

**College Readiness Beliefs and Behaviors of Adolescents in a Pre-College Access Program:
An Extension of the Theory of Planned Behavior**

by

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This dissertation is dedicated to my family.

To mom & grandma, for believing I could do anything in life despite my circumstances;

To my uncle, for showing me how working hard will enable me to overcome my circumstances;

To my brothers and sisters, for encouraging me to be best I can be;

And my wife, for always believing that my journey is an inspiration to others.

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“I can do all things through Him who strengthens me.” Philippians 4:13

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ABSTRACT

Higher education policy-makers, practitioners and researchers increasingly seek to better understand interventions that reduce opportunity gaps faced by minority and low-income students across the PK-20 pipeline. Going beyond evaluation studies, this theory-driven dissertation provides new insight into key connections between social-cognitive motivation, active program participation and successful college readiness behaviors in the GEAR UP intervention. Extending the Theory of Planned Behavior (TPB), these connections are investigated in three studies that focus on self-regulated learning behaviors critical for college preparation and readiness among low-income students. The first study examined the relationship between key TPB student strengths – attitudes, control beliefs, subjective norms and intentions – and GEAR UP participation. The second study investigated the reciprocal relationship between students' GEAR UP participation and subsequent self-regulated learning attitudes, beliefs, norms and intentions. The third study explored whether systematic barriers (low parental education) moderated the association between TPB motivational strengths and GEAR UP participation.

Structural equation analysis of longitudinal (two-wave) panel survey data from a predominantly African American 8th and 9th grade sample provided several key findings. The first study revealed that strong control beliefs motivated active participation in GEAR UP. As hypothesized, behavioral intentions mediated this control belief-active participation relationship. The second study found a surprising inverse relationship between students' active participation and subsequent attitudes toward self-regulated learning. This unexpected finding suggests that active GEAR UP college readiness activities (rigorous course and test preparations) exacerbate

distressful orientations (attitudes) toward competitive self-regulated learning behaviors. The third study revealed that higher expectations of significant others (teachers, counselors, parents) increased active participation in GEAR UP for the lower-SES students but decreased active participation for higher-SES students. Overall, this TPB extension provides a better understanding of how low-income students translate social-cognitive motivational beliefs into self-regulated learning behavioral processes that promote college preparation and readiness. Findings suggest that successful pipeline interventions must pay greater attention to the social-psychological strengths that students bring to program settings, how such strengths effect and are effected by active program participation, and how these reciprocal relationships may differ for low-income students faced with systemic barriers. These findings have important theoretical and practical implications.

CHAPTER I

Introduction

A number of studies have documented the pressing need to close the “opportunity gap” facing students of color and low-income students with the potential for college but limited college access because of persistent systemic barriers (Anderson, 1988; Carter, Welner, & Ladson-Billings, 2013; Darling-Hammond, 2010; Oakes, 2008; Ogbu, 1978; Orfield & Lee, 2007; Orfield, Marín, & Horn, 2005; Putnam, 2015). For example, Carter and colleagues (2013) noted that this “opportunity gap” persists between racial/ethnic and related social class divisions and continues to grow as economic inequalities widen in the United States. These authors also emphasized the policy significance of pre-college interventions to help close this opportunity gap by better preparing students of color for college success and productive societal roles in the 21st century:

According to demographic forecasts, Blacks and Latinos combined will make up a majority of the US population by the middle of the 21st century. Unless we close the opportunity gaps...significant numbers of youth from these backgrounds will not be adequately prepared for higher education attainment and subsequent leadership roles in society. Today a college diploma is what a high school diploma became in the mid-twentieth century: the foundational credential for access to opportunity. (p. 4)

A range of P-16 educational pipeline policies and policy-relevant interventions have been designed to address the opportunity gap and the disparities in college enrollment. These policy initiatives aim to provide students occasions to engage in pre-college access and college

support interventions that enhance their preparation for college (Allen & Griffin, 2006; Cabrera et al., 2006; Gandara, 2001; Hagedorn & Prather, 2006; Savitz-Romer & Bouffard, 2012; Tierney, 2002; Ward, 2006). In this dissertation, pre-college interventions are policy-relevant mechanisms for expanding opportunity by promoting college preparation and access into higher education for low-income students and students of color (St. John, Fisher, Lee, Daun-Barnett, & Williams, 2008). These interventions are assumed to influence student beliefs and motivation toward behaviors that promote college preparation (Paulsen & St. John, 2002; St. John, Paulsen, & Starkey, 1996).

Comprehensive pre-college interventions are sponsored by both private and federal sectors. A consistent goal of interventions in both sectors is the provision of resources, support and experiences to supplement what students may or may not receive in their educational or familial settings. Privately-sponsored efforts such as the Washington State Achievers Scholarship Program, the Indiana Twenty First Century Scholarship Program, and Gates Millennium Scholarship Program are well known pre-college interventions. These comprehensive interventions support the college preparation of low-income students through multiple program components that promote low-income students' college knowledge, readiness for college and motivation to enter higher education after high school. This includes information about the types of institutions that exist; social support from significant others; extra-curricular activities; and, access to rigorous coursework and curriculum that reinforce their college aspirations (Bell, Rowan-Kenyon, & Perna, 2009; Cabrera & La Nasa, 2001; Caldwell & Siwatu, 2003; St. John, 2004, 2006; Trent & St. John, 2008). These interventions also reduce the financial burden of attending college by providing scholarships that supplement other financial

options available to students (Oseguera, Denson, & Hurtado, 2008; Rowan-Kenyon, Bell, & Perna, 2008).

The Higher Education Act of 1965 (HEA), now known as the Higher Education Opportunity Act (HEOA), is a federal policy response intended to reduce disparities in college enrollment and barriers to college preparation (St. John, Bigelow, Lijana, & Masse, 2015). Similar to the privately-sponsored interventions previously highlighted, this education policy aims to increase college access by providing both monetary (financial aid) and non-monetary (college preparation support programs) assistance to institutions of higher education and students (Mercer & Skinner, 2007; Naughton, 2008). One result from this federal policy was the creation of the Pell Grant program. This financial aid program provides discretionary funds to higher education institutions to encourage and assist prospective and enrolled first generation and low-income minority students to attend and complete college (Balz & Esten, 1998; Mercer & Skinner, 2007; Naughton, 2008). Another result of the HEA of 1965 was the creation of TRIO¹. TRIO is a series of programs designed to help students overcome social and cultural barriers to higher education success through comprehensive interventions for both pre-college students and college students (Balz & Esten, 1998).

The 1998 reauthorization of the HEA resulted in the creation of the federally sponsored Gaining Early Awareness and Recruitment for Undergraduate Programs (GEAR UP) initiative. GEAR UP provides six-year state and partnership grants for the implementation of support programs. These grants support early college preparation and awareness activities at state and local levels to ensure low income middle school and high school students are prepared for and

¹ Defined by the Department of Education as a group of grant programs under HEA. TRIO was originally three programs and is not an acronym. This programs include Upward Bound, Talent Search, and the McNair Scholars Program.

pursue postsecondary education. Institutions of Higher Education (IHEs), Local Education Agencies (LEAs), and State Education Agencies (SEAs) are eligible to apply for these competitive grants. GEAR UP grantees serve an entire cohort of students who begin the program no earlier later than the 7th grade and continue in the program through 12th grade. These programs aim to increase college attendance, academic achievement, and educational expectations of low-income students at high poverty middle and high schools. GEAR UP funds may also be used to provide scholarships to low-income students.

Overall, researchers and practitioners substantiate, empirically and anecdotally, that comprehensive pre-college access interventions support and provide opportunities to underrepresented students for college preparation experiences that facilitate access to higher education (Swail, 2002; Swail & Perna, 2002). Through financial assistance and enrichment programs, comprehensive pre-college interventions positively influence adolescent engagement in their college prep coursework, involvement in school and community activities, and cultivation of their social cognitive strengths (Sedlacek & Sheu, 2006; St. John, Hu, & Fisher, 2011). Yet, considerable research on pre-college access interventions remains inconclusive with respect to the influence of these interventions on student academic and psychological outcomes (DesJardins & McCall, 2014). Thus, continuing to understand the extent to which pre-college access interventions alleviate gaps in college preparation for underrepresented students remains imperative.

Statement of the Problem and Significance

There is a growing body of descriptive and evaluative studies about how pre-college access interventions structure opportunities to reduce barriers to college preparation for students and families (St. John et al., 2004). However, we need more theory-driven studies to further

clarify the connections between participation in pre-college access interventions, barriers to college preparation, and student beliefs about behaviors that position them to be academically successful and gain college admission.

Descriptive studies and anecdotal evidence suggest that participation in pre-college access interventions lead to changes in students' college-going attitudes and beliefs (i.e., college aspirations and expectations) (St. John & Hu, 2006). However, much less is known about the pre-college intervention mechanisms through which such social-cognitive variables affect motivation and behaviors relevant to college preparation, achievement, and admission into college. The dearth of theory-driven research in this area impedes a deeper understanding of the influence of comprehensive pre-college interventions on student social-cognitions about pursuing college and engagement in behaviors that facilitate college preparation. Moreover, understanding how students' social backgrounds, program participation, and social-cognitions affect college preparation behaviors could result in pre-college intervention strategies that are better tailored to participant needs.

Dissertation Significance. Overall, this dissertation seeks to make a significant contribution to the higher education literature through a better understanding of the relationship between pre-college intervention participation and a set of pivotal social-cognitions – attitudes and beliefs - that promote successful college preparation behaviors. It is especially essential to investigate whether these social-cognitions influence students' plans to engage in college preparation behaviors. Such a theory-driven investigation can provide insights about intervention participants with respect to how a variety of student background factors and experiences in school and in their communities are progressing them toward the ultimate goal of college attendance and college attainment. Implicitly, the goal of pre-college access interventions is to

influence mediating psychosocial factors that are amenable to change. As such, gaining a deeper understanding of these social psychological processes - that are theoretically-based - will help program practitioners understand the students they serve and tailor programs to best meet their needs.

Theoretical Framework and Major Contributions

Ajzen and Fishbein's theory of planned behavior (TPB) provides the theoretical grounding for this dissertation (Ajzen, 1991; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010). The TPB takes into account a set of individual social-cognitions that influence whether or not a person engages in a behavior. This theoretical framework is often used to frame studies in a variety of fields and disciplines including public health (Albarracin, Johnson, Fishbein, & Muellerleile, 2001; Godin & Kok, 1996; Noonan, Kulbok, & Yan, 2011), and political science (Fishbein & Ajzen, 2010; Netemeyer & Burton, 1990; Netemeyer, Burton, & Johnston, 1991). While some higher education literature (i.e., college choice) includes several perceptual variables (Hossler, Braxton, & Coopersmith 1989), the TPB has rarely been used to study issues of college preparation and college-going in higher education research.²

The TPB suggests that a person's favorableness and affect toward engaging in a behavior (i.e., attitudes), their perceptions of the normative beliefs of significant others for engaging in behaviors (i.e., subjective norms), and their perceived capabilities of engaging in a behavior (i.e., perceived behavioral control) influence their plans to perform specific behaviors (i.e., intention). The degree to which these four social-cognitions are related to a student's college preparation behaviors may also depend on the socio-economic opportunities, resources and related skills she or he has available to engage in behavior (i.e., actual control). Overall, the TPB is a theoretical

² Constructs in the theory of planned behavior are analogous to the non-cognitive characteristics possessed by students for college admissions in higher education (Sedlacek, 2004).

framework that can explain relationships between students' attitudes and beliefs about college preparation behavior, the socio-economic opportunity (e.g., parental higher education) that often impedes college-going behavior and outcomes, and their actual participation in pre-college interventions that encourage such behavior.

A major contribution of this dissertation is that it *extends* the TPB in three major ways to better understand the operation of pivotal social-cognitive mechanisms in successful pre-college interventions with underrepresented students. Study 1 explores the predictive relationship between TPB social-cognitions and a measure of actual participation in a comprehensive pre-college intervention (e.g., total number of hours actually spent in various intervention activities). Study 2 explores if the actual level of pre-college intervention participation impacts subsequent TPB social-cognitions (e.g., examines TPB cognitions as dependent variables rather than predictors). Study 3 explores whether relationships between TPB social-cognitions and intervention participation are moderated by a student's actual control or objective socio-economic opportunity (e.g., parent's higher education status). Thus, this dissertation uses the TPB to refine our understanding of the processes and mechanisms through which interventions affect behaviors, *and* how behaviors and cognitions influence intervention participation.

Another innovative aspect of this dissertation is the *reformulation* of the TPB through attention to social-cognitions about a) self-regulated learning and b) discussing grades and academic coursework with significant others. This approach to understanding student perceptions about getting prepared for college has particular relevance to learning challenges low-income students face outside of the formal activities pre-college interventions offer. First, self-regulated learning is a process in which an individual evaluates and takes ownership over their learning and behavior (Pintrich & Schunk, 1996, 2002; Schunk, Pintrich, & Meece, 2008).

Higher education scholars believe this a key attribute that facilitates college preparation and contributes to college success (Conley, 2008, 2013; Sedlacek, 2004). Second, discussing grades and academic coursework with significant others is key to college preparation because it may signify the social support students receive through encouragement and trust gained in relationships early in the education continuum (St. John, Hu, Fisher, 2011). These behaviors are critical indicators of readiness for college (Conley, 2008, 2013). Thus, adolescent beliefs toward these college preparation behaviors may add to the field higher education by explaining variations in student motivation for college preparation and college-going. This approach to understanding student college preparation could lead to a better understanding of social-cognitive mechanisms that drive long-term outcomes such as college attendance and college degree attainment.

Purpose of the Three Studies

The overall purpose of the studies that comprise this dissertation is to examine the social cognitions of pre-college access intervention participants toward behaviors that promote college preparation. Informed by the TPB, this dissertation explores whether students' attitudes, subjective norms, and perceived behavioral control are related to their intentions to perform behaviors that promote college preparation. Moreover, whether these constructs relate to one another when actual opportunities (pre-college access intervention participation) and actual barriers (social background) are present is investigated. Using longitudinal survey data with two time points, three separate studies were conducted.

Study 1. The objective of the first study is to understand why students participate in a pre-college program. Specifically, this study investigates the extent to which students' college preparation behavioral beliefs at the start of an academic semester affect their level of

participation in intervention activities. I use the TPB to answer this question by examining whether students' attitudes, subjective norms, perceived behavioral control, and intentions to engage in self-regulated learning behavior and discuss schoolwork with significant others influence their intervention participation.

Study 2. Study two uses the TPB to explore whether the level of participation in a pre-college access program affects student *beliefs about engaging* in behaviors that facilitate college preparation (i.e., attitudes, subjective norms and perceived behavior control). This study also considers whether level of intervention participation influences *actual engagement* in behaviors that facilitate college preparation.

Study 3. This third study examines whether student socio-economic background moderates relationships between TPB constructs and intervention participation at time 1 and time 2. Students have a variety of experiences at home, at school, and in their community that pose barriers to college preparation. These challenges may ultimately influence their level of involvement in college preparation programs and their beliefs and motivation to engage in behaviors that facilitate college preparation. Thus, how actual opportunities (program participation) and actual barriers (social background) inform student behavioral attitudes, behavioral norms, perceived behavioral control, and behavioral intentions is the focus of this study.

Dissertation Outline

This dissertation is organized into six chapters. The second chapter details the literature that informs this research, and further describes the TPB and its utilization in the framing of this dissertation. This chapter also provides an overview of the empirical research on college choice, which is the most common framework referred to by scholars in understanding the college going

process of middle and high school students. The drawbacks of this framework and opportunities to further develop this framework are discussed. Chapters three through five contain the three studies previously discussed in this chapter. Finally, the sixth chapter provides suggestions for future research about behaviors that facilitate college preparation among pre-college intervention participants. Implications for policies that support pre-college interventions and implications for practitioners are also discussed.

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CHAPTER II

Literature Review

Higher education research seeks to explain factors that contribute to the process students undergo in pursuing and eventually enrolling in colleges and universities (Hossler, 1987; Jackson, 1982a; Litten, 1982; Manski & Wise, 1983). Hossler and Gallagher's (1987) college choice framework is one of the most widely used frameworks to understand factors that influence high school student decisions related to going to college. This dissertation seeks to extend college choice research, specifically the work grounded in Hossler & Gallagher's framework, by considering student participation in an intervention (GEAR UP) that begins in middle school and is designed to support college preparation and engagement in the college choice process. Using a social psychological theoretical framework (the theory of planned behavior), this study explores the extent to which students' beliefs toward behaviors that facilitate college preparation affects engagement in pre-college interventions. Ultimately, this dissertation adds to the discourse surrounding why students differ in their college preparation and eventually the pursuit of higher education. In this chapter, I use Hossler and Gallagher's college choice framework to organize a discussion of research into factors that promote and impede students' decisions to seek admission to college. The limitations of this framework in assessing the college choice process of underrepresented students are also discussed. Thereafter, the theory of planned behavior, as framework to understand college preparation and pre-college intervention engagement, is introduced. How it informs the studies presented in Chapters 3, 4, and 5 is also covered in this chapter.

College Choice Research

College choice describes the process that occurs when a student decides to continue formal education after high school and must choose which postsecondary institution to attend (Hossler & Gallagher, 1987). Hossler and Gallagher propose that students make decisions about going to college in three distinct stages: predisposition, search, and choice (Hossler, Braxton, & Coopersmith, 1989). *Predisposition* is the beginning stage during which students arrive at a tentative decision to pursue a formal education after high school graduation. Hossler & Gallagher (1987) suggest that there are a number of key background characteristics that influence students' decisions to pursue higher education while they are in the 9th and 10th grade. Characteristics include education aspirations, socio-economic status, academic achievement, parent and peer educational aspirations, and perceptions about the availability of financial aid and scholarships (Horn, Chen, & Chapman, 2003; Hossler, Schmit, & Vesper, 1999). The *search* and *choice* stages make up a substantial portion of existing college choice research. These stages consider how factors such as students' perceptions and actual college costs (e.g., tuition and financial aid) influence how students select the institutions they intend to apply for admission to, and once admitted, the institution in which they decide to enroll (Long, 2004; Paulsen & St. John, 2002; Perna & Titus, 2004; St. John, Paulsen, & Starkey, 1996; Van der Klaauw, 2002).

Empirical Research on Student Predisposition

The predisposition stage is most relevant for this study as my interest is understanding factors that lead to potential engagement in the early stages of college choice. Research on students at this time identifies various student academic and social background characteristics that impact their decisions to pursue higher education (Hossler & Stage, 1992; Hurtado, Inkelas, Briggs, & Rhee, 1997; Pitre, 2006; Pitre, Johnson, & Pitre, 2006); the relationships students

develop with significant others, such as parents, teachers, and peers (Perna, 2007; Perna & Titus, 2005; Smith, 2006, 2009); school characteristics, including college preparatory courses and school activities offered (Hossler & Stage, 1992; McDonough, 1997); and, the type of school activities in which students engage (McDonough, 1997).

Background characteristics & education aspirations. Academic and demographic background characteristics are considered to be key factors in the development of students' educational aspirations³. Researchers contend that student aspirations are developed during the predisposition stage, and that higher aspirations are associated with a greater likelihood of pursuing college (Chapman, 1981; Hossler and Gallagher, 1989, 1999; Jackson, 1982b).

Prior research finds social background and academic characteristics to be associated with students' educational aspirations. For instance, Hossler and Stage (1992) found positive relationships between student aspirations, parent educational background, student educational expectations, grade point average (GPA), and involvement in school activities. Similarly, Legutko (1998) found that student grade point average and student aspirations were significantly associated with parents' educational background. Cabrera and La Nasa (2001) found that students' social background affected their ability to become academically prepared and qualified for future college admission and enrollment. Additionally, their research indicated that students from low SES backgrounds were less likely to apply to 4-year colleges compared to students from higher socio-economic backgrounds.

Race as a background characteristic also impacts student predisposition. However, research examining racial differences in students' educational aspirations has had mixed results. Wilson-Sadberry (1991) found that Black students who had high achieving friends were more

³ Consistent with existing literature, in this dissertation, aspirations are considered a proxy for predisposition. As such, these terms are used interchangeably.

likely to pursue higher education than Black students with friends obtaining lower levels of achievement. Also, opportunities to participate in college sports and obtain college athletic scholarships significantly influenced Black students' decisions to pursue college (Pope, 2003). On the other hand, Pitre (2006) found - after controlling for SES, parental encouragement, achievement, and gender - that race was not significantly related to educational aspirations. This suggests Black students are just as likely to aspire to attend college as their White counterparts. Hurtado and colleagues (1997) found Asian Americans had significantly higher educational aspirations than any other racial group in the 10th grade; Latino students had the lowest educational expectations; and Black and White students had similar educational expectations toward college attendance. Additionally, Mohammad (2008) found that Black mothers were more supportive of their daughter's educational aspirations than their sons' education. SES adds another layer of complexity. For example, Strayhorn (2009) found that Black males from high SES families had higher educational aspirations than their low SES counterparts.

