004) model and on Social Cognitive Theory (Bandura, 1996; Locke & Latham, 1990), valuing of, and commitment to, goals were thought to be among the most important dimensions in the present study, and hence the change. The value and commitment questions were combined and averaged for each of the seven life domains, and alpha reliabilities are described below.

The pilot study revealed a relatively high alpha-reliability for all seven life domain items (with value and commitment questions averaged). The alpha reliability coefficient for Fame was .94, Relationships .84, Image .93, Health .93, Wealth .93, Personal Growth .83, and Community involvement .95.

2. Measuring the Strength of (i.e. Value and Commitment to) the Target Subgoal of Graduating from College: The College Graduation Scale

This scale was created specifically for this study. It was modeled after the modified Aspirations Index (Kasser & Ryan, 1993, 1996) described above. It includes five goals, all having to do with college graduation. Each goal is followed by two questions, one pertaining to value (importance), and one pertaining to commitment to the goal. The questions are followed by a seven-point scale, 1 denoting "not at all," and 7 denoting "very" (e.g.: Goal: to graduate from college. 1. How important is this to you? 2. How committed are you to reaching this goal?). The Alpha reliability indicated by the

pilot study was .97.

3. Measuring the Instrumentality of College for Achieving Future Aspirations: The College Instrumentality Scale

This scale was created specifically for this study, to assess to what extent college was perceived as instrumental for attaining the aspirations listed in the seven life domains by the Aspirations Index (Kasser & Ryan, 1993, 1996). Participants were asked to rate, on a seven-point scale, to what extent they saw college graduation as instrumental to achieving wealth, fame, attractive appearance, meaningful relationships, community involvement, and health. The alpha reliability for this scale was .86, as indicated by the pilot study.

4. Measuring Proximal Subgoals: The Modified *MSLQ (Pintrich et al., 1991)*

This instrument was originally designed to assess six motivational factors (intrinsic goal orientation, extrinsic goal orientation, task value, control beliefs about learning, self-efficacy for learning and performance, and test anxiety), and nine learning strategy factors (rehearsal, elaboration, organization, critical thinking, metacognition, time and study environment management, effort regulation, peer learning, and help seeking) involved in successful academic performance. Pintrich and colleagues (1993) have provided convincing evidence of reliability and validity of the instrument.

In the present study, only eight of the original learning strategy subscales were used, the ones considered to indicate strategic subgoals designed to graduate from college in order to reach future goals. These eight subscales, followed by their originally reported alpha reliabilities (Pintrich et al., 1993), are rehearsal (.69), elaboration (.75),

organization (.64), critical thinking (.80), metacognition (.79), time and study environment (.76), peer learning (.76), and help seeking (.52). In addition, three subscales were added to the MSLQ specifically for the present study: social strategies (5 items asking about the balance between social activities and school, e.g. "When I have to choose between studying for a test and partying, I often choose studying for the test), financial approaches (5 items such as "I make sure that all college bills are paid on time"), and academic planning (5 items such as "I check with a college advisor periodically to make sure that I am taking all the courses necessary for graduation").

The items in these three scales were added based on interviews with two experts, both experienced professors who have had extensive research, teaching, and advising experience for a combined period of more than forty years, and who had been chairs of their respective departments. One professor was from the College of Education of a large Midwestern university, and another was from the College of Arts and Sciences of a large Southern university. The professors were asked to look at the MSLQ subscales chosen, and to add specific strategies without which, in their experience, students would find it difficult to graduate from college.

The pilot study revealed the following alpha reliability coefficients: .95 for the entire modified MSLQ instrument (that included the three additional subscales created specifically for this study), rehearsal subscale .82, elaboration .81, organization .83, critical thinking .91, metacognition .83, time and study environment .74, peer learning .82, help seeking .67, social strategies .73, financial approaches .79, and academic planning .83.

5. Measuring Perceived Task Instrumentality:

The Perceived Instrumentality Scale (Miller et al., 1999; Greene et al., 2004).

Miller et al. (1999) provided convincing evidence for the reliability and validity of the scale. The scale contains five items measuring perceptions of instrumentality for school work (e.g. "I do the work assigned in this class because my achievement plays a role in reaching my future goal"), and was successfully used to predict various motivational outcomes in educational environments by Miller and colleagues. The alpha reliability coefficient was .91 (Miller et al., 1999), and .90 (Greene et al., in press). The pilot study revealed an alpha coefficient of .91 for this scale.

Pilot Study Goals and Preliminary Results

The goals of the pilot study were as follows:

1. To check the alpha reliabilities of the instruments used with a sample of the population that will be used in the main study
2. To get a preliminary view of the normality of the variables
3. To see whether the variables hypothesized to be predictive of each other actually correlate with each other
4. To see preliminary patterns of missing data in the target population
5. To find out whether the participants had any problems completing the FOSS instrument or subscales within the instrument (i.e. clarity of items, etc.)

The results of the pilot study indicated the following general results:

1. Alpha reliabilities were very high, mostly in the .8 to .9 range (see specific information above under the discussion of each scale used in the study).

2. The normality of some the variables was problematic, especially in obviously desirable variables, such as wanting to graduate from college. When one asks college students how much they want to graduate from college, one can expect a major negative skew, since most are very likely to want to graduate. Table A1 provides measures of central tendency, skews and kurtosis of major variables.

3. An examination of the correlation coefficients of the pilot study revealed results in the expected direction, based on the Miller and Brickman (2004) model. As predicted, future aspirations correlated significantly with the extrinsic and intrinsic college instrumentality variables. Intrinsic aspirations correlated significantly with intrinsic college instrumentality ($r = .27$, $p < .05$), and extrinsic aspirations correlated significantly with extrinsic college instrumentality ($r = .31$, $p < .01$).

Some intrinsic future aspirations such as growth and health also correlated significantly with the target goal of graduating from college, despite the large skew of the college graduation variable ($r = .23$, $p < .05$, and $r = .40$, $p < .01$ respectively). The target goal of graduating from college correlated significantly with intrinsic college instrumentality ($r = .28$, $p < .05$), and with perceptions of task instrumentality ($r = 33$, $p < .01$). The highest correlations involved those between the intrinsic and extrinsic future aspirations on one hand, and the MSLQ and the task instrumentality, on the other. Students with a higher degree of intrinsic future aspirations (i.e. personal growth, relationships, health, and community service) also indicated more strategies for college success on the MSLQ ($r = .56$, $p < .01$). The score of students with extrinsic future

Table A1

Mean, Median, Mode, Standard Deviation, Skew and Kurtosis of Major Variables

	Mean	**Median**	**Mode**	**St.Dev.**	**Skew**	**Kurtosis**
Wealth	4.85	5.20	5.60*	1.29	-0.66	-0.10
Growth	6.22	6.30	7.00	0.70	-1.16	1.36
Fame	3.44	3.45	1.00*	1.44	0.23	-0.39
Relationships	6.12	6.40	7.00	0.84	-0.76	-0.62
Appearance	3.69	3.75	3.30	1.45	0.00	-0.64
Health	5.82	6.00	7.00	0.98	-1.24	1.62
Community	5.65	5.90	5.90*	1.22	-1.27	1.58
IntrinsicGoals	5.93	6.06	6.13	0.72	-0.69	-0.07
ExtrinsicGoals	3.95	3.86	3.57	1.18	-0.13	-0.45
CollegeGraduation	6.70	7.00	7.00	0.79	-5.39	35.83
CollegeInstrum-Intrinsic	4.16	4.00	6.00	1.59	-0.10	-0.92
CollegeInstrum-Extrinsic	3.75	3.66	4.00	1.40	0.33	-0.49
College Instrum-Total	3.97	3.85	5.00	1.39	0.05	-0.89
MSLQ	4.69	4.80	4.25	0.89	-0.32	-0.49
MillerInstrument.	5.80	6.20	7.00	1.32	-1.12	0.32

* Multiple modes exist. The smallest value is shown.