These research studies indicate differences in educational aspirations attributable to background characteristics. Moreover, studies also show the complexity of educational aspirations as a construct that is not solely influenced by one's racial or economic background. Rather, aspirations is a multi-dimensional construct that intersects with one's value for education and appraisals of whether actual circumstances will support one's educational desires.

Student academic achievement. Student *academic achievement*, often measured by course grades and grade point average (GPA), also appears to shape aspirations. Furthermore, it facilitates access into educational activities and college preparation curricula, both of which increase the probability of admission into college (Stage, 1993). Hossler and colleagues (1999) found that high academic achievement was associated with more encouragement from parents,

teachers, and peers to continue with their education after high school as well as students' postsecondary aspirations. Evidence also suggests that high achieving Black, Latino, and White 8th grade students are more likely than lower achieving students from all racial groups to have taken the SAT - a necessary standardized testing requirement for college admission - by the end of the 12th grade (Hurtado, et al., 1997).

Student college knowledge. *College knowledge* plays a key role in developing a predisposition to attend college. Hossler and colleagues (1999) identified that 9th and 10th grade students were most interested in obtaining information about career opportunities related to their interests, college admission requirements, and financial aid assistance. Parents, on the other hand, were most interested in acquiring information related to college attendance costs and the financial aid system. Student perceptions and *knowledge of financial resources* such as financial aid are also key factors. One study found that the likelihood of students' having knowledge of college prices and the perceived availability of financial aid, increased with household income and parent education (Horn et al, 2003). The financial information communicated by higher education institutions through recruitment materials has been found to stimulate college related discussions between students and parents while also alleviating constraints on student decisions about attending college (Hossler & Foley, 1995; Rowan-Kenyon, Bell, & Perna, 2008).

Preceptions of the availability of financial resources also have been found to affect student decisions in the college choice process (Perna, 2006a, 2006b), among them academic achievement (Ellwood, 2000; St John et al., 2004); academic preparation for college (Paulsen & St. John, 2002); college enrollment (Freeman, 2002; Kim, 2004; St. John & Noell, 1989); and, habitus regarding notions of college affordability (McDonough & Calderone, 2006). Federally funded pre-college programs such as Upward Bound also provide key information to students.

Bell, Rowan-Kenyon, and Perna (2009) found that students who participated in Upward Bound consistently knew more about college admissions processes and financial aid. Having such knowledge shaped participants' decisions related to their academic preparation for college.

Significant Others

Parents. Parental encouragement and support are associated with students' predispositions toward college attendance. Evidence suggests that the educational expectations of parents, parent encouragement and support, and student academic achievement influence students' educational aspirations to pursue college (Bateman, 1996). *Parental encouragement* is often captured as the frequency with which parents talk to their children about college. Horn and colleagues (2003) found that 74% of students who planned to attend college reported discussing academic requirements of attending college with parents; 69% reported having conversations with parents about a college they hoped to attend; and, fewer than 50% of students reported discussing financial options and costs of attending college. Research also suggests that female students are more likely to talk to their parents about going to college than male students (Hossler et al., 1999). Students from higher socio-economic backgrounds who talked to their parents rather than their peers, teachers, and counselors about college were more certain about their plans to attend (Hossler et al., 1999). Furthermore, Rowan-Kenyon and colleagues (2008) found that college educated parents often provided messages that urged their children to attend college by following educational attainment paths similar to their own. In contrast, parents with less education often relied on schools to provide information about going to college, and work scheduling was a barrier to parental involvement in school related activities. In addition, research has found that among African American students, parental educational expectations to be

significantly associated with a higher probability of students deciding to pursue college and participate in community activities (Hamrick, 2004).

Parental support is defined as parents financially saving for their child's college education, taking their child on college campus visits, or attending financial aid and college information workshops, all of which can affect predisposition (Hossler et al., 1999). Horn (2003) found that the likelihood of parents reporting they had begun saving or making other financial preparations increased with household income. Research also indicates that, low SES parents are more likely than high SES parents to convey to their children that they may have to make substantial financial contributions to their own education (Rowan-Kenyon et al., 2008). Two conditional variables known to influence parental support are student achievement (GPA) and information about college costs. Horn (2003) found that when students' GPA increased, so did parents' financial saving for college, their gathering of information about financial aid, and their acquisition of knowledge about education tax credits. On the other hand, Hossler and Vesper (1993) found that when parents discussed college attendance plans with their children, and parents had little information about college costs, there was no increase in the likelihood of them saving for college.

When considering the *temporal aspects of aspiration formation*, Hossler and colleagues, (1999) found that students began to develop their educational aspirations to attend college between the 8th and 10th grades. Hossler (1999) also found that student college aspirations played less of a role in college choice as they approached the 12th grade, and family income played more of a significant role in student college planning than parental encouragement.

Peers. Student interactions with *peers* also influenced predisposition (Abada & Tenkorang, 2009; Antonio, 2004; Hossler, et al., 1999; Sokatch, 2006; Thomas & Webber,

2009). Research indicates students who have friends that plan to attend college after high school are more likely to have plans to attend and to eventually enroll in two-year and four-year colleges and universities (Hossler et al, 1999; Perna and Titus, 2005). This relationship seems to hold regardless of socioeconomic status. Sokatch (2006) found that if low-SES students who wanted to attend college had friends with plans to attend college, their probability of eventual enrollment increased from 2.6% (no such friends) to 29.1% (friends with college plans).

Counselors. *Counselors* are important stakeholders in the predisposition stage because of the resources available to them, the information they can disseminate, and expectations they hold of the students they serve (McDonough, 1997; Muhammad, 2008; Perna et al., 2007).

McDonough (1997) indicates that the availability of school resources plays a primary role in determining the way counselors provide college guidance to students. She found that compared to their counterparts in low SES schools, counselors working in high SES schools were better able to provide college guidance to students during the predisposition stage; provide opportunities for students to visit college campuses; and, assess students' college readiness by administering the Pre-Scholastic Aptitude Test (PSAT). These counselors also placed less emphasis on helping students understand and find financing options to attend college. On the other hand, counselors in low SES schools were unable to provide students with college-related counseling until their senior year and instead focused counseling efforts on student dropout prevention during the 9th and 10th grade.

Other issues such as state budget cuts, test administration, data reporting, and identifying and assisting students with mental health, drug, and alcohol problems have been identified as barriers to college-related counseling among counselors in low SES schools (Perna, 2007). In addition, the educational expectations counselors hold about students attending low SES schools

have been found to explain nearly 30% of the variation in students' college aspirations (Muhammad, 2008). Thus, the beliefs counselors hold about students' ability to succeed, and the guidance they provide in schools where parental educational experiences are limited, play significant supplemental roles in the formation of students' predispositions to attend college (Freeman, 1997, 1999, 2005; Muhammad, 2008).

Demographic Indicators, School Characteristics & Activities

Demographics and school/community activities. The availability of *school activities* that promote college preparation, and the level of student engagement in such activities, are reflective of school resources and the existing college going culture. There are mixed results, however, regarding the effect of student involvement in school related activities on individual student predispositions (Hossler and Stage 1992; Hossler et al, 1999). Hossler and colleagues (1999) found that students who were more involved in high school related activities were more likely to have higher education aspirations. Yet, Hamrick (1998) found that for students attending schools with higher proportions of minority students and higher student participation in school lunch programs, involvement in school activities was not significantly related to student predisposition. This was despite the fact that these populations were significantly more likely to be involved in school activities than their White and higher SES counterparts.

Hamrick (2004) also found significant racial differences between Black and White students in their involvement in community activities such as scouting, religious youth groups, hobby clubs, neighborhood clubs, and other youth programs. Findings indicated that student participation in community activities positively and indirectly affected students' predisposition through its influence on a number of factors, including parent educational expectations. Some low SES students also receive encouragement from community members. For instance, Pope

(2003) found that receiving encouragement, information about college, and financial support from church members was more positively influential for Black students' pursuit of higher education than White students'.

Demographics, school characteristics and aspirations. School characteristics also influence student educational aspirations. Engberg (2010) and Venezia (2003) found that students in higher performing schools had higher aspirations to attend a four-year college, even after controlling for enrollment in honors courses. Wells (2011) found that students who attended urban schools were more likely to aspire to obtain a four-year degree compared to students who attended rural schools. This study also found that students who attended private religious schools were more likely to aspire to attain a four-year degree compared to students who attended public schools.

These characteristics are important for understanding how schools function as organizations that influence student educational aspirations. McDonough (1997) identified in her research the concept of *organizational habitus*, which seeks to understand how school environments influence how students form their educational aspirations and how schools present students with higher education opportunities (McDonough, 1997). Organizational habitus emphasizes that schools influence how students form their educational aspirations through the time and resources schools have at their disposal to provide college advising, the types of colleges emphasized by counselors for students to attend, and the proactive and reactive role counselors take when working with students to support college enrollment.

The availability of resources is a key facilitator of the creation and maintenance of a *college going culture* within a school by administrators, teachers, counselors, and other school staff. Prior studies have found differences in the characteristics of college going cultures in low

SES and high SES schools (McDonough, 1997; Perna, 2007). High SES schools were found to have school policies in place that conveyed the expectations held by teachers, counselors, and parents that students should attend college after high school, such as requiring students to take the PSAT in the 10th grade (McDonough, 1997). Additionally, Perna (2007) and McDonough (1997) found that high SES schools were more likely to have smaller student populations, a higher proportion of college educated parents, and lower student-to-counselor ratios.

On the contrary, these same scholars found larger student populations, higher student-to-counselor ratios, higher proportions of students from working class backgrounds, fewer resources to acquire college materials (i.e., college guidebooks), and fewer college visits among students attending low SES schools. Moreover, low SES schools may host fewer college information events (Rowan-Kenyon et al., 2008). *Student perceptions of school quality and ability* to prepare them for college also shape student educational aspirations. Pitre (2006) found that students who perceived that their high school was not preparing them well for college admission, or were unsure about how well they were being prepared, were less likely to aspire to attend college compared to students who were more confident in their preparation.

McDonough's work on the role that schools as organizations play in the development of students' educational aspirations is critically important because it introduces the supporting role of pre-college interventions such as GEAR UP in preparing students for college. These interventions use pragmatic strategies and resources to develop cultural expectations and student desires for pursuing a college education, which is often missing in college choice research.

Limitations of Research on the Predisposition Phase of the College Choice Process

Contextual Barriers to College Preparation

Although college choice is a multi-stage framework to understand factors that affect student decisions to pursue, search, apply to, and attend college, it does not explicate how

disparities in college preparation affect student perceptions about their ability to gain admission into college (Trent, Nicholson, & McKillip, 2008). This is partly due to the assumption that students have full control over their preparation for college and the decision to attend college. As prior research indicates, especially for low-income students, there are experiences that impede academic preparation for college that are not wholly under their control, such as school tracking in college bound and non-college bound curricula (Oakes & Guiton, 1995; Welner & Oakes, 1996), bullying (Hymel & Swearer, 2015), substance abuse (Bryant, Schulenberg, O'Malley, Bachman, & Johnston, 2003), and interactions with the child welfare system (Blome, 1997). Moreover, the schools and communities in which students are immersed influence student engagement in the college choice process. Research has consistently shown that a school's capacity to provide students opportunities to gain college preparation experiences is associated with academic achievement and college enrollment (Carter, 2013; Carter, Welner, & Ladson-Billings, 2013; Farmer-Hinton & Adams, 2006; Hagedorn & Prather, 2006; Walpole et al., 2005).

Perna's (2006) ecological college choice model emphasizes habitus, schools, communities, higher education, and social policy as contexts that affect students' assessment of costs and benefits of higher education. In this model, a student's assessment of the costs and benefits is affected by how they are socialized and supported by their family, school, and community. Therefore, the resources and opportunities provided in school and communities shape how students are prepared to succeed in secondary and postsecondary settings. Yet, how contextual barriers influence student engagement early in the college choice process is not accounted for in Hossler's and Gallagher's college choice framework.

Pre-College Interventions as Resources for College Preparation & College Engagement

Pre-college interventions provide students with opportunities to receive programs that supplement their academic preparation for college. Yet, how student participation in these interventions supports their college preparation is not fully understood in college choice. Prior research indicates that when interventions provide low-income students financial support through guaranteed financial aid & scholarships, those students are more likely to persist during their first two-years of college and have the same odds of graduating as high-income students who do not receive such aid (St. John & Hu, 2006; St. John et al., 2004). Moreover, participation in pre-college interventions such as the Gates Millennium Scholars (GMS) program enables students to engage in academic and social activities on college campuses rather than having to work in areas that are not related to their academic careers (Allen, Harris, Dinwiddie, & Griffin, 2008; Hune & Gomez, 2008). As a result, intervention participants are more likely to successfully integrate into the academic and social fabric of their college campuses. Thus, this research highlights a limitation of student predisposition in the college choice framework.

Research also finds that students who participate in pre-college interventions are more likely to have access to and take advanced college preparation courses in high school. For instance, St. John, Fisher, Lee, Daun-Barnett, and Williams (2008) found that students who took the Indiana Twenty First Scholarship Program pledge had better odds of completing advanced college preparatory curricula than their non-participation counterparts. Additionally, this relationship was more likely to be observed for students attending schools that served a high proportion of minority students than students enrolled in schools with a lower-proportion of minority students. Similarly, St. John, Hu, & Fisher (2011) found that a higher proportion of students (56%) who were selected to and participated in the Washington State Achievers Scholarship (WSA) were more likely than non-participants to be enrolled in advanced placement

(AP) and international baccalaureate (IB) courses at their schools (42%). Two years later, they found that the number of WSA students who took such college preparatory courses increased from 56% to 72%. Moreover, students who pledged to participate in the Indiana 21st Century Scholars Program were more likely to enroll in college preparation courses starting in the 8th grade (75%) than non-participants (25%) (St. John, Hu, & Fisher 2011). In another study, students in Upward Bound were more likely to take college prep coursework (AP and IB) compared to students who did not participate in the intervention (Domina, 2009). The research above demonstrates pre-college access interventions contribute to increased educational opportunities for students in high school and in college settings. Particularly, pre-college access interventions allow students to gain experiences in challenging contexts that promote their college preparation and college success. These factors are not accounted for in earlier stages of the college choice process.

Structure of Pre-College Interventions and Their Promotion of Student Agency

Research on pre-college access interventions show that participants are provided opportunities to exhibit agency in their school, familial, and community contexts that promote their preparation for college. Agency, or an individual's perceived capacity to exercise control over personal thinking, motivation, and action in a variety of settings and situations (Bandura, 1982, 1989a, 2001b, 2006; Johnson, 2000), is a strength-based characteristic promoted by pre-college access programs.

One way in which pre-college interventions promote agency among students is through academic capital formation. St John, Hu, and Fisher (2011) suggest pre-college access interventions often serve as a mechanism of social, economic, and cultural capital development. *Academic capital formation* is the social process that builds family knowledge of educational and

career options and support their navigation through educational systems and professional organizations. The *economic* (or human capital) aspect of pre-college interventions address issues and concerns regarding the costs of attending college and is assumed to impact behavior such as seeking out resources and gaining knowledge prior to attending college. The *social* capital elements of pre-college interventions provide students with opportunities to develop networks with people in their schools and communities who promote college readiness, and provide encouragement and support prior to college attendance. Moreover, developing such networks gives students access to individuals with resources and information that facilitate the college-going process, and in turn, leads students to develop trust with such individuals.

The norms and values about attending college that are transmitted within low-income families (e.g., *cultural* capital) are assumed to play a role in student pursuit of higher education. Low-income families are more likely to have a household with low educational backgrounds, diminishing the likelihood that students will receive knowledge about the process of going to college (cultural capital), and instead will lean toward alternative educational and occupation career paths after high school. In this academic capital formation framework, the economic and social capital aspects of pre-college interventions serve as a buffer and transform students' and families conceptual notions about pursuing a college degree.

Despite college preparation barriers present in schools, pre-college access intervention settings may also serve to promote students' agency by enhancing their psychosocial strengths (e.g., self-concept, self-efficacy, school and community engagement) that promote academic engagement and achievement (Sedlacek & Sheu, 2006, 2008; St. John & Trent, 2008). Pre-college access interventions play a supplemental role in student college preparation by increasing participants' access to information about college and through activities designed to promote

behaviors that enable students to successfully navigate and prepare for college. Unfortunately, how these mechanisms operate is not fully accounted for in existing college choice frameworks.

Intervention Participation, College Preparation, and Student Agency

A theoretical framework that can comprehensively specify and explain student behaviors (e.g., self-regulated learning and discussing schoolwork with significant others) that are precursors to key long-term outcomes (e.g., achievement, college attendance) is essential to understanding early engagement in the college choice process among adolescents in pre-college interventions. Educational aspiration is a key psychological characteristic in college choice and college preparation research that reflects student value for higher education. Yet, this concept does not provide a robust understanding of students' perceived capability to perform behaviors that facilitate their college preparation. Additionally, although research identifies school resources and significant other support as factors that impact students' preparation for and pursuit of higher education, how they shape student beliefs about engaging in behaviors that contribute to their preparation for college is not explained.

The theory of planned behavior is a framework that can account for additional social-cognitive indicators and explain students' valuation of preparing for college, perceptions of significant others' expectations that they engage in preparation behaviors, and their agency to participate in intervention activities designed to enhance their preparation for college. Therefore, the theory of planned behavior can contribute to higher education research by capturing actual student experiences with barriers and opportunities that can affect their behavioral beliefs that, in turn, promote academic preparation for admission into college. The following section discusses the theory of planned behavior and how it informs this dissertation study.

Theoretical Framework

Ajzen and Fishbein's theory of planned behavior (TPB) provides the theoretical grounding for this study (Ajzen, 1991; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010). Fishbein and Ajzen (2010) and Ajzen (2006) argue and provide evidence that the assumptions of their perceived behavioral control construct are the same as the assumptions outlined in Bandura's self-efficacy theory. This dissertation, therefore, also draws from self-efficacy theory in order to gain a deeper understanding of how the *perceived behavioral control* construct operates in the TPB. Each of these theories will be discussed in turn.

Theory of Planned Behavior

Figure 2.1 illustrates the theoretical assumptions of the theory of planned behavior. People with favorable *attitudes* toward a behavior are more likely to form intentions to engage in a behavior. More specifically, attitudes toward behavior are developed based on a person's behavioral beliefs regarding whether engaging in a behavior will lead to negative or positive outcomes. These beliefs are assumed to dictate a person's affect toward and evaluation (e.g., favorable vs. unfavorable) of the behavior (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010). Thus, it is assumed that if a person has a favorable attitude toward a behavior, he or she is more likely to form intentions to perform the behavior in question.

The perceived social pressures from significant others to engage or not engage in a behavior are known as *subjective norms*. People form perceptions of whether or not significant others think they should or should not perform the behavior in question. These perceived norms are formed based on a person's understanding of whether significant others think certain behaviors are right or wrong - or their *normative beliefs*. Whether one complies with these normative beliefs is determined by the degree to which he or she values the opinions of

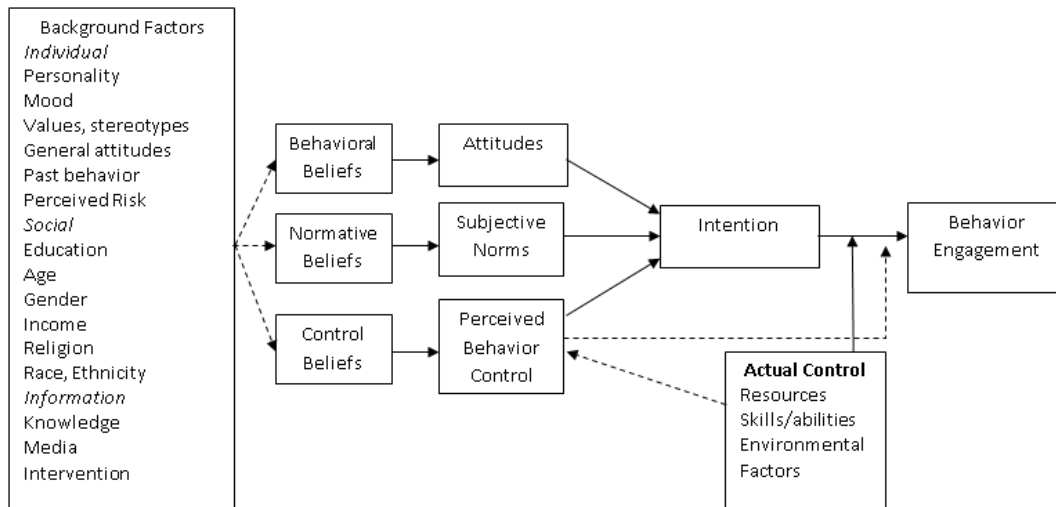


Figure 2.1. Theory of planned behavior model (Fishbein & Ajzen, 2010).

significant others (Ajzen, 1980). Therefore, the TPB assumes that an individual will be more likely to form intentions to engage in behaviors if they are willing to comply with the perceived social pressure of significant others.