Note: Table 1 shows that the college goal variable has a high negative skew of -5.39, indicating that most students want to graduate from college.

Table A2

Pearson product-moment Correlations of Major Variables

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	
1. Wealth	1														
2. Growth	.36**	1													
3. Fame	.59**	.32**	1												
4. Relations	.17	.27*	.29*	1											
5. Appear	.48**	.21	.60**	.35**	1										
6. Health	.31**	.45**	.20	.34**	.42**	1									
7. Commun	.47**	.76**	.46**	.36**	.33**	.43**	1								
8. IntrinsicG	.44**	.79**	.43**	.63**	.42**	.73**	.86**	1							
9. ExtrinsicG	.81**	.37**	.88**	.33**	.83**	.35**	.51**	.52**	1						
10. CollegeG	-.03	.23*	-.12	.06	-.09	.40**	.05	.22	-.11	1					
11.Coll/Intrin	.19	.18	.24*	.12	.05	.16	.26*	.27*	.13	.28*	1				
12.Coll/Extrin	.34**	.09	.40**	.15	.24*	.14	.17	.21	.31**	.22	.66**	1			
13. Coll/Instr	.28*	.16	.32**	.14	.14	.16	.24*	.27*	.22	.28*	.95**	.87**	1		
14. MSLQ	.15	.48*	.19	.32**	.10	.51**	.44**	.56**	.21	.16	.24*	.09	.20	1	
15. TaskInst	.20	.42*	.03	.41**	.07	.47**	.39**	.54**	.09	.33**	.17	.16	.18	.55**	1

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Key to variables:

1. Wealth
2. Growth
3. Fame
4. Relations
5. Appearance
6. Health
7. Community service
8. Intrinsic Goals
9. Extrinsic Goals
10. College Goal Scale
11. College Instrumentality—Intrinsic
12. College Instrumentality—Extrinsic
13. College Instrumentality—General
14. Modified MSLQ
15. Task Instrumentality

aspirations (i.e. wealth, fame, and appearance), however, did not correlate significantly with the MSLQ (r = .22, n.s.). Also, students with a higher degree of intrinsic future aspirations had higher perceptions of task instrumentality (r = .54, p < .01); whereas students with a higher degree of extrinsic future aspirations had scores that did not correlate significantly with task instrumentality (r = .09, n.s.). As predicted by the Miller and Brickman (2004) model, strategies, or the indicators of proximal goals, were very significantly correlated with perceptions of task instrumentality (r = .55, p < .01).

4. Missing data were a problem. Originally, there were 81 participants. Two participants missed 67 and 58 items respectively (out of 160 items). These two cases were completely eliminated from the analysis. Of the remaining 79 participants, 17 had one item missing, 4 had two items missing, 1 had 3 items missing, and 1 had 4 items missing. The missing data seemed to be random.

5. Input from the participants indicated that they felt that the questionnaire was too long. The questionnaire consists of 160 items. Although it took most students only about 20-25 minutes to complete, one could definitely feel that they would have much preferred a shorter questionnaire. Because a length of 20-25 minutes is generally deemed reasonable in the social studies research literature, it was decided to leave this feature unchanged.

In one class only, a small number of students indicated that they did not understand what the numbers on the Likert-type scale stood for. What they meant was that some of the instruments, such as the Aspirations Index and the MSLQ provide only labels for the extreme anchor points 1 and 7, but provide no labels for the numbers in-between. This did not seem to be a problem for students in any of the other classes.

Nonetheless, based on this feedback, students will be given a short explanation of the Likert-type scale used in the study prior to questionnaire administration.

6. Finally, students felt that the College Graduation Scale contained items that asked repetitive questions. An examination of the scale revealed that the last four questions (out of a total of 10 questions) were, indeed, too repetitious, and they will be deleted from the scale in the main study. The alpha reliability after deletion is not likely to suffer, as it remained .97 after deleting the four questions.

Limitations of the Study

Limitations of the study include the nature of correlational and causal-comparative methodology, the use of convenience samples, the study design, the nature of self-report measures in general and questionnaires in particular, and, finally, the use of a Likert-type scale. Each one of these limitations will be addressed below.