Perceived behavioral control (PBC) suggests that individuals make judgments about their perceived capabilities of engaging in a behavior based upon available information, skills, and other resources that pose as barriers or facilitators for behavioral performance (Fishbein and Ajzen, 2010). The recognition of these environmental factors is known as *actual control* (Fishbein and Ajzen, 2010). Particularly, PBC is considered to be a person’s perception of the ease or difficulty of performing behaviors required to produce outcomes (Ajzen, 1991). In TPB, it is assumed that PBC can predict behavior for two reasons. First, the amount of effort one expends toward engaging in a behavior is likely to increase with PBC. Secondly, PBC can be used as a proxy for actual control conditioned on whether or not the perceptions being measured to observe behavioral engagement are accurate (Ajzen, 1991). Therefore, the theory assumes that greater perceived behavioral control leads to a stronger moderating effect of PBC on the

intention-behavior relationship. There are many debates in the research literature regarding how PBC operates in a TPB framework. Perceived behavioral control is traditionally operationalized by self-efficacy or an individual's perceived capability to perform domain specific tasks to produce outcomes (Bandura, 1989b; Fishbein & Ajzen, 2010). Recent theoretical discussions around PBC (Armitage & Conner, 2001) have taken into consideration the impact of external barriers on a person's perceived control to engage in behaviors (i.e., perceived control over behavior). Based on these research debates, perceived behavioral control is a rich construct that takes into account individual agency (self-efficacy) and the situational constraints and opportunities that impede or promote behavioral engagement. In the context of this dissertation, both aspects of PBC are examined.

Intention is an indicator of a person's plan to engage in the behavior in question. It is assumed that the stronger one's intention is to perform the behavior, the more likely he or she is to engage in that behavior. Behavioral intention in the TPB is also considered to be indicator of a person's readiness to perform the behavior. Intentions are believed to be stronger if a person has a more favorable attitude; completion of the behavior complies with the perceived norms of their significant others; and, the individual has a high degree of perceived behavioral control over the behavior (Fishbein & Ajzen, 2010).

There are a number of processes that occur which can influence one's plans to engage in behavior. Intention assumes to capture motivational factors such as a person's volition and effort (Ajzen, 1991). TPB considers that a person's ability to perform behaviors is not always under their complete volitional control. Some behaviors may depend on non-motivational factors such as the availability of resources and opportunities or *actual control* (Ajzen, 1991). If a person perceives that they have the opportunity and resources necessary to engage in behaviors that

produce expected consequences, he or she or will be more likely to form strong behavioral intentions and translate them into actual behavioral performance (Ajzen, 1991). However, behavioral intentions are expected to increase their influence on behavioral performance to the extent that a) a person has actual control to perform the behavior and b) he or she is motivated to try (i.e., effort) (Ajzen, 1991).

Self-Efficacy

As previously mentioned, self-efficacy and PBC are essentially capturing the same underlying construct (Fishbien and Ajzen, 2010). As such, this study will primarily talk about PBC and use that terminology; however, to gain a deeper understanding of how the PBC construct operates in TPB, this study draws upon self-efficacy literature. According to Bandura (1977, 1997; 1977), self-efficacy is considered to be an individual's perceived capability to perform behaviors and tasks required to produce outcomes. Self-efficacy is informed by the consequences that behavioral performance produces in a particular domain. The information gained from such consequences is derived from four sources: actual performance of the behavior; vicarious performance of the behavior through the observation of significant others; verbal feedback received about one's ability to overcome or thrive from the anticipated consequences of the behavior; and, the emotional arousal produced and experienced by engaging in the behavior.

Bandura also posits that an individual's perceived self-efficacy influences various cognitive, motivational, and affective processes (Bandura, 1986). When considering cognitive processes, individuals with high perceived self-efficacy are more likely to set goals, maintain their commitment to achieving their goals, and anticipate the occurrence of and have agency over events that affect their daily lives (Bandura, 1982, 1997, 2001a, 2006). Perceived self-efficacy is

also thought to determine a person's level of motivation, exhibited by how much effort they exert in an endeavor, and how long they will persevere and overcome the obstacles they face.

Individuals with higher self-efficacy are more likely to quickly recover from aversive situations, through self-assurance in their capabilities, than others with a lower self-efficacy. Finally, self-efficacy is assumed to affect how much stress, anxiety, and depression people experience in difficult situations, which in turn can affect their motivation. For instance, students who believe they can exercise control over potential threats are less likely to develop apprehensive thoughts and be affected by these thoughts if they do develop (Bandura, 1989a, 1989c, 1997). However, individuals who believe they cannot manage challenging tasks or situations often experience high levels of stress and anxiety, tend to dwell on their deficiencies in managing challenging tasks, and view their environment as very risky (Bandura, 1989c, 1993). Additionally, low self-efficacy can contribute to the avoidance of threatening situations and activities that they regard as risky.

Theory of Planned Behavior Relevancy for Dissertation Studies

Each of the constructs in the theory of planned of behavior is explored with 8th and 9th grade students in my dissertation studies. Throughout their development, adolescents are forming identities and beliefs related to their educational future. It is expected that adolescent beliefs toward academic preparation for college and enrolling in college are informed by experiences in their school, community, and family, and participation in pre-college interventions. In turn, how adolescents interact with and what they learn from people in these contexts further contributes to how they form beliefs toward pursuing higher education, developing strategies, and engaging in behaviors that prepare them for eventual college enrollment.

Based on the TPB, I expect that adolescents' beliefs about behaviors that will help them be academically successful in college will positively influence their participation in pre-college interventions. These beliefs can contribute to differences in adolescent attitudes toward behaviors that impact their academic preparation to attend college. Additionally, the perceptions adolescents have about the beliefs of significant others - such as teachers, counselors, parents, peers and pre-college staff - regarding behaviors that promote college preparation will play a role in the formulation of intentions to engage in such behaviors. Finally, when considering the role of PBC to engage in behaviors that promote academic achievement and preparation for college, theory and research suggests that students with higher PBC about whether they can perform behaviors that will increase their opportunity to attend college will be more likely to engage in such behaviors. In turn, these behaviors are expected to influence their decisions to pursue higher education after high school.

I also expect that students will differ in their perceived academic self-efficacy to engage in behaviors that promote academic achievement, preparation for college and eventual college enrollment. Adolescent efficacious beliefs in these areas could also influence their participation in pre-college interventions. Examining student efficacy beliefs is relevant because theoretical propositions of self-efficacy suggest that adolescents' efficacious beliefs in academic domains influence their goals and plans related to becoming academically prepared for college as well as their motivation to stay committed to the goals they set (Zimmerman, 2000; Zimmerman, Bandura, & Martinez-Pons, 1992). Self-efficacy is also critical in dealing with the stress and anxiety that comes with the desire to attend college after high school. Students with high perceived self-efficacy will likely be better able to manage stress and anxiety around the demands associated with being an adolescent, striving for academic success, and navigating

through the information and resources available during the college going process. Finally, adolescent perceived self-efficacy can influence their degrees of participation in pre-college programs, and also facilitate and contribute to the efficacious beliefs and constructs in the TPB. Student perceptions about their ability to engage in behaviors that promote academic success in secondary and postsecondary education settings are one of many necessary antecedents to their pursuit of higher education.

Conceptual Models

The properties and assumptions in the theory of planned of behavior provide a unique lens through which to conceptualize each of my dissertation studies. Thus far, I have presented the argument that adolescents have attitudes, subjective norms, perceived behavioral control, and intentions to engage in behaviors that promote their academic preparation for college. These behaviors are viewed as antecedents to observing short-term (i.e., college prep course completion, achievement) and long-term (i.e., college admission, enrollment, and attainment) outcomes. Thus, *antecedent behaviors* are defined here as behaviors that have been identified by researchers as positive contributors to college preparation and admission. Each study will focus on two antecedent behaviors: 1) discussing schoolwork with significant others and 2) self-regulated learning behavior. In each study, discussing schoolwork with significant others is considered to be a proxy for students perceived support available in their school environment to support their preparation for college. The following sections will outline the conceptual frameworks for each study.

Study 1

This first study (Chapter 3) addresses the policy relevant question of whether adolescents' background and social cognitive characteristics predict their participation in an

intervention. Specifically, the conceptual model in Figure 2.2 below seeks to explain students' pre-existing attitudes, subjective norms, and perceived behavioral control related to self-regulated learning behavior and discussing their schoolwork with significant others. Their level of participation in pre-college programs is assumed to be directly related to their attitudes about a) discussing schoolwork with significant others and b) their engagement in behaviors that promote learning. As will be discussed in the next chapter, research on pre-college interventions suggest that affective forms of attitudes - such as aspirations - are critical for understanding student participation in pre-college programs. In addition, behavioral intentions toward learning and discussing schoolwork with significant others are assumed to mediate the relationship between its antecedent variables and student participation in GEAR UP activities.

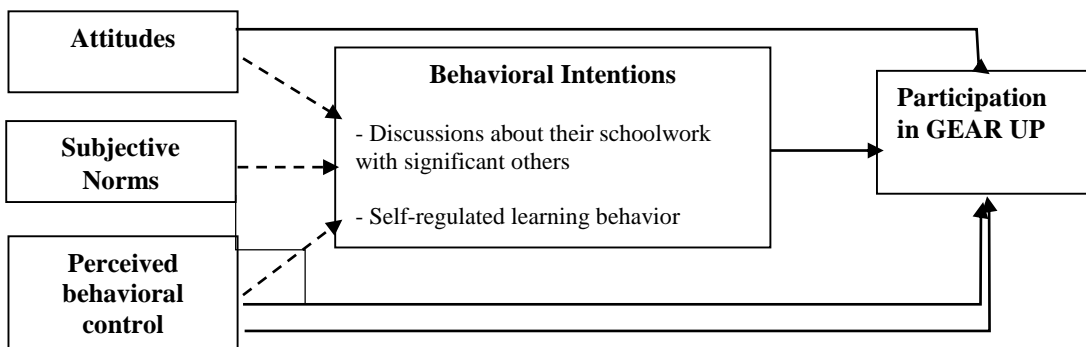


Figure 2.2. Theory of planned behavior model to examine student participation in GEAR UP.

Study 2

Figure 2.3 illustrates the conceptual framework guiding the second study (Chapter 4). As will be outlined in the first study, much is known about the academic, cognitive, and background characteristics of student participating in GEAR UP programs. However, what is unknown is whether participation in GEAR UP affects attitudes, subjective norms, and perceived behavioral control toward self-regulated learning behaviors and speaking with significant others about their

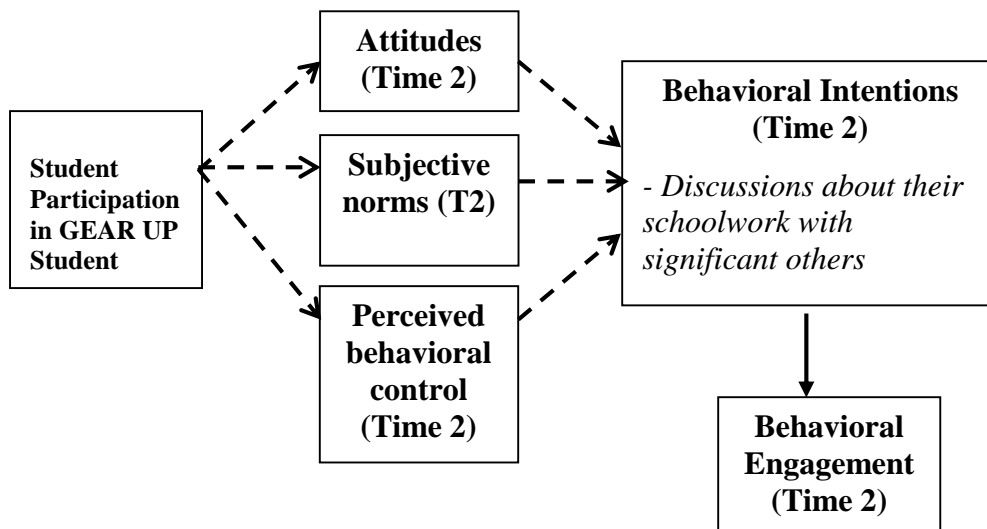


Figure 2.3. Theory of planned behavior model examining GEAR UP student college preparation behavior.

schoolwork at a future time point. What is also unexplored in the literature is whether these determinants predict behavioral intentions and behavioral engagement.

Study 3

Figure 2.4 presents the conceptual model for the third and final study (Chapter 5). A drawback of the theory of planned behavior is its inability to account for barriers that moderate the relationships and assumptions among constructs in the theory. Previous research has identified socioeconomic status – often measured by parent education background, parent income, and student free/reduced lunch status – as a key social background characteristic in adolescent development and college choice. At certain levels, these social background characteristics are seen as external barriers that may impede college readiness. Additionally, these characteristics may moderate the relationship between student aspirations and expectations of their long-term educational attainment outcomes and may impact their cognitive appraisals

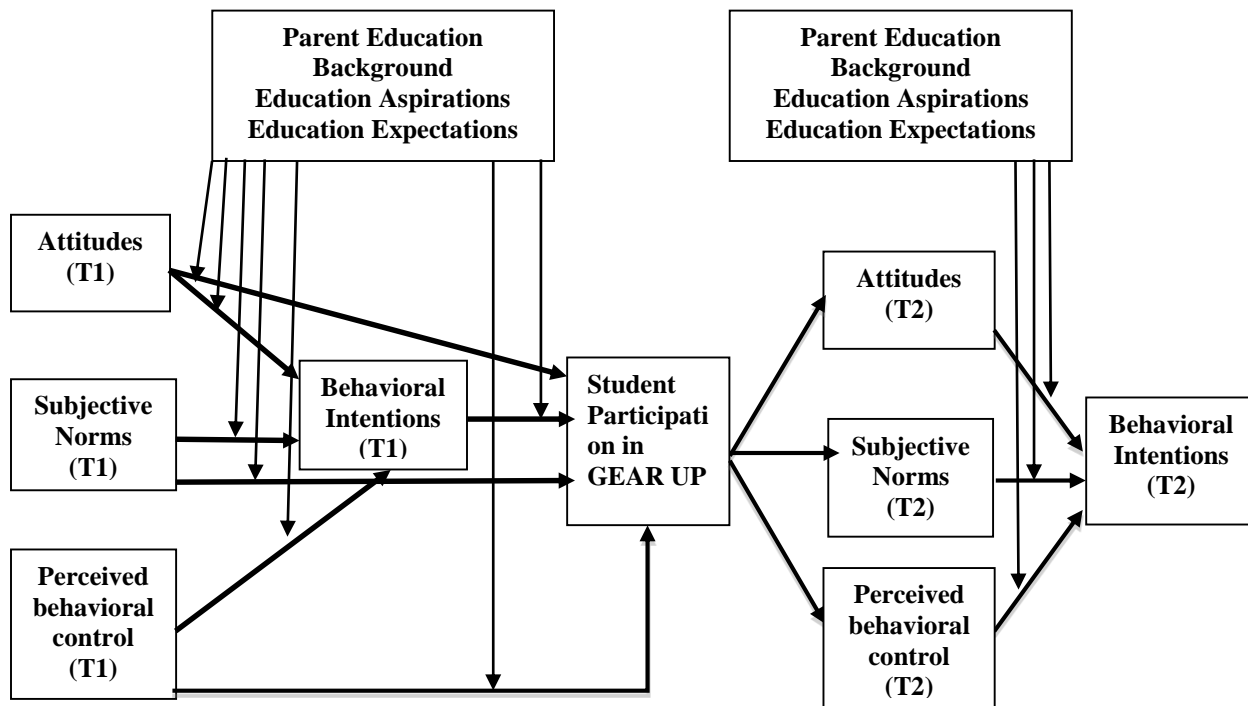


Figure 2.4. Intersections of opportunity gaps, GEAR UP participation, and student engagement in college readiness behavioral strategies.

toward engaging in behaviors that promote college readiness. These relationships will be examined in the third and final study.

Overall, the conceptual models presented in all three studies highlight gaps in research investigating students in pre-college interventions. That is, there is a lack of attention to the mediating and moderating psychological factors that precede engagement in the main outcome of college preparation programming – college attendance. Overall, the information gleaned from this dissertation can be used to improve the development of pre-college programs and the ability of such programs to understand their influence on the intentions and behaviors of the populations they serve.

Chapter Conclusion

This chapter explored the existing higher education literature on college choice with respect to the predisposition stage of Hossler and Gallagher's college choice framework. As noted in previous research, there are a variety of student and school characteristics that play a role in a student's pursuit to attend college. The literature also showed that teachers, parents, and counselors play a key role in student pursuit of higher education. This chapter explained how the theory of planned behavior could add to our conceptual knowledge of early stages in the college choice process and acknowledged that students have multiple strength-based social-cognitive characteristics that promote their preparation for college. Student beliefs in their academic capabilities impact how they engage in behaviors that facilitate their preparation for admission into colleges and universities. Moreover, these beliefs are not only influenced by the context of schools and support from significant others, but also by levels of participation in middle school and high school pre-college interventions such as GEAR UP that support college preparation and encourage students to go to college.

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CHAPTER III

Study 1

Education reform efforts (e.g., Race to the Top) recognize that a highly educated citizenry is necessary for individual and national economic progress in a competitive global market (Education, 2014). Yet disparities in college enrollment at four-year colleges and universities are prevalent for certain groups, despite some evidence of progress (Perna & Jones, 2013; Perna & Kurban, 2013). Current enrollment trends suggest that in the United States, a higher proportion of Asians and Whites are attaining four-year degrees compared to minority students (Jones, 2013) and degree attainment is more likely to be observed for students from high socio-economic backgrounds (Jones, 2013).

The Higher Education Act (HEA) of 1965, and its many reauthorizations, addressed the need to increase college access for underrepresented racial and socioeconomic groups. The HEA resulted in the creation of TRIO programs by the late 1960s and the Gaining Early Awareness and Recruitment for Undergraduate Programs (GEAR UP) in 1998. Both programs provide grants to educational agencies and higher education institutions, and provide programs and services that support low-income students and students of color in overcoming social, economic, cultural, and psychological barriers that impact access to higher education (Balz & Esten, 1998). The need for these programs is vital. The HEA is one of the few federally sponsored initiatives designed to increase college enrollment among underrepresented populations. Currently, the federal government invests nearly one billion dollars a year in college access initiatives.

Questions remain in both research and policy arenas, however, about whether pre-college access programs are addressing disparities in college enrollment (Haskins & Rouse, 2013).

When GEAR UP was first implemented after the reauthorization of the 1998 HEA, many legislators were skeptical about the accountability standards of grantees in charge of program implementation because of the lack of formal structures set in place to evaluate GEAR UP (Office of Inspector General & Educational Resources Information, 2002). Legislators also expressed concerns about the duplicative nature of services provided by both GEAR UP and TRIO programs, where both programs provided similar services and resources to the same student population (Anonymous, 2000; Fields, 2001; Morgan, 2002; Burd, 2003). Opponents argued for cutbacks on federal investments in GEAR UP and raised accountability standards that evaluated the program's effectiveness (Powell, 2005). Currently, policy stakeholders are calling for policy reform, similar to reform seen in the Head Start Program, which would result in the consolidation of GEAR UP and TRIO into a single federal grant program (Haskins & Rouse, 2013). In addition, grantees would need to prove, based on rigorous analysis, that their performance is helping their target population (Haskins & Rouse, 2013). Given this political climate, and efforts to reduce the federal deficit by disinvesting in entitlement programs, funding for GEAR UP and TRIO programs are in jeopardy.

Some research and programmatic data suggest that GEAR UP programs provide middle and high school students with opportunities that boost their college preparation and enrollment (Perna, 2002). These opportunities include mentoring; financial aid assistance and awareness; college selection; course selection into college bound curriculum; assistance with coursework; tutoring; advising; and, campus visitation (Perna, 2001; Perna, Rowan-Kenyon, Bell, Thomas, & Li, 2008). However, policy stakeholders and researchers argue that more rigorous research is

needed to determine whether such opportunities affect student college enrollment and attainment (Haskins & Rouse, 2013; Perna & Cooper, 2005).

Study Significance

While concerns over the effectiveness of federal pre-college access programs such as GEAR UP programs are valid, ensuing debates fail to fully consider the behavioral and psychological factors that contribute to the college enrollment and attainment of participants. Specifically, research suggests students' cognitions and beliefs about college preparation behaviors vary and affect the degree to which they engage in such programs and consequently what they learn and do (Sedlacek & Sheu, 2006). Yet more research is needed about the motivations of participants. For example, students' ability to self-regulate their own learning and connect with significant others about schoolwork are two behaviors known to be positively associated with college enrollment and attainment (Pintrich, 2004). However, investigations of the college preparation behavioral beliefs (e.g., attitudes, intentions) of pre-college access program participants are missing from current assessments of pre-college programs. Specifically, we might expect students with favorable attitudes toward self-regulated learning – a behavior important for educational success - to be more likely to participate in a program focused on college attainment. Thus, the effect of student college preparation beliefs on their level of participation in program activities also needs further exploration, as this may provide further insight into the types of students who participate in pre-college programs. Making assumptions about the effectiveness of pre-college access programs, without fully understanding how student perceptions of performing college preparation behaviors influence their program participation, can be a barrier to understanding program effectiveness and addressing disparities in college enrollment and attainment.