The correlational and causal-comparative methods used in this study do not provide cause-and-effect evidence among the variables examined, as only a true experimental method can establish cause-and-effect. However, these non-experimental methods do provide evidence for the possible direction in which future goal variables influence proximal subgoals and task instrumentality, and this evidence may be very helpful for planning future experiments designed to determine causality.

Although the sample of the pilot study was quite diverse, the relatively low number of participants (N = 79), the convenience sample and the study design of this study, involving data collection during one limited period of time in one university, will reduce the generalizability of the study. Additional studies will be needed before findings can be generalized to other educational environments and other populations.

Self-report measures in general, and questionnaires in particular, have limitations as well. Limitations of self-report measures include, for example, the possibility that participants' answers may reflect their perceptions of social desirability rather than their true beliefs, and the possibility that participants do not consider their answer seriously, but rather rush through in order to get to the next activity (for a discussion of the weaknesses of self-report measures see Aaronson, Ellsworth , Carlsmith & Gonzales, 1990, p. 244-261).

The method employed in the present study, the self-report questionnaire, however, does have some advantages over other methods. For example, unlike behavioral methods or interview methods, it can provide a much higher level of anonymity, especially if, as in this case, participants are not asked to list any identifying information. A greater level of anonymity is beneficial not only because of ethical issues, but also because of the lessened chance that participants may answer in socially-desirable ways. Another great advantage of the questionnaire pertains to standardization: any instructions, wording, order of the items, etc., can be kept constant across participants, thus minimizing error and experimenter bias in interpretation.

Finally, the questionnaire used in this study utilizes a Likert-type scale, and this type of scale, where participants' responses are averaged on any one issue, has been criticized for the fact that people with very different attitudes on an issue may have the same average score. For example, on a Likert-type scale of 1 to 7, given three items, one participant may mark 1 + 1 + 7, and another may mark 3 + 3 + 3, and their average score would be identical (Aronson et al., 1990). However, the limitations posed by the use of a self-report questionnaire measure utilizing a Likert-type scale are somewhat

ameliorated by the fact that other studies pertaining to variables similar to those analyzed in the present study and utilizing different methodologies have come to conclusions supporting the hypothesis of the present study (e.g. Brickman & Miller, 2001; Schutz et al., 2001).

Appendix B

Future-Oriented Student Motivation Survey (FOSS)

Student Motivation Survey

General Information. **Please circle the answer number that answers the question, or provide the information requested.**

1) Your gender:
   1. Male
   2. Female

2) How old will you be on December 31 of this year?
   1. 20 or younger
   2. 21-30
   3. 31-40
   4. 41-50
   5. 51 or over

3) Are you enrolled (or enrolling) as a:
   1. Part-time student
   2. Full-time student

4) Are you:
   1. White/Caucasian
   2. African American/Black
   3. American Indian/Alaska Native
   4. Asian American/Asian
   5. Mexican American/Chicano
   6. Other Latino
   7. Other

5) What were your scores on the ACT OR the SAT I-Composite (i.e. total score)?
   1. ACT score between 11-15 OR SAT composite score between 500-750
   2. ACT score between 16-18 OR SAT composite score between 760-890
   3. ACT score between 19-21 OR SAT composite score between 900-1010
   4. ACT score between 22-24 OR SAT composite score between 1020-1120
   5. ACT score between 25-27 OR SAT composite score between 1130-1230
   6. ACT score between 28-30 OR SAT composite score between 1240-1350
   7. ACT score between 31-36 OR SAT composite score between 1360-1600

6) What is your expected cumulative GPA (i.e. for all the courses you are taking) at the end of this semester?
   1. Below 2.00
   2. 2.0 - 2.9
   3. 3.0 - 3.9
   4. 4.00

7) What year did you first enter this college?

1. 2004 or 2005
2. 2003
3. 2002
4. 2001
5. 2000 or earlier

Aspirations

Everyone has long-term Goals or Aspirations. These are the things that individuals hope to accomplish over the course of their lives. In this section, you will find a number of life goals, presented one at a time, and we ask you two questions about each goal. (a) How important is this goal to you? and (b) How committed are you to reaching this goal? Please use the following scale in answering the two questions about each life goal.