Study Purpose and Research Questions

This study explores the college preparation behavioral attitudes, subjective norms, perceived behavioral control, and intentions of middle and high school GEAR UP students toward self-regulated learning and discussing their schoolwork with significant others. Specifically, this study aims to understand if these psychological factors inhibit or facilitate student participation in GEAR UP activities. Examining these relationships is essential for both program leadership and staff, school partners, and policymakers because it can provide a holistic view of the pre-college experience from the perspective of its participants. Presented below are the research questions of interest for this study:

- 1) How do attitudes, subjective norms, perceived behavioral control, and intentions *about self-regulated learning* relate to student participation in GEAR UP activities?
- 2) How do attitudes, subjective norms, perceived behavioral control, and intentions *to discuss schoolwork with significant others* relate to student participation in GEAR UP activities?

The subsequent sections in this chapter will discuss the current empirical literature on GEAR UP and its student participants, offer additional insights about exploring psychological characteristics of GEAR UP students using the theory of planned behavior as a theoretical framework, and introduce the methodology and hypotheses for this study. Moreover, the data analysis plan, results, discussion, implications, and limitations for this study are presented in this chapter.

Literature Review

Previous research on GEAR UP students has shown that program participation influences academic achievement, academic preparation (e.g., college prep course selection, learning skills,

and learning behaviors), and psychological characteristics associated with college enrollment. Each of these outcomes is discussed below.

Academic Achievement

Cabrera and colleagues (2006) found that 6th grade students attending schools with no GEAR UP program obtained higher reading achievement than students in schools with a GEAR UP program; however, by the end of the 7th grade after GEAR UP was implemented, no significant differences were found in reading achievement. Moreover, no significant differences in 6th grade math achievement were found between intervention and comparison schools (i.e., GEAR UP and non-GEAR UP schools). Yet, after GEAR UP was introduced to 7th grade students enrolled at GEAR UP schools, students at GEAR UP schools had higher math achievement compared to students in schools where GEAR UP was not present. Similar studies have found student participation in GEAR UP positively affected grade point average (GPA) and reduced truancy, fighting, and disciplinary referrals (Yampolskaya, Massey, & Greenbaum, 2006).

Academic Preparation

Another strand of research examines relationships between student participation in GEAR UP and acquiring academic skills and preparation for college. Beer, LeBlanc, and Miller (2008) found significant increases in GEAR UP student motivation, academic and study skills, critical thinking skills, reading and math comprehension, and math achievement, after participating in a summer program. Moreover, Cates and Schaeffe (2011) found positive relationships between student participation in GEAR UP advising and tutoring activities, and the number of college preparatory courses completed. Likewise, student participation in GEAR UP advising and college campus visitation activities were positively associated with taking the

PSAT during sophomore and junior years and decisions to pursue higher education after high school.

Psychological Characteristics

Prior studies also seek to describe psychological characteristics of GEAR UP students and parents. For instance, Weiher and colleagues (2006) found that increased student exposure to GEAR UP increased the probability of student college attendance (as reported by parents). Additional research has found that GEAR UP participants' perceptions of their parents involvement in their schooling, and development of relationships with significant others, fostered student developmental growth and overall sense of identity (Gibson & Jefferson, 2006). GEAR UP student participants also identified negative social support, community violence, and perceived experiences with racism and discrimination as impediments to their learning and contributors to low self-efficacy in math-related academic performance (Jackson & Nutini, 2002). However, despite these perceived barriers to learning, family support for higher education attainment and achievement, and high self-efficacy to cope with discrimination, regulate stress, and manage peer relationships, were identified by GEAR UP students as key strengths and resources to support their learning (Jackson & Nutini, 2002). Finally, prior research suggests that students who participate in GEAR UP activities are more likely to have higher college aspirations than their counterparts (Cowley, 2000; Cowley, Meehan, Wilson, & Wilson, 2003; Meehan, Cowley, Chadwick, & Whittaker, 2001; Watt, Huerta, & Lozano, 2007).

Literature Gaps

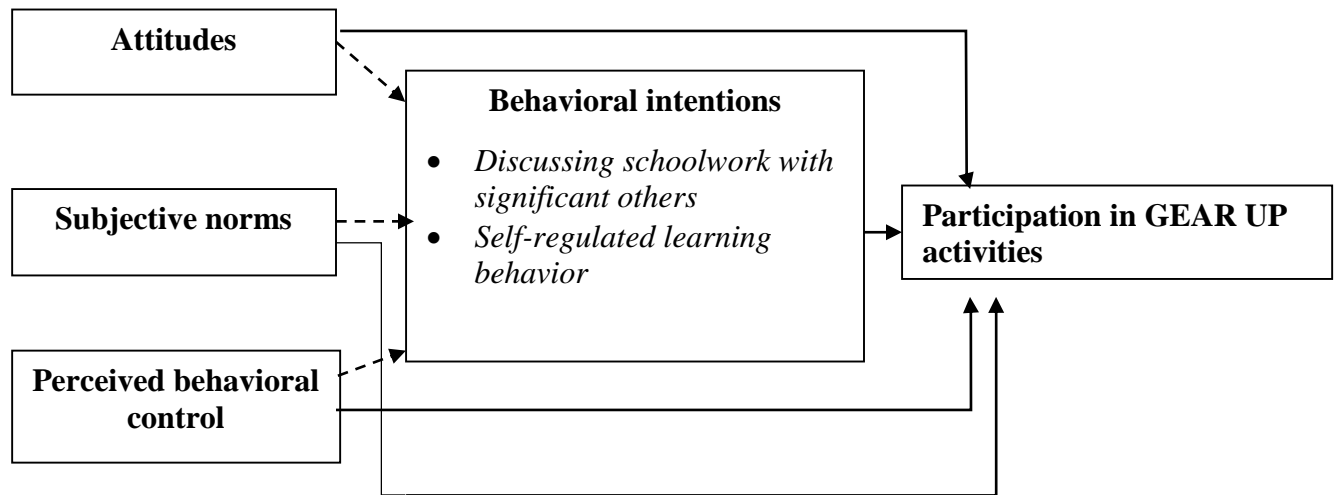
The research presented provides knowledge on the effects of student participation in GEAR UP on achievement, academic preparation, and certain psychological characteristics. However, the influence of student beliefs about behaviors that promote college readiness on

GEAR UP participation needs further exploration. Much of the extant research also fails to assess student psychological orientations toward college readiness early in the education pipeline. Moreover, prior studies do not provide theory-driven explanations for variations in student participation, which may be useful for understanding individual and contextual factors that drive college preparation behavior. Therefore, research which addresses these gaps may give GEAR UP administrators and staff new insights about how college preparation behavioral beliefs affect the degree of student participation in activities. In turn, this information may be used to improve the strategies employed to reach and serve their students.

Conceptual Framework

Figure 3.1 illustrates relationships that factor into the main research questions of this study. GEAR UP and similar pre-college access interventions implicitly assume that program participation influences student college preparation behaviors related to going to college; yet, these assumed connections have not been explored theoretically in prior inquiries. This study's main contribution to the literature lies in its consideration of GEAR UP participation as an outcome within a theoretical framework (the theory of planned behavior) and its measurement as a dosage construct. Dosage is defined as the amount of programming received by participants in an intervention (Durlak & DuPre, 2008; Dusenbury, 2003). Dosage can be used to assess the extent to which attitudes, beliefs and behaviors that promote college readiness are associated with overall level of involvement in program activities. This approach to examining participation helps to address a critical concern of practitioners, researchers, and policy stakeholders regarding which students are more likely to take advantage of the services provided by GEAR UP programs (i.e., take-up rates). Understanding intervention take-up helps to determine if program participation fulfills unmet student needs.

Figure 3.1. Theory of planned behavior model to examine student participation in GEAR UP.



Informed by the theory of planned behavior, this conceptual framework seeks to explicate the relationship between student college preparation behavioral beliefs and their level participation in GEAR UP activities. I investigate college preparation behavioral beliefs in two areas: a) self-regulated learning and b) discussing schoolwork with significant others. The theory of planned behavior has four main constructs: attitudes, subjective norms, perceived behavioral control, and intention. All constructs are examined in this study.

In this context, attitudes are informed by student beliefs that are comprised of feelings, thoughts, and actions toward behaviors that promote academic preparation for college (Ajzen, 2005). Attitudes are conceptualized here as a value concept that reflects student affective and evaluative orientation toward learning and discussing coursework with significant others. Student perceived norms towards learning and talking with others (i.e., teachers, counselors, parents, peers, and GEAR UP staff members) about their progress in their coursework may affect their intentions to engage in these behaviors and their participation in GEAR UP. Perceived behavioral control (PBC) assesses student perceptions of whether they are capable of engaging in

self-regulated learning behaviors and discussing their coursework with significant others. There is assumed to be a direct relationship between PBC and participation in GEAR UP activities and behavioral intentions are also assumed to mediate this relationship. These assumptions address the possible connection between student efficacious beliefs and the degree to which they participate in GEAR UP activities and resources. Informed by motivation, intention is the degree to which a person plans to engage in behavior (Ajzen, 1991; Fishbein & Ajzen, 2010). Student behavioral intentions are posited to be a potential determinant of participation in GEAR UP activities. Finally, student intentions to engage in college readiness behaviors may shape their perceptions of the consequences of engaging in GEAR UP activities.

This study's conceptual framework examines student participation as an outcome, in contrast to prior research that has conceptualized student participation as a predictor variable. This framework has implications for policy and how program administrators implement formative evaluations to assess its student population, and allows a robust exploration of the psychological characteristics that can influence college preparation. This framework also has implications for how program administrators and policymakers make pragmatic and policy related decisions about where to concentrate outreach efforts and allocate resources to GEAR UP programs. Finally, this conceptual framework is highly relevant for assessing short-term outcomes among GEAR UP students earlier in the education pipeline because the assessment of long-term outcomes such as college enrollment and attainment will not occur for a number of years.

Methodology

A non-experimental panel survey study was implemented to examine dimensions of the theory of planned behavior and student level of participation in GEAR UP activities (Babbie,

1990, 2010). The college preparation behaviors investigated were discussing schoolwork with significant others and self-regulated learning. Prior TPB studies implement panel designs in at least two time points and empirically find significant changes among its theoretical constructs (Ajzen, 1991; Levine & Strube, 2012; Madden, Ellen, & Ajzen, 1992). This study took the same approach in its research design to assess TPB constructs among GEAR UP students.

Sample

A convenience sample of 8th and 9th grade students were surveyed at baseline (n=118) and at follow-up (n=96) across middle schools and high schools in two southeastern Michigan public schools where GEAR UP implemented programming. This sampling method was necessary due to the criteria GEAR UP programs use to determine a school's eligibility to receive programs (i.e., the proportion of students who receive free-reduced lunch). Based on this selection criterion, GEAR UP provides programs with a graduating cohort of students at these schools beginning in the 7th grade and through their first year of college. When this study began, students in selected schools were in the 8th grade. Any student attending schools where GEAR UP conducted programming was eligible for the study and had the opportunity to take the baseline and follow-up surveys.

Table 3.1 displays the demographic characteristics of study participants. The majority of study participants were African American (63%) and female (55%). A majority of study participants reported an estimated annual family income of less than \$40,000 (62%). Similarly, a majority of students reported being participants in the free or reduced lunch program (79%). When considering the educational preparation of parents, a higher proportion of students reported that their mothers attained a postsecondary education degree (71%) compared to their fathers (48%).

Table 3.1
Sample Demographic Characteristics by Percentage (N=118)

<i>Grade (n=118)</i>	
8 th Grade	56.8 (67)
9 th Grade	43.2 (51)
<i>Gender (n=118)</i>	
Male	44.9 (53)
Female	55.1 (65)
<i>Race/Ethnic Background (n=115)</i>	
African American/Black	62.6 (72)
Multiracial/Multiethnic	15.7 (18)
White/Caucasian	13.9 (16)
Hispanic	5.2 (6)
Asian American	1.7 (2)
American Indian/Alaskan Native	0.9 (1)
<i>Income (n=55)</i>	
\$0-20000	32.7 (18)
\$20001-40000	29.1 (16)
\$40001-60000	23.6 (13)
\$60001-80000	12.7 (7)
<\$80000	1.8 (1)
<i>School Lunch Participation (n=115)</i>	
Yes	79.1 (91)
No	20.9 (24)
<i>Mother Education (n=94)</i>	
Did Not Finish High School	9.6 (9)
High School Graduate	19.1 (18)
Some College	39.4 (37)
Bachelor Degree	16.0 (15)
Master/Professional Degree	14.9 (14)
Doctoral Degree	0.8 (1)
<i>Father Education (n=78)</i>	
Did Not Finish High School	12.8 (10)
High School Graduate	39.7 (31)
Some College	23.1 (18)
Bachelor Degree	14.1 (11)
Master/Professional Degree	7.7 (6)
Doctoral Degree	2.6 (2)

Note: The information above was reported by student participants

Data Collection Procedures

Data collection occurred over a 13-month period beginning when the graduating GEAR UP cohort was in the 8th grade and concluded at the end of the cohort's 9th grade year. School and district leadership at each GEAR UP school were contacted and presented with information

about the study. Of the eligible GEAR UP schools, two agreed to have data collection occur on site; students and parents from three additional schools were contacted about participation in the survey via the internet.

Using a program parent listserv, recruitment letters were emailed to parents from the GEAR UP director, which described the purpose and goals of the study. To reach parents not on the email listserv, arrangements were made with school personnel to recruit students at their school in a group setting (e.g., classroom, group assembly). During this session students were introduced to the study, and interested students received a packet that contained a recruitment letter and parent consent form to take home to a parent/guardian to review and sign. Students were instructed to return the signed consent form to a specified location on the school premises. Students who obtained parental consent were eligible to take a baseline survey at the beginning of a semester and a follow up survey at the end of a semester.

Alternative data collection procedures were also implemented to reach students attending schools where district leadership did not allow recruitment to occur on the school premises. Parents whose child participated in GEAR UP's summer program received a recruitment email that described the goals and purpose of the study. Reminders to consent for their child to participate in the study were sent to each parents' individual email address using Qualtrics online survey software. Within this reminder email, parents were able to consent online. The online parent consent form contained the same information presented in the recruitment email and paper version of the parent consent form and responses were directly tied their email address. Finally, parents were asked to provide a current email address where their child could receive a baseline and follow up web survey.

Measurement

Constructs used to assess college preparation behaviors were self-regulated learning behavior and discussions about schoolwork with significant others. Informed by the measurement conventions and properties of the theory of planned behavior, GEAR UP student attitudes, subjective norms, perceived behavioral control, and behavioral intentions toward college readiness behaviors were examined (Fishbein & Ajzen, 2010; Madden, et al., 1992). Survey pre-testing of items was conducted with a representative sample. At pre-testing, students were asked to list specific adults that were influential to their learning. Parents, teachers, counselors, friends, and GEAR UP program staff were identified as common referents and were included in the final survey.

Self-regulated learning. The Academic Self-Efficacy for Self-Regulated Learning Scale (ASE-Learning Scale) (Zimmerman, Bandura, & Martinez-Pons, 1992) was designed to assess a student's perceived capability to develop and use a variety of self-regulated learning strategies. The learning strategies assessed in the ASE-Learning Scale included planning and organizing academic activities, transforming instructional information using cognitive strategies to understand and remember class material, student academic motivation, resisting distractions, and classroom participation. This original scale yielded high internal consistency ($\alpha = .87$), and was administered to 9th grade and 10th grade students.

In this study, self-regulated learning was considered to be a key behavior since it is a critical factor in students' academic achievement and preparation for college. It constitutes various actions students must undergo in order to master academic material and be competitive for college admission. Dimensions of self-regulated learning within the TPB are displayed in Table 3.2. Self-regulated learning behaviors were represented by 11-items from the ASE-

Table 3.2
Measurement of Self-Regulated Learning Behavior at Time 1

SRL Behaviors (11)	SRL Behavior ATT Items & Scale	SRL Behavior SN Items & Scale	SRL Behavior PBC Items & Scale	SRL Behavior Intention Items & Scale
1. Finishing homework assignments before they are due	<u>Item</u> <i>Attitude</i> [SRL behaviors 1-11] this semester is...	<u>Item</u> <i>Normative Beliefs</i> My [TC, PG, CF, GU] think I should...	<u>Item</u> <i>Self-Efficacy</i> How likely is it that you will be able to... & <i>Control</i> How much control do you think you have over...	<u>Item</u> This semester, I plan to... <u>Scale (1-5)</u> Definitely Probably Maybe Probably Not Definitely Not
2. Doing homework when they are other fun things to do	<u>Scale (1-7)</u> Bad-Good	<i>Motivation to Comply</i> I want to do what my [TC, PG, CF, GU] think I should do when it comes to...	<u>Scales (1-5)</u> <i>Self-Efficacy</i> Extremely Likely Very Likely Somewhat Likely Very Unlikely Extremely Unlikely	
3. Focusing on school subjects	Not Important-Important			
4. Taking notes during class	Stressful-Stress-free			
5. Using the library to get information for class assignments is	Useless-Useful			
6. Using the internet to get information for class assignments	Boring-Exciting	<u>Scale (1-5)</u> Strongly Agree Agree Neutral Disagree Strongly Disagree	<i>Control</i> Full Control A Lot of Control Some Control A Little Control Absolutely No Control	
7. Planning ahead to complete my schoolwork				
8. Organizing my schoolwork				
9. Remembering information presented in class and in textbooks				
10. Finding a place to study without distractions				
11. Participating in class discussions				

Note. SRL=Self-Regulated Learning; TC=Teacher/Counselor; PG=Parent Guardian; CF=Close Friend; GU=GEAR UP Staff; ATT=Attitudes; SN=Subjective Norm; PBC=Perceived Behavioral Control; INT=Intention.

learning scale, and were adapted to represent students' attitudes, subjective norms, perceived behavioral control, and intentions toward self-regulated learning behaviors within the TPB framework. *Attitudes* examined student *evaluations* and *affect* toward engaging in behaviors that promote self-regulated learning. Each self-regulated learning item and its accompanying attitudinal component were measured on a 7-point semantic differential scale with five bi-polar adjective pairings. *Subjective norms* examined students' perceived *normative beliefs* of and *motivation to comply* with the norms significant others held about engaging in behaviors that

promoted self-regulated learning. Both subjective norm dimensions were measured by a summative 5-point Likert scale. *Perceived behavioral control* measured student perceived capability to engage in SRL behaviors (i.e., *self-efficacy*). Additionally, ASE-learning items were also adapted to represent student perceptions of how much *control* they had to engage in self-regulated learning behaviors. Both dimensions of perceived behavioral control were measured on a 5-point summative Likert scale. *Intention* was operationalized to examine student plans to engage in self-regulated learning behaviors during an academic semester, and was also measured on a summative 5-point Likert scale (definitely-definitely not).

Discussing schoolwork with significant others. Survey items reflecting students discussing schoolwork with significant others did not come from a prior scale. However, academic and social support from significant others are key factors in promoting student pathways to college (Perna & Jones, 2013). As shown in Table 3.3, student attitudes, subjective norms, perceived behavioral control, and intentions to discuss their schoolwork (homework, grades) with significant others were assessed in baseline and follow-up surveys. Identical to the measurement of self-regulated learning, attitudes about discussing schoolwork with significant others were measured by a 7-point semantic differential scales with five bi-polar adjective pairings. Attitudes were examined with four different referents (e.g., counselor(s) or teacher(s); parent/guardian; close friends; and GEAR UP staff member). Items reflecting *subjective norms*, *perceived behavioral control*, and *intention* for significant other referents were measured on a 5-point summative Likert scale.