Not at all			**Moderately**			**Very**
1	**2**	**3**	**4**	**5**	**6**	**7**

Life-goal: To be a very wealthy person.

8. How important is this to you? 1….2….3….4….5….6….7

9. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To grow and learn new things.

10. How important is this to you? 1….2….3….4….5….6….7

11. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To have my name known by many people.

12. How important is this to you? 1….2….3….4….5….6….7

13. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To have good friends that I can count on.

14. How important is this to you? 1….2….3….4….5….6….7

15. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To successfully hide the signs of aging.

16. How important is this to you? 1….2….3….4….5….6….7

17. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To work for the betterment of society.

18. How important is this to you? 1….2….3….4….5….6….7

19. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To be physically healthy.

20. How important is this to you? 1….2….3….4….5….6….7

21. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To have many expensive possessions.

22. How important is this to you? 1….2….3….4….5….6….7

23. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: At the end of my life, to be able to look back on my life as meaningful and complete.

24. How important is this to you? 1….2….3….4….5….6….7

25. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To be admired by many people.

26. How important is this to you? 1….2….3….4….5….6….7

27. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To share my life with someone I love.

28. How important is this to you? 1….2….3….4….5….6….7

29. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To have people comment often about how attractive I look.

30. How important is this to you? 1….2….3….4….5….6….7

31. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To assist people who need it, asking nothing in return.

32. How important is this to you? 1….2….3….4….5….6….7

33. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To feel good about my level of physical fitness.

34. How important is this to you? 1….2….3….4….5….6….7

35. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To be financially successful.

36. How important is this to you? 1….2….3….4….5….6….7

37. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To choose what I do, instead of being pushed along by life.

38. How important is this to you? 1….2….3….4….5….6….7

39. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To be famous.

40. How important is this to you? 1….2….3….4….5….6….7

41. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To have committed, intimate relationships.

42. How important is this to you? 1….2….3….4….5….6….7

43. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To keep up with fashions in hair and clothing.

44. How important is this to you? 1….2….3….4….5….6….7

45. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To work to make the world a better place.

46. How important is this to you? 1….2….3….4….5….6….7

47. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To keep myself healthy and well.

48. How important is this to you? 1….2….3….4….5….6….7

49. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To be rich.

50. How important is this to you? 1….2….3….4….5….6….7

51. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To know and accept who I really am.

52. How important is this to you? 1….2….3….4….5….6….7

53. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To have my name appear frequently in the media.

54. How important is this to you? 1….2….3….4….5….6….7

55. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To feel that there are people who really love me, and whom I love.

56. How important is this to you? 1….2….3….4….5….6….7

57. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To achieve the "look" I've been after.

58. How important is this to you? 1….2….3….4….5….6….7

59. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To help others improve their lives.

60. How important is this to you? 1….2….3….4….5….6….7

61. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To be relatively free from sickness.

62. How important is this to you? 1….2….3….4….5….6….7

63. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To have enough money to buy everything I want.

64. How important is this to you? 1….2….3….4….5….6….7

65. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To gain increasing insight into why I do the things I do.

66. How important is this to you? 1….2….3….4….5….6….7

67. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To be admired by lots of different people.

68. How important is this to you? 1….2….3….4….5….6….7

69. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To have deep enduring relationships.

70. How important is this to you? 1….2….3….4….5….6….7

71. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To have an image that others find appealing.

72. How important is this to you? 1….2….3….4….5….6….7

73. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To help people in need.

74. How important is this to you? 1….2….3….4….5….6….7

75. How committed are you to reaching this goal? 1….2….3….4….5….6….7

Life-goal: To have a physically healthy life style.

76. How important is this to you? 1….2….3….4….5….6….7

77. How committed are you to reaching this goal? 1….2….3….4….5….6….7

College Goals

Although you are in college right now, your interest in and commitment to various college-related goals may vary. The following are some college-related goals, and we ask you two questions about each goal. (a) How important is this goal to you? and (b) How committed are you to reaching this goal? Please use the following scale in answering the two questions about each goal.

Not at all			**Moderately**			**Very**
1	**2**	**3**	**4**	**5**	**6**	**7**

Goal: To graduate from college.

78) How important is this to you? 1….2….3….4….5….6….7

79) How committed are you to reaching this goal? 1….2….3….4….5….6….7

Goal: To earn a college degree (i.e. Bachelor's, Masters', etc.).

80) How important is this to you? 1….2….3….4….5….6….7

81) How committed are you to reaching this goal? 1….2….3….4….5….6….7

Goal: To avoid dropping out of college.

82) How important is this to you? 1….2….3….4….5….6….7

83) How committed are you to reaching this goal? 1….2….3….4….5….6….7

College Instrumentality

Using the following scale, please indicate to what extent you think that college graduation is instrumental to achieving the goals indicated below. If you do not think that college graduation is instrumental at all, please mark #1. If you think that it is very instrumental, please mark #7. If you think that it is moderately instrumental, please mark a number from 2 to 6 that best captures your view.

College graduation is not at all instrumental for achieving this goal		**College graduation is moderately instrumental for achieving this goal**				**College graduation is very instrumental for achieving this goal**
1	**2**	**3**	**4**	**5**	**6**	**7**

"For you, how instrumental is college graduation to achieving the following goals:"

84) Wealth	1….2….3….4….5….6….7
85) Fame	1….2….3….4….5….6….7
86) Attractive appearance	1….2….3….4….5….6….7
87) Personal growth	1….2….3….4….5….6….7
88) Meaningful relationships	1….2….3….4….5….6….7
89) Community involvement	1….2….3….4….5….6….7
90) Health	1….2….3….4….5….6….7

Strategies

In order to succeed in college, students may or may not adopt various strategies. We would like to know what strategies, if any, you have personally adopted. Please pick an **ACADEMIC CLASS** that you are taking this semester and refer to it whenever the words "this class" or "this course" appear. Please use the scale below.

Not at all true of me						Very true of me
1	**2**	**3**	**4**	**5**	**6**	**7**

REHEARSAL

91) When I study for this class, I practice saying the material to myself over and over. 1….2….3….4….5….6….7

92) When studying for this class, I read my class notes and the course readings over and over. 1….2….3….4….5….6….7

93) I memorize key words to remind me of important concepts in this class. 1….2….3….4….5….6….7

94) I make lists of important terms for this course and memorize the lists. 1….2….3….4….5….6….7

ELABORATION

95) When I study for this class, I pull together information from different sources, such as lectures, readings, and discussions. 1….2….3….4….5….6….7

96) I try to relate ideas in this subject to those in other courses whenever possible. 1….2….3….4….5….6….7

97) When reading for this class, I try to relate the material to what I already know. 1….2….3….4….5….6….7

98) When I study for this course, I write brief summaries of the main ideas from the readings and the concepts from the lectures. 1….2….3….4….5….6….7

99) I try to understand the material in this class by making connections between the readings and the concepts from the lectures. 1….2….3….4….5….6….7

100) I try to apply ideas from course readings in other class activities such as lecture and discussion. 1….2….3….4….5….6….7

ORGANIZATION

101) When I study the readings for this course, I outline the material to help me organize my thoughts. 1….2….3….4….5….6….7

102) When I study for this course, I go through the readings and my class notes and try to find the most important ideas. 1….2….3….4….5….6….7

103) I make simple charts, diagrams, or tables to help me organize course material. 1….2….3….4….5….6….7

104) When I study for this course, I go over my class notes and make an outline of important concepts. 1….2….3….4….5….6….7

CRITICAL THINKING

105) I often find myself questioning things I hear or read in this course to decide if I find them convincing. 1….2….3….4….5….6….7

106) When a theory, interpretation, or conclusion is presented in class or in readings, I try to decide if there is good supporting evidence. 1….2….3….4….5….6….7