GEAR UP student participation. Take-up rates for of 8th and 9th grade student participation in GEAR UP activities were measured using information collected by the GEAR UP program staff. GEAR UP students had an opportunity to participate in campus visitation

Table 3.3

Measurement of Discussing Schoolwork with Significant Others at Time 1

SWSO Behavioral ATT Items & Scale	SWSO SN Items & Scale	SWSO PBC Items & Scale	SWSO Intention Items & Scale
<u>Item</u> <i>Attitude</i> Talking to my [TC; PG; CF; GU] about my grades, homework, or classes this semester is...	<u>Item</u> <i>Normative Beliefs</i> My [TC; PG; CF; GU] think I should talk to them about my grades, homework, or classes.	<u>Item</u> <i>Self-Efficacy</i> How likely is it that you will be able to talk to your [TC; PG; CF; GU] about these things?	<u>Item</u> This semester, I plan to talk to my [TC; PG; CF; GU] about my grades, homework, or classes.
<u>Scale (1-7)</u> Bad-Good Not Important-Important Stressful-Stress-free Useless-Useful Boring-Exciting	<i>Motivation to Comply</i> I want to talk to my [TC; PG; CF; GU] about these things. <u>Scale (1-5)</u> Strongly Agree Agree Neutral Disagree Strongly Disagree	<i>Control</i> Talking to my [TC; PG; CF; GU] about my grades, homework, or classes is... <u>Scales</u> <i>Self-Efficacy (1-5)</i> Extremely Likely Very Likely Somewhat Likely Very Unlikely Extremely Unlikely <i>Control (1-7)</i> Not up to me-Totally up to me	<u>Scale (1-5)</u> Definitely Probably Maybe Probably Not Definitely Not

Note. SWSO=Discussing Schoolwork with Significant Others; TC=Teacher/Counselor; PG=Parent Guardian; CF=Close Friend; GU=GEAR UP Staff; ATT=Attitudes; SN=Subjective Norm; PBC=Perceived Behavioral Control; INT=Intention.

programs and in-school workshops. Although students were able to choose whether or not they would participate in campus visitation programs, in-school workshops took place in classroom settings during school hours. Thus, student participation was determined by teacher availability and whether they allowed GEAR UP staff to conduct workshops during school hours. Moreover, there were differences in-school workshops offered across GEAR UP schools. This was due, in part, to the availability of school staff to allow GEAR UP to conduct workshops during the

school day and coordinate programs around school events and testing. Thus, this effected study participant opportunities to engage in school workshops provided by the GEAR UP program. Individual participation data were collected from sign-in sheets that the program used to track student involvement. Students were eligible to participate in one or more of the following activities during the study: *Benefits of College Workshop*; *Believing the Dream Workshop*; *Extreme Reality*; *GEAR UP Assemblies*; *Detroit Museum Field Trip*; *Fall Campus Visitation Program*; *Spring Campus Visitation Program*; *Me at My Best - That's Success: Fall Campus Visitation Program*; *Each One - Teach One: Spring Campus Visitation Program*; *Healthy Study Habits Workshop*; *Collegiate Reality Workshop*; *Executive Muscle Workshop*; *Engineering Road Show*; *Early Financial Awareness Presentation*; *Learning Style Workshop*; and, *Cookies for College Workshop*.

The amount of time students participated in each activity was the metric used to measure participation as a continuous variable. For each student, time in an activity was measured by a decimal fraction. The total number hours of participation in GEAR UP activities was computed for each student in 8th and 9th grade during this study. This metric of participation is reported in subsequent data analyses and results reported in this study in order capture the maximum amount of student variation in time spent in GEAR UP activities. Table 3.4 displays the average time spent in activities provided by GEAR UP among the study sample. A brief description of each activity is offered below.

Benefits of College Workshop (8th grade). This workshop aimed to help students understand the benefits of higher education, and understand the messages they received from family and community members about higher education. It also raised awareness of different college opportunities.

Table 3.4
Average Time (Hours) Spent in GEAR UP Among Study Participants

	8 th grade			9 th grade		
	N ^a	Mean	SD	N ^a	Mean	SD
Fall Campus Visits	96	1.12	1.95	117	0.81	1.66
Spring Campus Visits	96	0.93	1.83	118	0.80	1.49
Believing the Dream	20	1.10	0.39	-	-	-
Benefits of College	76	0.12	0.26	-	-	-
Future Leaders	76	0.33	0.91	-	-	-
High School Transition	76	0.76	0.36	-	-	-
Extreme Reality	9	2.77	2.14	-	-	-
GEAR UP Assembly	16	0.53	0.08	-	-	-
Cookies for College Workshop	8	0.75	0.26	103	0.44	0.56
Charles Wright African American Museum	2	1.12	1.59	-	-	-
Healthy Study Habits Workshop	-	-	-	114	0.77	1.72
Early Financial Awareness	-	-	-	-	-	-
Collegiate Reality	-	-	-	95	0.08	0.30
Executive Muscle	-	-	-	95	0.06	0.28
Engineering Road Show	-	-	-	7	3.43	4.27
Learning Styles	-	-	-	7	0.13	0.34

Note. ^aReflects the number cases used to compute mean participation and does not reflect the number of study participants who actually participated in a GEAR UP activity.

Believing the Dream Workshop (8th grade). This workshop is a best-practice driven curriculum developed to increase college attendance expectations and improve academic performance of prospective low-income first generation college students. Students who participated in these workshops examined and reflected on the following: a) their identity; b) people who they identified as supportive of their academic and personal success, and their personal and academic goals; and, c) how to make choices when experiencing personal, academic, and social changes. Overall, this workshop curriculum was designed to support students through various transitions they may experience throughout their education careers.

Extreme Reality (8th grade). The goal of this workshop was to introduce students to financial literacy and decision making as necessary life skills for adulthood and college life.

Students were randomly assigned to an annual income bracket based on their education and occupation background. Through vignettes, students learned about the concepts of saving and budgeting using a checkbook register and budget sheet. With these tools, participants were asked to assess and distribute their available income into checking and saving balances. At the end of the activity, students reflected about the choices they made based on available income.

GEAR UP Assemblies (8th grade). An assembly at each school was coordinated by GEAR staff. During the assembly, staff introduced the program and explained how it could assist and support students in realizing a future in higher education.

Detroit Museum Field Trip (8th grade). Students at two of the GEAR UP schools were given the opportunity to go on field trip to the Charles H. Wright museum of African American History. The goal of this field trip was to educate student about African American history in the United States. Participants went on a group tour coordinated between GEAR UP and Charles H. Wright museum staff.

Fall Campus Visitation Program (8th grade). This campus visit aimed to provide GEAR UP students with a series of activities centered on exposing them to undergraduate student leaders on a college campus; improving participant understanding of the educational opportunities historically available to African Americans, Native Americans, and Asian Americans; and increasing their knowledge of the use of oral traditions and proverbs as ways to further (individually and collectively) their education. Program participants worked with undergraduate student leaders on examining the historical and cultural context of education for African Americans. Participants also created their personal proverbs for educational success, shared their proverbs and reflected on ways they can support each other, and discussed strategies they could use to be successful in school. Finally, undergraduate student leaders demonstrated,

through a skit, how 8th grade participants could use what they learned to support their preparation for college.

Spring Campus Visitation Program (8th grade). This visitation program used skits to spark dialogues between 8th grade students and undergraduate student leaders about the importance of having self-advocacy skills. The skits also demonstrated how to implement self-advocacy skills in school settings as preparation for their transition into high school.

Me at My Best - That's Success: Fall Campus Visitation Program (9th grade). With a continued emphasis on the high school transition, this campus visit program gave GEAR UP students an opportunity to visit a college campus and speak to undergraduate student leaders about their transition from middle school to high school. Participants learned the importance of planning for academic success and developed a pact with other participants to carry out their transition plan.

Each One - Teach One: Spring Campus Visitation Program (9th grade). Activities in this program were designed for students to understand the power of mentors as key individuals who impart important knowledge and encourage participants to be prepared for and successful in high school and adulthood. Participants in this program worked with undergraduate student leaders to identify significant others that support their success. Moreover, students in this program also identified ways they could impart their knowledge and skills to support their peers. The proverb of *Each One -Teach One*, which was the focus of this program, originated from African-American slavery during a time when African Americans were denied the right to education; once a slave was taught to read, it became his or her duty to teach someone else.

Healthy Study Habits Workshop (9th grade). The focus of this seven session in-school workshop was to help students identify themselves as critical thinkers and become self-aware of the academic, emotional, and social aspects of learning through lessons and activities.

Collegiate Reality Workshop (9th grade). In this interactive workshop, participants were able to simulate college decisions regarding school selection, financial aid packages, and time management of other activities necessary for college admission.

Executive Muscle Workshop (9th grade). This in-school activity aimed to teach students that the process of muscle growth through strain and rest is similar to intellectual growth through studying challenging course material. Students in this activity learned the conceptual difference of growth intelligence (mastery of material by effort) and fixed intelligence (master of material by innate competency).

Engineering Road Show (9th grade). Offered by another university college access program, some GEAR UP students participated in a day-long workshop with engineering college students. In this workshop, GEAR UP students learned skills needed to be successful in science, technology, engineering, and mathematics (STEM) careers by solving a challenging program using an engineering design process.

Early Financial Awareness Presentation (9th grade). In this presentation, given by a university representative from the Office of Student Financial Aid, participants learned about the value of pursuing educational/training opportunities after high school. Presentation content also included how participants could receive financial aid to help pay for college.

Learning Style Workshop (9th grade). In this workshop, students individually reflected on ways in which they receive and process information or schoolwork. Students also discussed visual, audible and tacit ways people process information. A learning style inventory was taken

by participants and discussed with GEAR UP staff. Students also discussed with GEAR UP staff ways to modify their study habits to align with the way they processed information.

Cookies for College Workshop (8th & 9th grade). Working with undergraduate student leaders, participants in this workshop gained knowledge about the college experience in the following areas: housing, admissions, campus life, majors, types of college degrees, and financial aid.

Background variables. Demographic characteristics such as age, gender, race and ethnicity, school grade, and parent education background were examined. Student grade point average (GPA), courses currently enrolled, number of honors courses taken, plans to take AP courses in high school, postsecondary educational plans, and educational aspirations and expectations to go to college were also examined. To control for potential intervention selection bias, student participation in other school and community based activities during the time of study was included as a control variable. School of student enrollment was also included as a control variable to account for programmatic and contextual differences.

Data Analysis

Structural equation modeling (SEM) was the main analytic method used to examine whether theory of planned behavior constructs were associated with student participation in GEAR UP (Schumacker & Lomax, 1996). SEM was conducted to examine the covariance of latent factors represented by observed variables for self-regulated learning behavior and discussing schoolwork with significant others.

All SEMs were mediation models, where intention was hypothesized to mediate the affect of attitudes, subjective norms, and perceived behavioral control on student participation in GEAR UP. The hypothesized self-regulated learning SEM in Figure 3.2 was constructed to

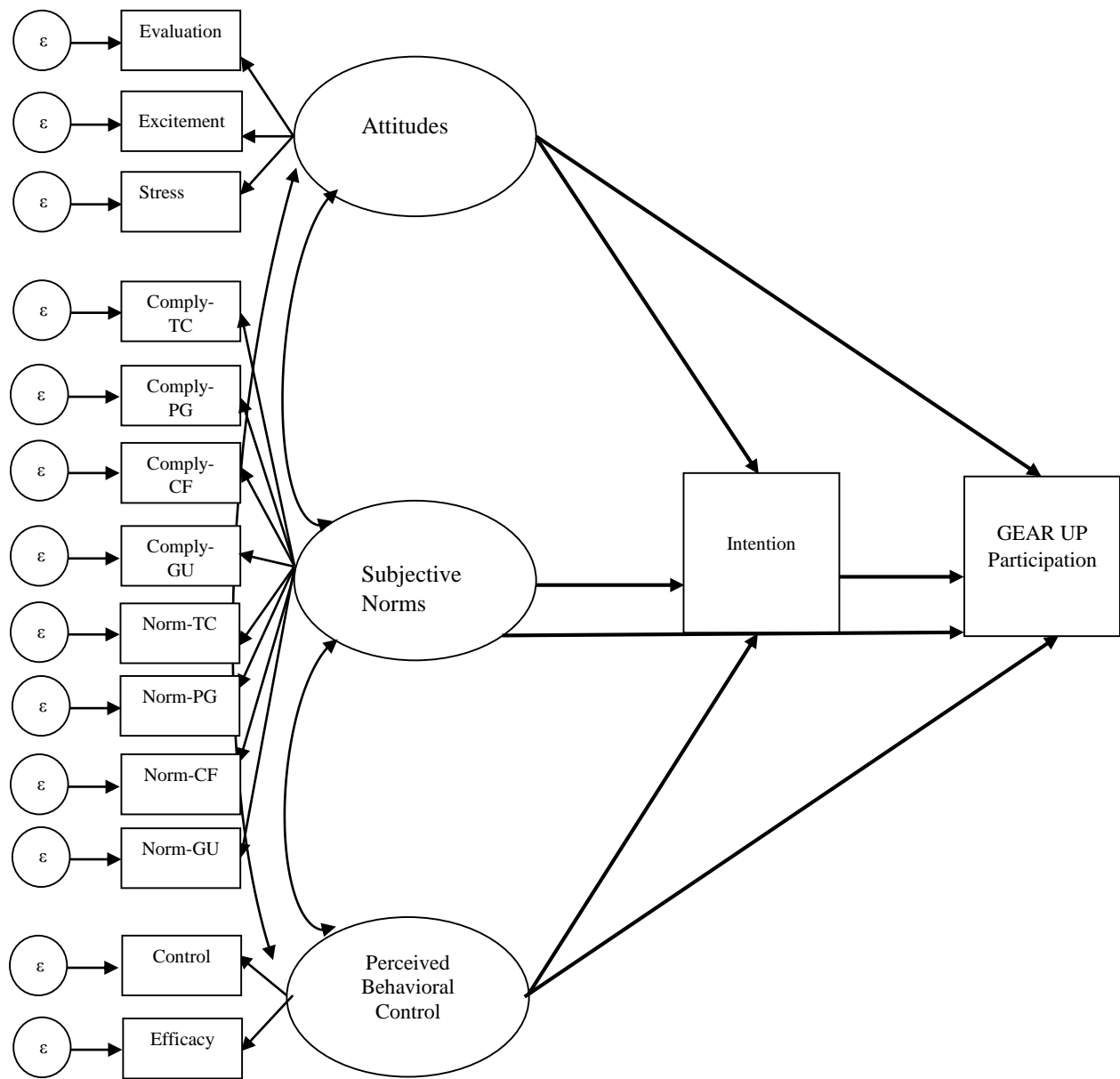


Figure 3.2. Hypothesized Structural Equation Model for Self-Regulated Learning.

examine relationships between latent TPB constructs. This SEM was based on a data subsample of 96 study participants in a single school district. Hypothesized SEMs for discussing schoolwork with significant others were constructed for each referent (Figure 3.3). This SEM was performed with the full study sample⁴.

All SEMs produced good fit to observed data; however, they yielded poor parameter estimates among latent constructs. Thus, model modification was conducted and direct paths from attitudes, subjective norms, and perceived behavioral control were removed. These final SEMs are reported and displayed in the results section (Table 3.5 & Table 3.6). The Bollen-Stine bootstrap sampling method was conducted to obtain accurate direct and indirect effect estimates and assess model fit with non-normal data (Kline, 2011). The AMOS statistical package was the main analytical software tool used in this study.

Measurement Analysis. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed to assess whether TPB constructs exhibited predictive, concurrent, convergent, and discriminant validity (Cronbach & Meehl, 1955). EFA was only performed on self-regulated learning items in order to reduce the number of observed variables to be included in the measurement portion of the SEM. The factors derived from items reflect TPB constructs and were used in the CFA. For interpretation purposes, mean composite scores were computed for each factor in order to regulate the number of parameters in the self-regulated learning SEM.

Next, CFAs were performed on self-regulated learning and discussing schoolwork SEMs, which examined whether latent TPB constructs were present. Hypothesis testing

⁴ The hypothesized model for GEAR UP staff estimated negative variances. Thus model fit and regression estimates were unreliable and further analysis with this SEM was not analyzed and reported in study results.

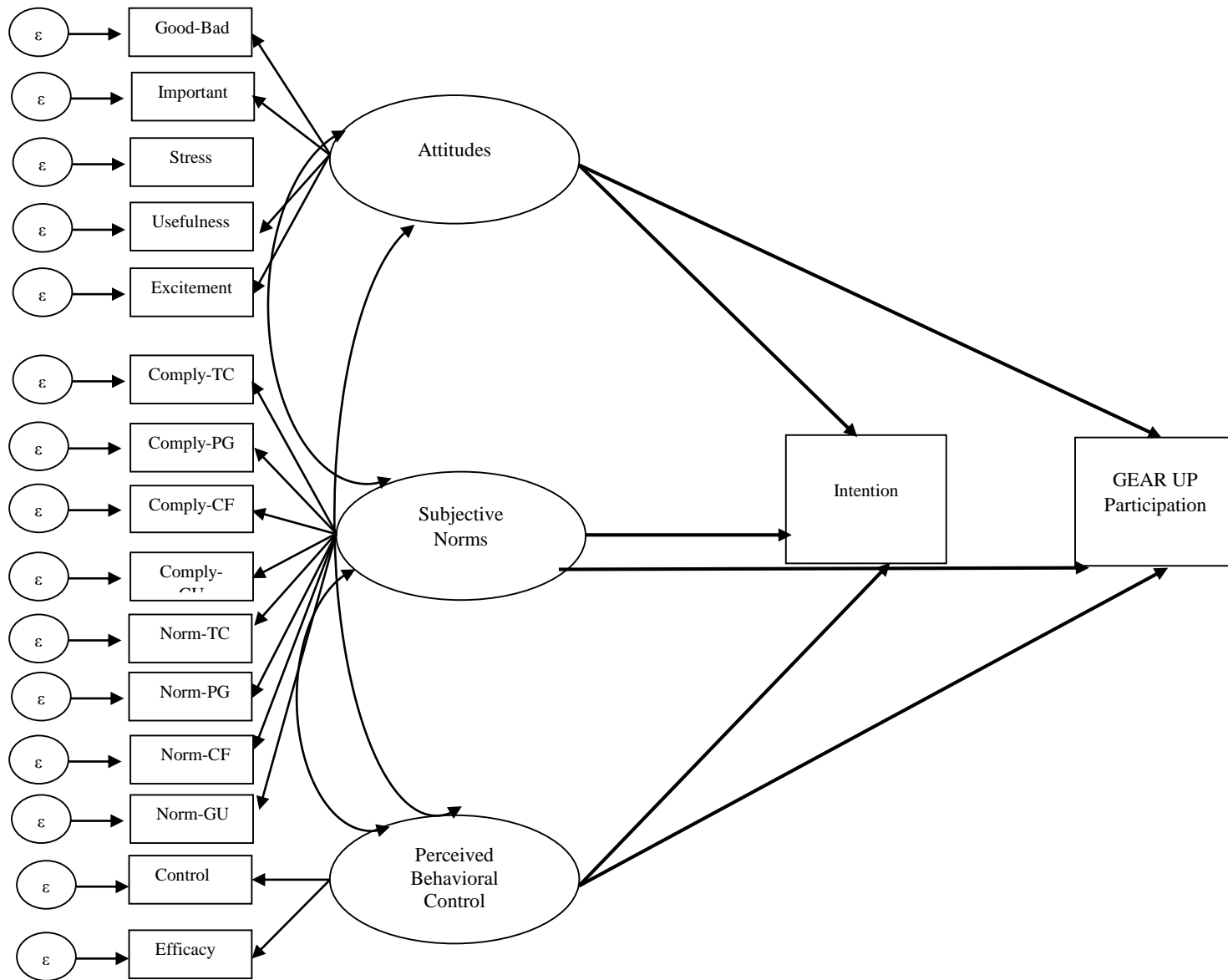


Figure 3.3. Hypothesized Structural Equation Model for Discussing Schoolwork with Significant Others (Teacher/Counselor; Parent/Guardian; Close Friend; GEAR UP Staff Member).

Results

Research Question 1

SEM results presented below address the first research question: how do attitudes, subjective norms, perceived behavioral control, and intentions *about self-regulated learning* relate to student participation in GEAR UP activities?

SEM (Direct and Indirect Effects): Self-Regulated Learning

Direct effects. Table 3.5 displays the standardized parameter estimates of the direct and indirect effects of the self-regulated learning SEM. Perceived behavioral control was positively related to intentions to engage in self-regulated learning behaviors ($\beta = .45$; $p = .039$). Student intention to engage in self-regulated learning behavior during the course of an academic semester was positively associated with participating in GEAR UP activities ($\beta = .23$; $p = .015$). Two control variables, student school enrollment ($\beta = .27$; $p = .008$) and GPA ($\beta = .22$; $p = .016$), were positively related to student participation in GEAR UP.

Indirect effects. To test whether full mediating relationships existed among TPB constructs and participation in GEAR UP, indirect effects were calculated for the modified self-regulated GEAR UP. Results indicate that self-regulated learning intention mediated the relationship between perceived behavioral control and student participation in GEAR UP ($\beta = .10$; $p = .039$) after demographic characteristics, school enrollment, and participation in other activities were included (i.e., controlled for) in the self-regulated learning SEM.

Research Question 2

SEM results presented below address the second research question: how do attitudes, subjective norms, perceived behavioral control, and intentions *to discuss schoolwork with significant others* relate to student participation in GEAR UP activities?