107) I treat the course material as a starting point and try to develop my own ideas about it. 1….2….3….4….5….6….7

108) I try to play around with ideas of my own related to what I am learning in this course. 1….2….3….4….5….6….7

109) Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives. 1….2….3….4….5….6….7

METACOGNITION

110) During class time I often miss important points because I'm thinking of other things. 1….2….3….4….5….6….7

111) When reading for this course, I make up questions to help focus my reading. 1….2….3….4….5….6….7

112) When I become confused about something I'm reading for this class, I go back and try to figure it out. 1….2….3….4….5….6….7

113) If course materials are difficult to understand, I change the way I read the material. 1….2….3….4….5….6….7

114) Before I study new course material thoroughly, I often skim it to see how it is organized. 1….2….3….4….5….6….7

115) I ask myself questions to make sure I understand the material I have been studying in class. 1….2….3….4….5….6….7

116) I try to change the way I study in order to fit the course requirements and instructor's teaching style. 1….2….3….4….5….6….7

117) I often find that I have been reading for class but don't know what it was all about. 1….2….3….4….5….6….7

118) I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying. 1….2….3….4….5….6….7

119) When studying for this course, I try to determine which concepts I don't understand well. 1….2….3….4….5….6….7

120) When I study for this class, I set goals for myself in order to direct my activities in each study period. 1….2….3….4….5….6….7

121) If I get confused taking notes in class, I make sure I sort it out afterward. 1….2….3….4….5….6….7

TIME AND STUDY ENVIRONMENT

122) I usually study in a place where I can concentrate on my course work. 1….2….3….4….5….6….7

123) I make good use of my study time for this course. 1….2….3….4….5….6….7

124) I find it hard to stick to a study schedule. 1….2….3….4….5….6….7

125) I have a regular place set aside for studying. 1….2….3….4….5….6….7

126) I make sure I keep up with the weekly readings and assignments for this course. 1….2….3….4….5….6….7

127) I attend class regularly. 1….2….3….4….5….6….7

128) I often find that I don't spend very much time on this course because of other activities. 1….2….3….4….5….6….7

129) I rarely find time to review my notes or readings before an exam. 1….2….3….4….5….6….7

PEER LEARNING

130) When studying for this course, I often try to explain the material to a classmate or a friend. 1….2….3….4….5….6….7

131) I try to work with other students from this class to complete the course assignments. 1….2….3….4….5….6….7

132) When studying for this course, I often set aside time to discuss the course material with a group of students from the class. 1….2….3….4….5….6….7

HELP SEEKING

133) Even if I have trouble learning the material in this class, I try to do the work on my own, without help from anyone. 1….2….3….4….5….6….7

134) I ask the instructor to clarify concepts I don't understand well. 1….2….3….4….5….6….7

135) When I can't understand the material in this course, I ask another student in this class for help. 1….2….3….4….5….6….7

136) I try to identify students in this class whom I can ask for help if necessary. 1….2….3….4….5….6….7

SOCIAL STRATEGIES

137) When I have to choose between studying for a test and partying, I choose studying for the test. 1….2….3….4….5….6….7

138) When I have school work to do, I limit my drinking of alcoholic beverages. 1….2….3….4….5….6….7

139) When I find myself surfing the internet or spending too much time in chat rooms, I make myself get back to studying. 1….2….3….4….5….6….7

140) I limit my television viewing to no more than one hour a day when I have school work that needs to be done. 1….2….3….4….5….6….7

141) I limit my extra-curricular activities (i.e. sports, sororities/ fraternities, clubs) so they don't interfere with my studies 1….2….3….4….5….6….7

FINANCIAL APPROACHES

142) I keep myself informed of any changes in the cost of attending college (i.e. tuition, dorm, books, fees, etc.). 1….2….3….4….5….6….7

143) I familiarize myself with the location and process for financial aid applications. 1….2….3….4….5….6….7

144) Every semester/academic year I make sure that I have obtained financial support for that semester/year. 1….2….3….4….5….6….7