SEM (Direct and Indirect Effects): Talking with Significant Others

Table 3.5 displays the standardized parameter estimates of the direct and indirect effects of SEMs regarding speaking with significant others about coursework.

Table 3.5
Direct, Indirect and Total Effects of Self-Regulated Learning Behavioral Intentions and GEAR UP Participation

	β (SE)		B (SE)	
	GU Participation	Intentions	GU Participation	Intentions
Direct Effects				
Race	-0.05 (.09)	0.01 (.03)	0.10 (.09)	0.06 (.03)
GPA	0.22 (.41) *	-0.09 (.08)	1.58 (.41)*	0.02 (.08)
School Lunch (SES)	0.12 (.55)	-0.14 (.18)	1.53 (.55)	0.03 (.18)
Gender	-0.03 (.44)	0.03 (.11)	0.58 (.44)	0.18 (.11)
School Enrolled	0.27 (.49) **	0.07 (.09)	2.07 (.49)**	0.23 (.09)
School Activity	0.14 (.24)	-0.07 (.05)	0.68 (.24)	0.03 (.05)
Attitudes	-	0.09 (.09)	-	0.15 (.09)
Subjective Norms	-	0.35 (.23)	-	0.46 (.23)
PBC	-	0.45 (.24)*	-	0.73 (.24)*
Intention	0.23 (.30)*	-	1.29 (.30)*	-
Indirect Effects				
Race	0.00 (.02)	-	0.05 (.02)	-
GPA	-0.02 (.07)	-	0.00 (.07)	-
School Lunch (SES)	-0.03 (.17)	-	0.01 (.17)	-
Gender	0.01 (.09)	-	0.16 (.09)	-
School Enrolled	0.02 (.08)	-	0.23 (.08)	-
School Activity	-0.02 (.04)	-	0.01 (.04)	-
Attitudes	0.02 (.07)	-	0.15 (.07)	-
Subjective Norms	0.08 (.19)	-	0.43 (.19)	-
PBC	0.10 (.20)*	-	0.65 (.20)*	-
Intention	-	-	-	-
Total Effects				
Race	-0.04 (.09)	0.01 (.03)	0.10 (.09)	0.06 (.03)
GPA	0.20 (.42)*	-0.09 (.08)	1.58 (.42)*	0.02 (.08)
School Lunch (SES)	0.09 (.55)	-0.14 (.18)	1.53 (.55)	0.03 (.18)
Gender	0.12 (.46)	0.03 (.10)	0.58 (.46)	0.18 (.10)
School Enrolled	0.29 (.49)**	0.07 (.09)	2.07 (.49)**	0.23 (.09)
School Activity	0.12 (.25)	-0.07 (.05)	0.67 (.25)	0.03 (.05)
Attitudes	0.02 (.07)	0.09 (.09)	0.15 (.07)	0.15 (.09)
Subjective Norms	0.08 (.19)	0.35 (.23)	0.43 (.19)	0.46 (.23)
PBC	0.10 (.20)*	0.45 (.24)*	0.65 (.20)*	0.73(.24)*
Intention	0.23 (.30)*	-	1.29 (.30)*	-

Note. β = standardized coefficient; SE= standard error; B= unstandardized coefficient.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Teachers/counselors. For the teacher/counselor SEM, direct effects indicated that student intentions to speak with teachers or counselors regarding academic schoolwork were negatively related to participation in GEAR UP ($\beta = -.19$; $p = .034$). Also, students efficacious beliefs to speak with teachers or counselors about their schoolwork were positively related to participation in GEAR UP ($\beta = .17$; $p = .012$). Control variables of school enrollment ($\beta = .49$; $p = .002$) and school lunch participation ($\beta = .20$; $p = .002$) were positively associated with student participation in GEAR UP. Indirect effects for the teacher-counselor SEM were not statistically significant.

Parent/guardian. Direct effects indicated that student subjective norms were positively related to intentions to speak with a parent or guardian about their schoolwork ($\beta = 1.12$; $p = .01$). Additionally, student efficacious beliefs to speak with parents or guardians were positively related to their participation in GEAR UP ($\beta = .22$; $p = .007$). Control variables of school enrollment ($\beta = .46$; $p = .002$) and school lunch participation ($\beta = .19$; $p = .007$) were positively associated with participation in GEAR UP activities. Indirect effects for the parent or guardian SEM were not statistically significant.

Close friends. Direct effects indicate that student subjective norms were positively related to intentions to speak with a close friend about their schoolwork ($\beta = .74$; $p = .002$). Moreover, student perceived control beliefs were negatively related to student intentions ($\beta = -.15$; $p = .048$). Control variables of school enrollment, grade point average, and school lunch participation remained positively associated with participation in GEAR UP activities. Indirect effects for the close friend SEM were not statistically significant.

Table 3.6

Direct, Indirect Effects, and Total Effects of Discussing Schoolwork with Significant Others on Behavioral Intentions and GEAR UP Participation

	Teacher/Counselor		Parent/Guardian		Close Friend	
	β (SE)		β (SE)		β (SE)	
	GU Participation	Intentions	GU Participation	Intentions	GU Participation	Intentions
Direct Effects						
Race	0.04 (.17)	0.05 (.07)	0.03 (.15)	0.05 (.10)	0.35 (.18)	-0.13 (.06)
GPA	0.14 (.62) ⁺	-0.15 (.29)	0.15 (.63) ⁺	-0.01 (.40)	0.15 (.63) [*]	0.04 (.19)
School Lunch (SES)	0.20 (.71) ^{**}	0.02 (.37)	0.19 (.73) ^{**}	-0.03 (.52)	0.18 (.73) ^{**}	-0.07(.25)
Gender	-0.14 (.66) ⁺	-0.03 (.36)	-0.10 (.63)	0.15 (.38)	-0.12 (.69)	0.29 (.25) ^{**}
School Enrolled	0.49 (.23) ^{**}	0.05 (.12)	0.46 (.23) ^{**}	-0.10 (.17)	0.51 (.24) ^{**}	0.02 (.07)
School Activity	0.02 (.34)	0.09 (.25)	-0.02(.34)	-0.15 (.29)	0.00 (.35)	-0.01 (.12)
Attitudes	-	0.38 (2.0)	-	-0.34 (2.0)	-	-0.04 (.50)
Subjective Norms	-	0.20 (2.0)	-	1.12 (2.3) ^{**}	-	0.74 (.50) ^{**}
Self-Efficacy	0.17 (.36) ^{**}	0.08 (.28)	0.22 (.43) ^{**}	-0.17 (.79)	0.05 (.25)	-0.07 (.11)
Control Beliefs	0.10 (.22)	0.01 (.20)	0.06 (.21)	0.02 (.07)	0.06 (.18)	-0.15 (.06) [*]
Intention	-0.19 (.31) [*]	-	-0.11 (.28)	-	-0.03 (.24)	-
Indirect Effects						
Race	-0.01 (.05)	-	-0.01 (.05)	-	0.00 (.02)	-
GPA	0.03 (.23)	-	0.01 (.20)	-	0.00 (.05)	-
School Lunch (SES)	0.00 (.26)	-	0.02 (.22)	-	0.00 (.08)	-
Gender	0.01 (.27)	-	-0.14 (.21)	-	-0.01 (.19)	-
School Enrolled	-0.01 (.08)	-	0.03 (.09)	-	0.00 (.02)	-
School Activity	-0.02 (.16)	-	0.07 (.16)	-	0.00 (.03)	-
Attitudes	0.00 (.87)	-	-0.12 (.64)	-	0.00 (.15)	-
Subjective Norms	0.05 (.88)	-	0.40 (.73)	-	0.02 (.30)	-
Self-Efficacy	-0.02 (.25)	-	0.10 (.43)	-	0.00 (.03)	-
Control Beliefs	0.00 (.13)	-	0.00 (.04)	-	0.00 (.03)	-
Intention	-	-	-	-	-	-
Total Effects						
Race	0.03 (.17)	0.05 (.07)	0.03 (.17)	0.05 (.10)	0.04 (.17)	-0.13 (.06)
GPA	0.17 (.66) [*]	-0.15(.29)	0.15 (.66) ⁺	-0.01(.40)	0.15 (.64) [*]	0.04 (.19)
School Lunch (SES)	0.20 (.74) ^{**}	0.02 (.37)	0.19 (.76) ^{**}	-0.02 (.52)	0.18 (.72) ^{**}	-0.07 (.25)
Gender	-0.13 (.69) ⁺	-0.03 (.36)	-0.12 (.67)	0.15 (.38)	-0.13 (.67)	0.29 (.25) ^{**}
School Enrolled	0.48 (.23) ^{**}	0.05 (.12)	0.47 (.26) ^{**}	-0.10(.17)	0.51 (.24) ^{**}	0.02 (.07)
School Activity	0.00 (.38)	0.09 (.25)	0.00 (.36)	-0.15 (.29)	0.00 (.35)	0.00 (.12)
Attitudes	0.00 (.87)	0.41 (1.1)	-0.03 (.64)	-0.28 (1.34)	0.00 (.15)	-0.01 (.39)
Subjective Norms	0.05 (.88)	0.23 (1.2)	0.10 (.73)	0.98 (1.40) ^{**}	0.02 (.30)	0.67 (.37) ^{**}
Self-Efficacy	0.16 (.44) [*]	0.08 (.28)	0.24 (.67) ^{**}	-0.17 (.79)	0.05 (.24)	-0.07 (.11)
Control Beliefs	0.09 (.24)	0.01 (.20)	0.06 (.21)	0.02 (.08)	0.06 (.18)	-0.15 (.06) [*]
Intention	-0.19 (.31) [*]	-	-0.11 (.28)	-	-0.03 (.24)	-

Note. ^{*}p< .05; ^{**}p< .01; ^{***}p< .001.

Discussion

The purpose of this study was to investigate ways in which TPB constructs (attitudes, subjective norms, perceived behavioral control, and intention) related to level of participation in GEAR UP activities in two college preparation behavioral domains: self-regulated learning and discussing schoolwork with significant others. These behavioral domains are important for students at the earlier stages in the education continuum because mastering these behaviors promotes their preparation for college in ways that maximizes their opportunities to be admitted into selective colleges and universities (e.g., networking with significant others, independent learner, engagement in school and community activities, and achievement) (St. John, Hu, & Fisher, 2011; St. John, Musoba, Simmons, Chung, & Schmit, 2004).

Self-Regulated Learning

Study findings indicated perceived behavioral control (PBC) to engage in self-regulated learning behaviors was related to the extent to which students participated in GEAR UP activities when operating through behavioral intention (i.e., mediation). This was the only TPB construct that was related to student level of participation in GEAR UP. This finding suggests that the degree to which students participate in GEAR UP activities depends on agency (Bandura, 1989), or their perceived capacity to exercise control over the way they think about, put effort into, and perform self-regulation learning behaviors in different settings and situations. Study participants reported positively on self-regulated learning intention and PBC, thus, suggesting that students who are highly motivated learners are more likely to participate in GEAR UP activities during an academic semester. Moreover, level of participation in GEAR UP was also dependent on the extent to which students were planful in the ways they incorporated self-regulated learning strategies.

Self-regulated learning intention and PBC are elements that are well supported in the literature. Study findings further understanding about the connection between student motivation and self-regulated learning (Zimmerman & Schunk, 2011). Prior research suggests that elements of self-regulated learning include setting learning goals, implementing effective learning strategies, monitoring and assessing goal progress, seeking assistance more often when needed, expending more effort and persistence for learning, and setting effective new goals when present goals are accomplished (Zimmerman & Schunk, 2008). Overall, these findings show that PBC and intention are key psychological strengths that influence whether students take advantage of formal resources offered by GEAR UP.

Despite the study findings, questions still remain about how interventions are able to reach students who may not possess high academic and social-cognitive strengths. In particular, what factors drive participation in interventions that are beyond student control? Throughout the course of this study, one of the challenges interventions practitioners faced was gaining consistent access to students within schools to provide programs. Teachers and school administrators are key stakeholders in school-intervention partnerships. Using their professional and personal judgment, these stakeholders make a determination of which students may benefit most from receive GEAR UP programs, and pay particular attention towards encouraging the participation of those students. Specifically, the level of participation in GEAR UP was heavily influenced by school stakeholders because they were responsible for providing activity information (flyers and permission slips) and coordinating schedules with GEAR UP staff. In addition, the level of participation was also highly influenced by campus visitations. Most of the time reflected in the GEAR UP participation variable was based upon participation in campus visitation programming. Thus, future research is needed to assess relationships between TPB

constructs and participation in specific GEAR UP activities. This will increase understanding of the relationships between internal (student psychological characteristics) and external (school personnel sponsorship) driving forces of participation.

Significant Others

Students perceptions of whether they can approach supportive significant others (teachers, counselor, parent, or guardian) about their grades, homework, or classes positively influenced the extent to which they participated in GEAR UP activities. In essence, students who believed could be positively supported by significant other adults had higher levels of participation. This highlights the important role significant others continue to play in students pathways to college (Farmer-Hinton & Adams, 2006; Gibson & Jefferson, 2006; G. Jackson, 1982, 1990; Stanton-Salazar, 1997). However, despite student high self-efficacy to speak with supportive adults about their schoolwork, intentions to speak with a teacher/counselor were negatively related to participation in GEAR UP activities. Meaning, lack of students intentions to speak with a teacher or counselor about their schoolwork negatively influenced the extent they participated in GEAR UP activities (i.e., less participation). This finding emphasizes the importance of student-teacher trust in school settings, and suggests that in order for GEAR UP programs to increase the take-up rates of its students, programs may need to consider ways it can build student trust in approaching their teacher or counselor about their schoolwork.

Attitudes, subjective norms, and perceived behavior control to discuss schoolwork with a close friend did not significantly influence student level of participation in GEAR UP activities. However, perceived expectations of a close friend about discussing schoolwork positively influenced student plans to engage in such discussions. In other words, study participants were more likely to intend to talk about grades, homework, and classes with a close friend if he or she

believed their close friend expected them to have such discussions. This shows how social group norms influence student motivation to receive academic support from peers (Alexander & Campbell, 1964; Davies & Kandel, 1981; Haller & Butterworth, 1960; G. Jackson, 1982, 1990; Kiuru, Aunola, Vuori, & Nurmi, 2007; Ryan, 2000; Sokatch, 2006; Thomas & Webber, 2009; Wentzel & Caldwell, 1997). Moreover, this study demonstrates that students in pre-college access interventions are also influenced by peer group behavioral norms toward academic success, which may or may not be as socially acceptable or popular among peers as other behaviors.

In this study, GEAR UP students associated with friends who had positive normative beliefs toward learning and academic success. This is encouraging considering findings from past research which found both negative and positive peer influences on student educational aspirations and college plans (Antonio, 2004; Asha Cooper, 2009). These results have relevance for GEAR UP programs regarding the influence peers can have on student decisions about the behaviors they engage in that promote their preparation for college. This finding also shows how social group dynamics can influence a school's college-going culture. GEAR UP programs may want to work with schools on creating a culture that emphasizes college-going as a normative belief among peer groups within schools.

Control Variables

The discussion of findings stated above took into consideration the potential influence of socio-demographic, academic, and intervention characteristics on student participation in GEAR UP. School enrollment, grade point average (GPA), and school lunch participation influenced whether study participants engaged in GEAR UP activities when both self-regulated learning and

speaking with significant others were examined. These findings suggest that the characteristics of school settings do influence the extent of student participation in GEAR UP activities.

Additionally, this study showed that students who were high achievers and/or came from low socio-economic backgrounds were more likely to participate in GEAR UP in activities. Student participation in other school and community based activities did not directly influence their participation in GEAR UP activities, indicating potential self-selection bias was accounted for and was reduced in this investigation. Therefore, this study provides useful information on the characteristics of GEAR UP student participants and highlights where outreach efforts may need to be directed in order to increase participation of students who display other characteristics.

Limitations

There are limitations to consider for future research. First, this study's sample size limits its ability to generalize findings to the broader GEAR UP student population. Future studies with larger sample sizes would increase power to obtain additional significant mediating effects between TPB constructs and participation in GEAR UP activities. One possible factor that contributed to this study's low sample size was implementing a convenience sampling technique based on the number of schools a particular GEAR UP program served. Future research should consider techniques where students are randomly sampled from various GEAR UP programs to ensure a more representative sample. Additionally, implementing a quasi-experimental design would have improved this study's ability to generalize results. Future research that utilizes a longitudinal and a pre-post test design would strengthen the rigor of examining take-up rates among GEAR UP programs.

Also, there were substantive limitations in this study. For instance, GEAR UP staff as a significant other was not examined with regard to discussing schoolwork. This could have been critical to provide additional insight into intervention efficacy, particularly in determining whether student subjective norms related to GEAR UP staff members would influence their engagement in GEAR UP activities. One factor that contributed to this limitation was the intervention being relatively new to study participants. Thus, students were still in the early stages of building relationships with GEAR UP staff. Finally, the study was limited in its ability to make inferences about the qualitative aspects of schools that affect the extent students participate in GEAR UP activities. For instance, characteristics such as a school's college-going culture may shape students' perceptions of their own readiness and pathways to college and can shape their perceptions of whether GEAR UP programs can address their academic, and social-emotional needs. This issue needs further elucidation in future research on GEAR UP students.

Conclusion

In closing, this study revealed that perceptions to engage in college preparation behaviors influenced the extent students participated in interventions designed to promote access into higher education for underrepresented students. This knowledge is critical to ongoing debates among higher education researchers, policymakers, and practitioners regarding who pre-college interventions target. Likewise, this study demonstrates that student level and school level characteristics influence the extent to which students take advantage of interventions such as GEAR UP. Thus, if disparities in college access (e.g., enrollment and attainment) are to decline in the U.S., then strategies to implement outreach efforts that reach all segments of the intended student population must be incorporated among pre-college outreach programs such as GEAR UP. Finally, it will remain imperative for pre-college outreach programs to take a judicious

approach in their own assessments about whether the programs offered match the academic and socio-emotional needs of students. Increased understanding of the relationship between students and engagement will be needed to improve knowledge of the intervention efficacy of pre-college outreach programs such as GEAR UP.

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CHAPTER IV

Study 2

Disparities in college enrollment at four-year colleges and universities remain prevalent for underrepresented students despite evidence of progress (Perna & Jones, 2013). The Higher Education Act of 1965 was one of many social policies created to promote education equality and increase access to higher education for low-income groups (Balz & Esten, 1998). The 1998 reauthorization of the Higher Education of Act resulted in the creation of Gaining Early Awareness and Recruitment for Undergraduate Programs (GEAR UP) (Perna, 2002). The mission of GEAR UP is to increase the number of low-income students who are academically prepared to enter and succeed in higher education.

GEAR UP and many other pre-college access programs are designed to address disparities in college access and facilitate the college enrollment process. These interventions seek to increase awareness of the college application and admission process, provide information about financial resources, and, identify significant others that can provide support throughout the college-going process (Bell, Rowan-Kenyon, & Perna, 2009; Swail, 2002; Swail & Perna, 2002). However, little is known about if and how participation in GEAR UP activities influence student beliefs about engaging in academic behaviors that are associated with college preparation and college success. Having knowledge in this area is critical for informing on-going debates about the psychological characteristics students need to embody in order gain college admission and thrive in colleges and universities (Kalsbeek, Sandlin, & Sedlacek, 2013) and how pre-college

interventions support the college preparation of underrepresented students (St. John, 2006; St. John, Hu, & Fisher, 2011; Trent & St. John, 2008).

Study Purpose and Research Questions

The purpose of this study is to examine the extent to which participation in GEAR UP influences student college preparation behavioral beliefs (attitudes, subjective norms, and perceived behavior control) in two areas: a) self-regulated learning and b) discussing schoolwork (grades, homework, classes) with significant others. This study aims to understand whether students' behavioral intentions about self-regulated learning and speaking with significant others influences their engagement in these behaviors. Presented below are the research questions for this study:

1) Among GEAR UP students, to what extent does their participation in GEAR UP activities influence self-regulated learning behavior beliefs (attitudes, subjective norms, perceived behavior control) at the end of an academic semester?

2) Among GEAR UP students, to what extent does their student participation in GEAR UP activities influence behavioral beliefs (attitudes, subjective norms, perceived behavior control) regarding discussing schoolwork with significant others (teacher/counselor, parent/guardian, close friend) at the end of an academic semester?

3) To what extent does participation in GEAR UP activities affect student engagement in self-regulated learning behavior at the end of an academic semester?

4) To what extent does participation in GEAR UP activities affect student engagement in conversations about their schoolwork at the end of an academic semester?

The subsequent sections in this chapter will discuss the research on college readiness and the conceptual framework guiding this study. Following that discussion, study methodology, data analysis, results, limitations, and implications of findings will be presented.

Literature Review

College Readiness

Student college readiness considers the extent that students arrive on college campuses prepared to take entry level college courses leading to a baccalaureate degree without having to take remediation courses in their first year (Conley, 2013). Thus, pre-college experiences and academic preparation remain critical factors in assessing whether students are college ready, and have opportunities to enroll in college (Cabrera et al., 2006; Perna & Kurban, 2013). This can prove most challenging for first-generation, low-income, and racial/ethnic minority students who are more likely to attend schools where performance standards and indicators of college readiness are not clarified (Roderick, 2009).

Testing for college admission (e.g., American College Test, Scholastic Aptitude Test), high school GPA, and college bound courses taken (e.g., Advanced Placement and International Baccalaureate) are traditional indicators of college readiness (Conley, McGaughy, Kirtner, Valk, & Martinez-Wenzl, 2010; Dougherty, Mellor, & Shuling, 2006). As such, school-based efforts to boost college readiness and college enrollment are often focused on addressing one or all of these indicators. Research has shown, however, that significant others are important to consider when evaluating these indicators.

Significant others & college readiness. In their study of middle and high school students, Wimberly and Noeth (2005) found that a higher proportion of participants reported a mother or a female guardian being instrumental in helping them select courses and explore

postsecondary education options compared to fathers, teachers/counselors, or friends. Moreover, findings revealed that mothers and fathers were the most helpful in encouraging students to select and take courses that would fulfill high school graduation requirements and prepare them for college. Additionally, students selected courses and programs of study based on what their friends were taking in order to form and maintain friendships around common classes. Finally, a higher proportion of students reported teachers being helpful in providing information about courses and connections of course content to their postsecondary education options whereas a smaller proportion of students reported their counselor being helpful in their course selection. Similarly, previous studies found that teachers, counselors, and middle-class peers operated as supportive stakeholders in providing information to working class minority students about college admission requirements (Stanton-Salazar, 1997). These studies show the continued importance of significant others for supporting college readiness and student pathways to a higher education.

Academic Preparation

Research also suggests that there are unequal forms of college bound curricula offered to students attending schools of lower socio-economic standing and students attending schools of higher socioeconomic status (McDonough, 1997; Venezia, Kirst, & Antonio, 2003). This disparity in academic preparation often leads to inconsistencies in assessing student pre-college achievement and preparation for college (Woodruff & Ziomek, 2004; Ziomek & Svec, 1995). With this mind, robust approaches to examining student college readiness have been proposed by researchers to determine whether middle school and high school students are equipped with the necessary skills, knowledge, preparation, psychosocial attributes, and behavioral habits that will promote their success on college campuses (Roderick, 2003; Roderick, Nagaoka, & Coca, 2009).

Conley's (2008, 2010, 2013) multidimensional college readiness model is intended for use by K-12 and higher education leaders to assess whether prospective high school students and newly enrolled students will be able to thrive on college campuses without having to take remediation courses. The four model components are: 1) key cognitive strategies; 2) key content knowledge; 3) academic behaviors; and, 4) contextual skills and awareness. In this framework, it is assumed that students are ready for college to the degree to which they have mastered all four of these areas.

Key cognitive strategies are modes of thinking that students must possess in a college classroom regardless of the selectivity of the institution. Such strategies include problem formulation and problem solving, being able to conduct research about a subject area or problem, being able to provide a well-reasoned argument based on evidence, and analyze competing and conflicting descriptions of a subject or issue. *Key content knowledge* is the foundational substantive information that students must master prior to enrolling in college. This content is often embedded in high school curriculums (e.g., English, math, science, foreign language, arts, and social studies). Teachers provide a classroom curriculum to track student progress and indicate students' level of proficiency in each subject area by assigning letter grades. Knowledge attainment is often used by colleges and universities to set admission standards.

Academic behaviors recognize that students must exhibit ownership for their learning and engage in strategies that promote their learning. Students who take ownership of their learning utilize metacognitive strategies to monitor, assess, and evaluate their mastery over a subject area. In other words, students benefit from being self-motivated, and value regulating their own learning. The learning techniques students must engage in and master include time management, stress management, prioritizing tasks, participating and taking notes in class, and communicating

with school officials. Academic behaviors are attributes and habits necessary for academic success in high school and college environments. *Contextual skills and awareness* represents the key knowledge and skills students must obtain to successfully transition into postsecondary education. Such knowledge and skills include knowing which courses to take in high school for college admission, understanding financial aid options and procedures, knowing how to complete a college application, and understanding the norms and mission of various colleges and universities. Having this is knowledge will help students navigate the college-going process as a prospective and newly admitted student.

Significant others & academic preparation. Despite the robust ways of conceptualizing college readiness as proposed by Conley's framework, research investigating the influence of significant others on college-readiness behaviors is needed. Specifically, one area of inquiry that needs further exploration is an understanding of student beliefs to engage in academic behaviors and their perceptions about the social support they may receive to engage in these behaviors from significant others. Prior research has found positive relationships between significant others' encouragement to pursue higher education and students' college choice decisions (Astone & McLanahan, 1991; Perna & Titus, 2005; Reynolds & Burge, 2008; See et al., 2011; Sewell & Shah, 1968; Shaw & Larson, 2003; Stage, 1993; Uwah, McMahan, & Furlow, 2008). Yet, more research is needed about how significant others encourage students to prepare for college, aside from encouragement to take the best college bound curriculum possible. Rather, how significant others encourage and socialize students' beliefs about being self-regulated learners is a critical factor in the college preparation process, but remains unexplored in the higher education literature. Therefore, this study addresses this area by identifying student perceptions about informal social support from significant others, as well as

formal support through participation in pre-college access programs (GEAR UP), to engage in self-regulated learning. This study approach is critical to supporting students in contexts that may impede or promote their preparation for college. The following conceptual framework may be useful to further exploring these considerations.

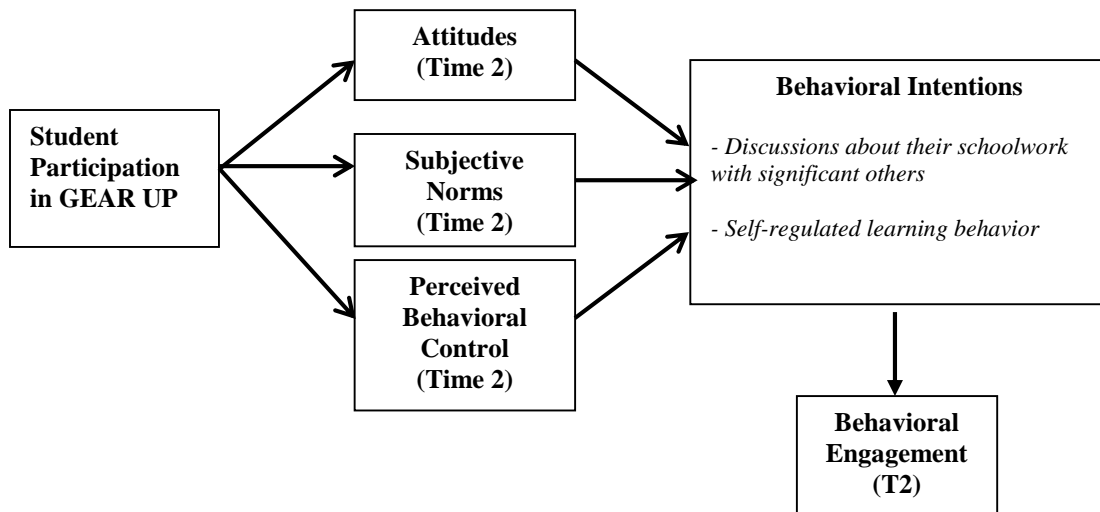
Conceptual Framework

Informed by the theory of planned behavior, the conceptual framework illustrated in Figure 4.1 proposes the relationship between student participation in GEAR UP activities and their beliefs about engaging in behaviors that promote their preparation for college. The behaviors of interest in this study are self-regulated learning and discussing schoolwork with significant others (Ajzen, 1991). These behaviors are important to investigate because they are important non-academic precursors for achievement and competitiveness in the college admission process (Hossler, Braxton, & Coopersmith, 1989). The extent to which students have the opportunity to enroll in a 4-year college or university is conditioned on whether they are admitted. This condition is also based on students' academic and non-academic accolades as well as the support received from significant others (Freeman, 1997, 2005; Perna & Kurban, 2013; Perna & Titus, 2005).

Key Constructs

The conceptual model presented in Figure 4.1 incorporates the theoretical assumptions of the theory of planned behavior. *Attitudes* reflect students' affect (i.e., value and emotion) and evaluation (i.e., behavior consequence) toward two college preparation behaviors: performing self-regulated learning and discussing schoolwork with significant others. *Subjective norms* measure student perceptions of the normative beliefs teachers, counselors, parents, and close friends hold about self-regulated learning and discussing grades, homework, and classes.

Figure 4.1. Theory of Planned Behavioral Model Examining GEAR UP Student College Readiness Behavior.



Perceived behavioral control (PBC) assesses whether students perceive they are capable and have control over engaging in these college preparation behaviors. This conceptual model assumes that GEAR UP students who hold favorable attitudes toward these behaviors are motivated to comply with the normative beliefs of important significant others; believe they are capable and able to regulate their own learning and talk to significant others about their schoolwork; and, are more likely to form intentions to engage in these college preparation behaviors. *Intention*, or a person’s perceived subjective probability of engaging in a behavior, is assumed to lead to behavioral engagement as a result of one’s college preparation behavioral beliefs (attitudes, subjective norms, and perceived behavioral control). The theory of planned behavior is extended in this conceptual model by the inclusion of a direct continuous measure of student engagement in interventions that supplement and promote opportunities that can positively influence college access. In this conceptual model, students’ level of participation in these interventions is assumed to affect their behavioral beliefs.

GEAR UP Participation

In this model, the key resource under consideration is the level of student involvement in GEAR UP activities during the course of an academic semester. I hypothesized that participating in GEAR UP activities during the semester would influence student college preparation behavioral beliefs at the end of an academic semester. Moreover, I anticipated that TPB constructs would influence student behavioral intention when examined at the end of an academic semester. In turn, intention would have an influence on student engagement in self-regulated learning strategies and talking to significant others about their schoolwork. I used the following methodological techniques to test these assumptions.

Methodology

A non-experimental panel survey study (Babbie, 1990, 2010) was implemented to examine the influence of student participation in GEAR UP on behavioral beliefs and engagement at the end of an academic semester. The college preparation behaviors were (1) discussing schoolwork with significant others and (2) self-regulated learning. Prior TPB studies implemented panel designs with at least two time points and found significant relationships between TPB constructs (Ajzen, 1991; Levine & Strube, 2012; Madden, Ellen, & Ajzen, 1992). This study took the same approach in its research design. A sample of 8th and 9th grade students were surveyed at time 1 (n=118) and time 2 (n=96). Chapter 3 provides a detailed description of the study sample selection, data collection procedures, measures assessed at time 1, and GEAR UP activities offered to students to participate during the study. The following sections provide a narrative of the key variables of interest at time 2, as well as the quantitative analytical techniques employed to answer the research questions for this study.

Measurement

Self-regulated learning. Assessed at the end of an academic semester (time 2), items that measured self-regulated learning behavior within the TPB framework were adapted from the *Academic Self-efficacy for Self-Regulated Learning Scale* (ASE-Learning Scale) (Zimmerman, 2000; Zimmerman, Bandura, & Martinez-Pons, 1992). This 11-item scale originally measured 9th & 10th grade students' perceived capability to use strategies that promote self-regulated learning. This scale yielded high internal consistency ($\alpha = .87$).

Items that reflect self-regulated learning within the TPB at time 2 are displayed in Table 4.1. Attitudes as a latent construct reflected student evaluations and affect toward engaging in *self-regulated learning behavior* over the course of a semester. Each self-regulated learning observed item at time 2, and its accompanying attitudinal component, were measured on a 7-point semantic differential scale with five bi-polar adjective pairings. *Subjective norms* as a latent construct included observed items that reflected students' perceived *normative beliefs* and *motivation to comply* with the norms significant others held about engaging in *self-regulated learning behaviors*. These dimensions were measured by a summative 5-point Likert scale. *Perceived behavioral control* (PBC), as a latent construct, was measured by observed items that represented student *self-efficacy* and *control* over engaging in self-regulated learning behaviors at time 2. Both of these dimensions were measured on a 5-point summative Likert scale. *Intention* at time 2 measured whether students planned to engage in *self-regulated learning behaviors* at the end of an academic semester. This was an observed mean composite score rather than a latent construct, and measured on a 5-point summative Likert scale. The frequency with which students engaged in *self-regulated learning behavior* over the course of a semester was the outcome variable. This behavioral indicator was measured on a 5-point summative Likert scale.

Table 4.1

Measurement of Self-Regulated Learning Behavior at Time 2

SRL Behaviors (11)	SRL Behavior ATT Items & Scale	SRL Behavior SN Items & Scale	SRL Behavior PBC Items & Scale	SRL Behavior Intention Items & Scale	SRL Behavior Engagement
1. Finishing homework assignments before they are due	<u>Item</u> <i>Attitude</i> [SRL behaviors 1-11] this semester is...	<u>Item</u> <i>Normative Beliefs</i> My [TC, PG, CF, GU] think I should...	<u>Item</u> <i>Self-Efficacy</i> How likely is it that you will be able to... & <i>Control</i> How much control do you think you have over...	<u>Item</u> This semester, I plan to... <u>Scale (1-5)</u> Definitely Probably Maybe Probably Not Definitely Not	<u>Item</u> This semester, how often did you do the following <u>Scale (1-5)</u> All of the Time Very Often Sometimes Not Very Often Never
2. Doing homework when they are other fun things to do					
3. Focusing on school subjects	<u>Scale (1-7)</u> Bad-Good	<i>Motivation to Comply</i>			
4. Taking notes during class	Not Important-Important	I want to do what my [TC, PG, CF, GU] think I should do when it comes to...			
5. Using the library to get information for class assignments is	Stressful-Stress-free		<u>Scales (1-5)</u> <i>Self-Efficacy</i> Extremely Likely Very Likely Somewhat Likely Very Unlikely Extremely Unlikely		
6. Using the internet to get information for class assignments	Useless-Useful Boring-Exciting				
7. Planning ahead to complete my schoolwork		<u>Scale (1-5)</u> Strongly Agree Agree Neutral Disagree Strongly Disagree			
8. Organizing my schoolwork					
9. Remembering information presented in class and in textbooks			<i>Control</i> Full Control A Lot of Control Some Control A Little Control Absolutely No Control		
10. Finding a place to study without distractions					
11. Participating in class discussions					

Note. SRL=Self-Regulated Learning; TC=Teacher/Counselor; PG=Parent Guardian; CF=Close Friend; GU=GEAR UP Staff; ATT=Attitudes; SN=Subjective Norm; PBC=Perceived Behavioral Control; INT=Intention.

Discussing schoolwork with significant others. Items that reflected student attitudes, subjective norms, perceived behavioral control, and intentions to *discuss schoolwork with significant others* at time 2 did not come from a prior scale and are displayed in Table 4.2. However, creation of these items was guided by prior research on the effect of discussing college plans and college financing options with significant others (e.g., parents, teachers, or counselors) on student decisions to pursue higher education after high school (Perna, 2006). Moreover, prior research has found pre-college interventions give students opportunities to develop trusting relationships with significant others that result in students in getting the support they need to navigate educational systems and prepare for college (St. John, et al., 2011). Psychometric

Table 4.2

Measurement of Discussing Schoolwork with Significant Others at Time 2

SWSO Behavioral ATT Items & Scale	SWSO SN Items & Scale	SWSO PBC Items & Scale	SWSO Intention Items & Scale	SWSO Behavior Engagement
<u>Item</u> <i>Attitude</i> Talking to my [TC; PG; CF; GU] about my grades, homework, or classes this semester was...	<u>Item</u> <i>Normative Beliefs</i> This semester, my [TC; PG; CF; GU] thought I should talk to them about my grades, homework, or classes.	<u>Item</u> <i>Self-Efficacy</i> How likely were you able to talk to your [TC; PG; CF; GU] about these things? <i>Control</i> Talking to my [TC; PG; CF; GU] about my grades, homework, or classes was...	<u>Item</u> This semester, I planned to talk to my [TC; PG; CF; GU] about my grades, homework, or classes. <u>Scale(1-5)</u> Definitely Probably Maybe Probably Not Definitely Not	<u>Item</u> How often did you talk to your [TC; PG; CF; GU] about your grades, homework, or classes? <u>Scale (1-5)</u> All of the time Very often Sometimes Not very often Never
<u>Scale (1-7)</u> Bad-Good Not Important- Important Stressful-Stress- free Useless-Useful Boring-Exciting	<i>Motivation to Comply</i> I wanted to talk to my [TC; PG; CF; GU] about these things. <u>Scale (1-5)</u> Strongly Agree Agree Neutral Disagree Strongly Disagree	<u>Scale</u> <i>Self-Efficacy (1-5)</i> Extremely Likely Very Likely Somewhat Likely Very Unlikely Extremely Unlikely <i>Control (1-7)</i> Not up to me- Totally up to me		

Note. SWSO=Discussing Schoolwork with Significant Others; TC=Teacher/Counselor; PG=Parent Guardian; CF=Close Friend; GU=GEAR UP Staff; ATT=Attitudes; SN=Subjective Norm; PBC=Perceived Behavioral Control; INT=Intention.

analysis was performed on the newly created items because they did not come from an existing measure.

GEAR UP student *attitudes* were measured on a 7-point semantic differential scale with five bi-polar adjective pairings. Each observed item was examined for each significant other referent in the study (e.g., teacher(s)/counselor(s); parent(s)/guardian(s); close friend(s)).

Subjective norms reflected students' perceived *normative beliefs* of and *motivation to comply*

with the norms significant others held about discussing schoolwork. These observed items were measured on a 5-point summative Likert scale. *Perceived behavioral control* was measured by dimensions of *control* and *self-efficacy*. For each significant other referent, control was measured by a 7-point semantic differential scale with a single bi-polar adjective pairing (up to me - not up to me). Self-efficacy was measured for each referent on a 5-point summative Likert scale (extremely likely - extremely unlikely). *Intention* examined whether students planned to discuss their grades, homework, or classes with significant others (e.g., teacher(s)/counselor(s); parent(s)/guardian(s); close friend(s)) over the course of an academic semester. Intention was measured on a 5-point summative Likert scale. Finally, the frequency with which students *discussed their schoolwork with significant others* was the behavioral outcome variable. This behavioral indicator was measured on a 5-point summative Likert scale.

GEAR UP participation. Eighth and ninth grade *student participation in GEAR UP activities* was measured using participation information collected by GEAR UP staff. Data was collected from sign-in sheets that the program used to track student participation. The amount of time students participated in a GEAR-UP activity was the metric used to measure participation as a continuous variable. For each student, time in an activity was converted into a decimal fraction. The summed total number hours of participation in GEAR UP activities in 8th and 9th grade was computed for each student. Participation in GEAR UP was based upon student activities during the time of this study. Chapter 3 provides a detailed description of student activities during the study.

Control variables. Demographic characteristics such as gender, race/ethnicity, school lunch participation, and grade point average (GPA) were included as control variables. Student participation in other school and community based activities during the study was included in the

analysis to control for intervention selection bias. Since GEAR UP programs select the schools served, student enrollment at each school was included as a control variable. Dummy variables were created for school enrolled, gender, and student race and ethnic background.

Data Analysis

Structural equation modeling (SEM) was the main analytic technique used to examine relationships between student participation in GEAR UP activities, their college preparation behavioral beliefs (attitudes, subjective norms, perceived behavioral control, and intentions) and behavior engagement at the end of an academic semester (time 2) in two domains: 1) self-regulated learning and 2) discussing schoolwork with significant others. One SEM was constructed for self-regulated learning behavior and three SEMs were constructed for each significant other referent regarding schoolwork discussions.