145) I make sure that all college bills are paid on time (i.e. tuition, dorm, library fines, etc.). 1….2….3….4….5….6….7

146) When I want to buy something expensive, I first make sure that I can pay all college expenses. 1….2….3….4….5….6….7

ACADEMIC PLANNING

147) I check with a college advisor periodically to make sure that I am taking all the courses necessary for graduation. 1….2….3….4….5….6….7

148) I periodically browse through the pertinent college publications (i.e. catalog, web site) to make sure that I am fulfilling all requirements. 1….2….3….4….5….6….7

149) I plan my schedule of classes carefully to make sure that I take all needed courses at the appropriate times. 1….2….3….4….5….6….7

150) I acquaint myself with all additional required college work such as laboratories or field work. 1….2….3….4….5….6….7

151) I make sure that I am well-acquainted with the college's policies and regulations regarding grades, incompletes, attendance, etc. 1….2….3….4….5….6….7

College Work Instrumentality

Please indicate to what extent you agree or disagree with the statements below regarding doing the work assigned in your courses this semester by using the following scale:

Strongly Disagree						Strongly Agree
1	**2**	**3**	**4**	**5**	**6**	**7**

"I do my course work this semester because…"

152. My performance in my courses is important for becoming the person I want to be. 1….2….3….4….5….6….7

153. My achievement plays a role in reaching my future goals 1….2….3….4….5….6….7

154. Mastering the ideas and skills taught in my courses will help me in the future. 1….2….3….4….5….6….7

155. Understanding the ideas and skills is important for becoming the person I want to be. 1….2….3….4….5….6….7

156. Learning these ideas and skills is important for achieving my dreams in the future. 1….2….3….4….5….6….7

Appendix C

IRB Permissions

University of Oklahoma and University of Memphis

The University of Oklahoma

OFFICE OF HUMAN RESEARCH PARTICIPANT PROTECTION

August 13, 2004

Ms. Sharon Tabachnick
Educational Psychology
Collings Hall Room 321
CAMPUS MAIL

Dear Ms. Tabachnick:

Your research application, "The Impact of Furture-Oriented Motivation and Self-Regulation on Student's Proximal Subgoals and on their Perceptions of Task Instrumentality," has been reviewed according to the policies of the Institutional Review Board and found to be exempt from the requirements for full board review. Your project is approved under the regulations of the University of Oklahoma - Norman campus Policies and Procedures for the Protection of Human Subjects in Research Activities.

Should you wish to deviate from the described protocol, you must notify this office, in writing, noting any changes or revisions in the protocol and/or informed consent document, and obtain prior approval. Changes may include but are not limited to adding data collection sites, adding or removing investigators, revising the research protocol, and changing the subject selection criteria. A copy of the approved informed consent document(s) is attached for your use.

Should you have any questions, please contact me at 325-8110 or irb@ou.edu.

Cordially,

Lynn Devenport, Ph.D.
Vice Chair
Institutional Review Board – Norman Campus (FWA #00003191)

FY2005-7

cc: Prof. Raymond Miller, Educational Psychology

660 Parrington Oval, Suite 316, Norman, Oklahoma 73019-3085 PHONE: (405) 325-8110 FAX: (405) 325-2373

THE UNIVERSITY OF MEMPHIS

Institutional Review Board

To: Sharon Tabachnick
Educational Pychology - University of Oklahoma

From: Chair, Institutional Review Board
for the Protection of Human Subjects
Administration 315

Subject: The Impact of Future-Oriented Motivation and Self-Regulation on Students' Proximal Subgoals and on their Perceptions of Task Instrumentality (E05-15)

Approval Date: July 14, 2004

This is to notify you that the Institutional Review Board has designated the above referenced protocol as exempt from the full federal regulations. This project was reviewed in accordance with all applicable statutes and regulations as well as ethical principles.

When the project is finished or terminated, please complete the attached Notice of Completion and send to the Board in Administration 315.

Approval for this protocol does not expire. However, any change to the protocol must be reviewed and approved by the board prior to implementing the change.

Chair, Institutional Review Board
The University of Memphis

Dr. R. Miller