The hypothesized self-regulated learning SEM in Figure 4.2 and the discussing schoolwork with significant others SEM in Figure 4.3 were constructed to examine relationships between latent and observed variables. In all SEMs, participation in GEAR UP activities was hypothesized to directly influence student behavioral beliefs (attitudes, subjective norms, and perceived behavior control) at time 2. The SEMs were mediation models where behavioral beliefs were hypothesized to mediate the relationship between participation in GEAR UP activities and behavioral intention. These models also hypothesized that behavioral beliefs and behavioral intention would mediate the relationship between GEAR UP participation and behavioral engagement. Twenty-two students who participated in the study at time 1 did not complete the follow-up survey at time 2. Thus, all SEMs were analyzed with a data subsample of

Figure 4.2. Hypothesized SEM for self-regulated learning at time 2

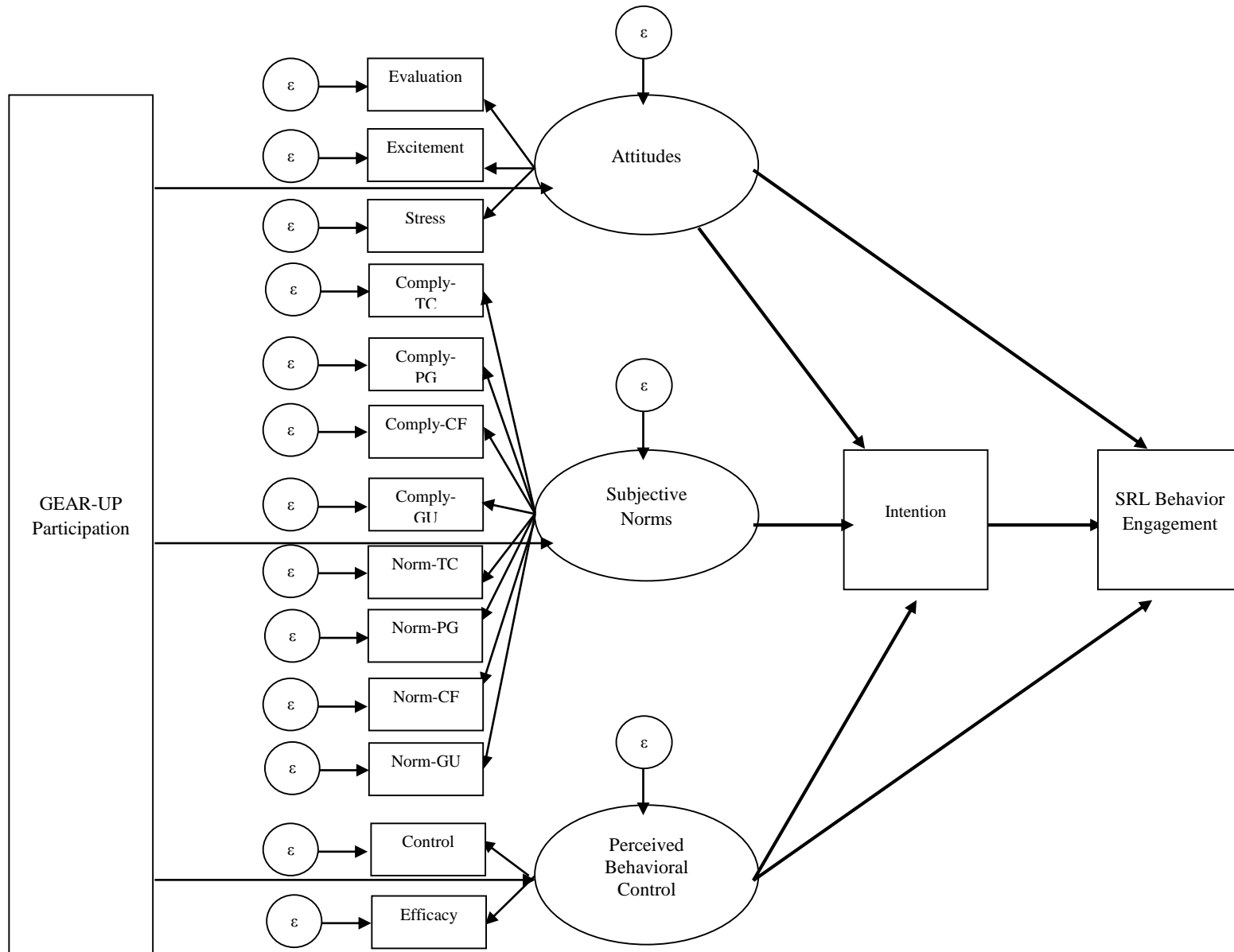
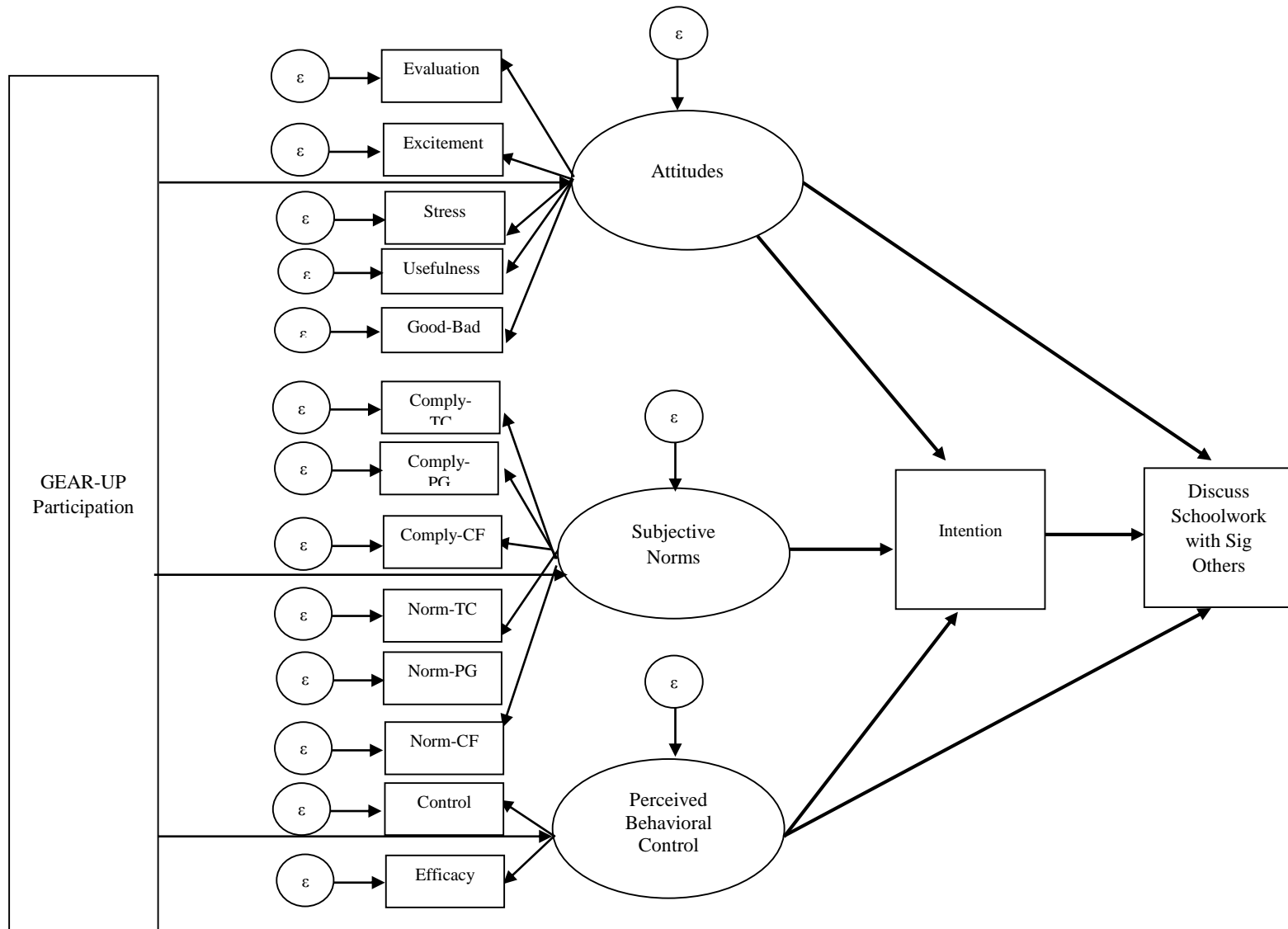


Figure 4.3. Hypothesized SEM for discussing schoolwork with significant others (teacher/counselor; parent/guardian; close friend; GEAR UP staff member) at time 2



96 GEAR UP eighth and ninth grade study participants who completed both the baseline (time 1) and follow-up surveys (time 2).⁵

All final SEMs produced a good fit to observed data, however, yielded poor parameter estimates among latent constructs. Thus, model modification was performed and guided by theory and empirical results (Schumacker & Lomax, 1996). Appendix F provides a description of model modification procedures for SEMs that examined self-regulated learning and discussing schoolwork with significant others. SEMs that required modification are displayed in Figures 4.4 through 4.7 in the results section. Bollen-Stine bootstrap sampling was conducted in the analysis of SEMs in order to obtain accurate direct and indirect effect estimates (Kline, 2011). The AMOS statistical package was the main analytical software tool used in this study. The following sections discuss the analysis procedures conducted to support this study's main analysis.

Descriptive analysis. Paired sample t-tests were conducted to examine significant paired mean differences in GEAR UP student behavioral beliefs at time 1 and time 2. Analysis of covariance (ANCOVA) was performed to investigate the amount of variance in student behavioral beliefs at time 2 explained by participation in GEAR UP activities (controlling for time 1 behavioral beliefs). The results of all descriptive analyses are displayed in Appendices G - L.

Measurement Analysis. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed to assess whether TPB constructs exhibited predictive, concurrent, convergent, and discriminant validity in this study (Cronbach &

⁵ Creating this subsample was necessary because it allowed me to accurately conduct analysis of missing data, examine potential changes in TPB constructs, and test assumptions of multivariate normality and linearity of observed data.

Meehl, 1955). EFA was performed on self-regulated learning items in order to reduce the number of observed variables to be included in the measurement portion of the SEM.

These factors reflect TPB constructs and were used in the CFA. For interpretation purposes, mean composite scores were computed for each factor in order to regulate the number of parameters in the self-regulated learning SEM.

Next, CFA was performed on self-regulated learning and discussing schoolwork SEMs, to examine whether TPB latent constructs were present for this study's sample. Hypothesis testing indicated that the measurement models for the self-regulated learning SEM and the discussing schoolwork with significant others SEMs were a poor fit to observed data. Guided by theory and modification indices, model modification was conducted to determine if parameters were missing which might increase measurement model fit to observed data. Appendix M provides a description of observed items that served as dimensions of latent constructs in each SEM. Close fit estimates of the final measurement models in each SEM are illustrated in Appendices N and O.

Power analysis. Sensitive to model complexity, this study utilized MacCallum and colleagues (1996) ratio of degrees of freedom and sample size determination power analytic approach. The null hypothesis of close fit was used for this study and states that the implied SEM for self-regulated learning and the SEM discussing schoolwork with significant others closely matches the observed data matrix ($H_0: \epsilon_o \leq .05$). Sample size determination was calculated for a close fit power estimate of .80. Power analysis indicated a close fit power estimate of .80 was not achieved for the self-regulated learning SEM ($n=107$, $df=134$). Additionally, the close fit power estimate was not achieved for SEMs assessing discussing schoolwork with a teacher or counselor ($n=134$,

df=97), parent or guardian (*n*=142, *df*=89), and close friend (*n*=135, *df*=96). Finally, an SEM for speaking with a GEAR UP coordinator about schoolwork was not analyzed because of the amount of missing data for these items due to participants not knowing whether they engaged with GEAR UP staff over the course of a semester.

Missing data analysis. The expectation maximization (EM) algorithm was used as a model-based imputation method for replacing missing data by imputing a value that is greater than or equal to 1 (Moon, 1996; Roth, 1994). Missing observations were imputed by predicted scores in a series of regressions where variables with missing data were regressed on available data for a particular case. Thereafter, the imputed dataset was submitted to ML estimation where missing scores were computed based on parameters that were estimated during imputation over 25 iterations until a stable solution was reached.

Results

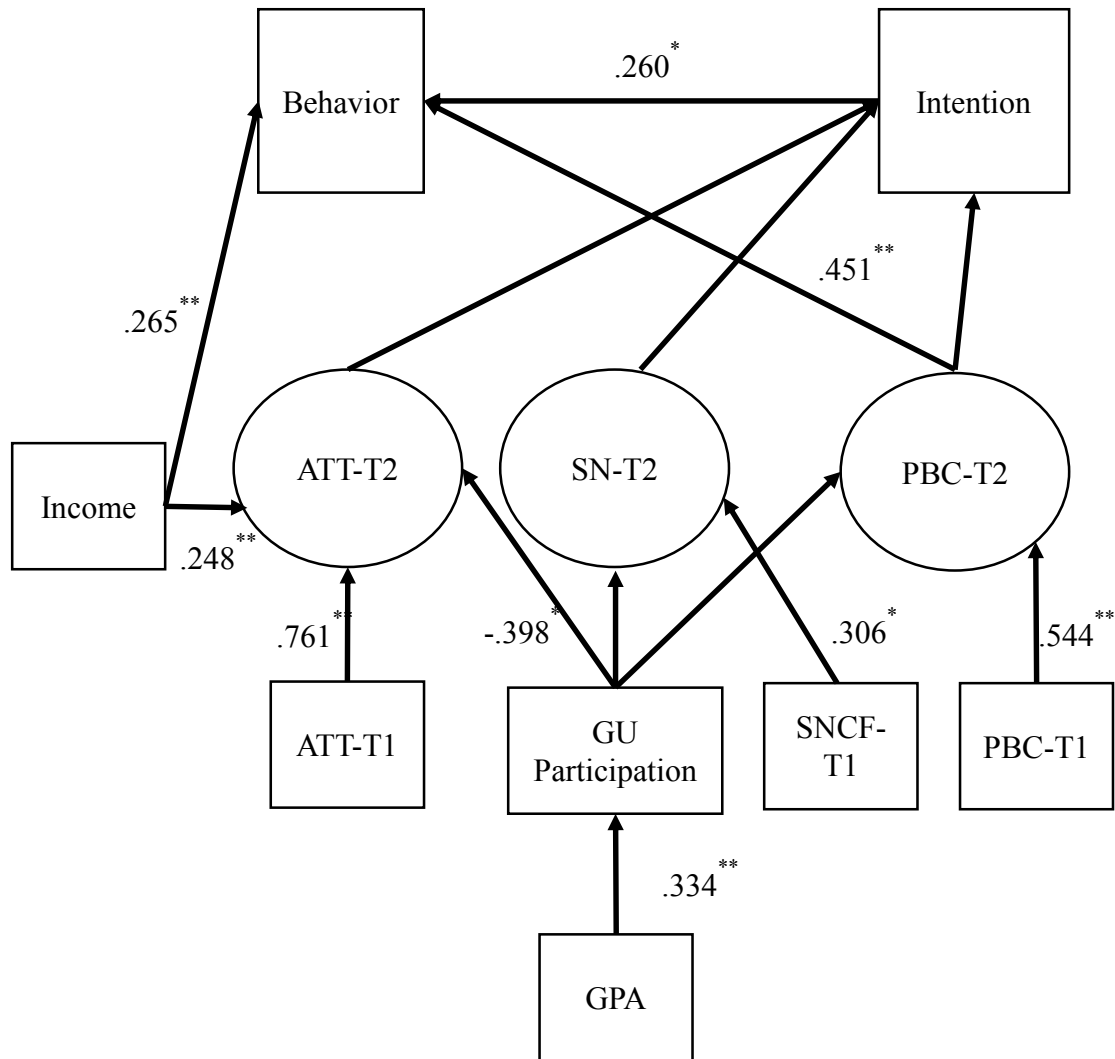
Research Question 1

SEM results presented below address the first research question: among GEAR UP students, to what extent does their participation in GEAR UP activities influence self-regulated learning behavioral beliefs (attitudes, subjective norms, perceived behavior control) over the course of an academic semester?

Direct effects & indirect effects. Figure 4.4⁶ displays the standardized direct effects estimates for the self-regulated learning SEM. Participation in GEAR UP activities was negatively associated with SRL attitudes at time 2 ($\beta = -.40$; $p = .024$). No relationships were found between GEAR UP participation and subjective norms or

⁶ Direct effects are only shown in SEM models illustrated in this dissertation.

Figure 4.4. Standardized direct effects of GEAR UP student engagement in self-regulated learning behaviors at time 2



$\chi^2 = 308.393$; DF = 202; CMIN/DF = 1.527; CFI = .902; RMSEA = .074.

⁺ $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$. DF indicates degrees of freedom; CMIN/DF, chi-square to degrees of freedom ratio, CFI, comparative fit index; RMSEA, root mean squared error of approximation. ATT=Attitudes; SN=Subjective Norms; PBC=Perceived Behavioral Control. T1=Time 1; T2=Time 2. CF= Close Friend; GPA=Grade Point Average.

Note: Standardized parameter estimates are only shown for paths that were statistically significant. Insignificant paths between control variables and theory of planned behavior constructs are not displayed.

perceived behavioral control. GPA remained a positive correlate of GEAR UP participation. An indirect effect was found where GPA negatively influenced student SRL attitudes through GEAR UP participation ($\beta = -.133$; $p = .020$).

Research Question 2

SEM results presented below address the second research question: among GEAR UP students, to what extent does their participation in GEAR UP activities influence behavioral beliefs (attitudes, subjective norms, perceived behavior control) regarding discussing schoolwork with significant others (teacher/counselor, parent/guardian, close friend) at the end of an academic semester?

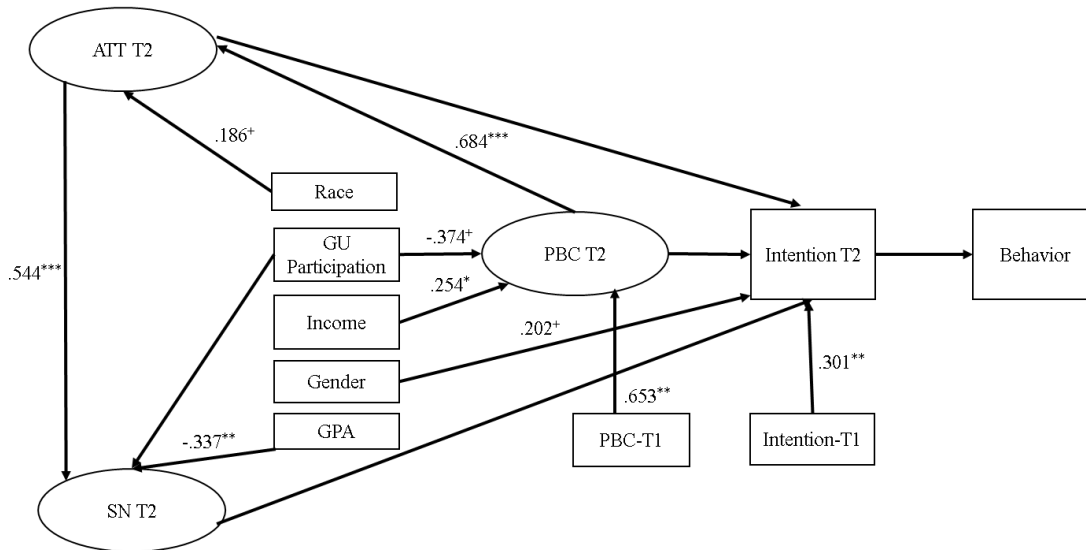
Discussing Schoolwork with a Teacher/Counselor

Direct effects & indirect effects. The teacher/counselor SEM in Figure 4.5 indicated that student participation in GEAR UP was negatively related to perceived behavioral control about speaking with teachers/counselors about their schoolwork ($\beta = -.37$; $p = .061$); however, this relationship was marginal. Indirect effects suggested that perceived behavioral control and attitudes mediated the indirect relationship between GEAR UP participation and subjective norms ($\beta = -.19$; $p = .044$). Perceived behavioral control also marginally mediated the relationship between GEAR UP participation and student attitudes about talking about their schoolwork with a teacher/counselor ($\beta = -.26$; $p = .060$).

Discussing Schoolwork with a Parent/Guardian

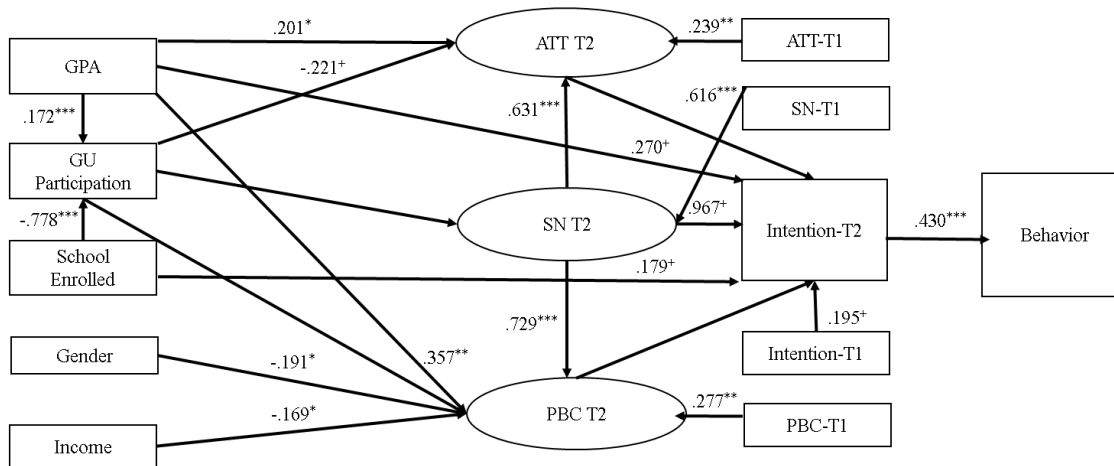
Direct effects & indirect effects. Figure 4.6 illustrates the SEM assessing GEAR UP participation and other factors that influence beliefs and behaviors about talking to a parent or guardian about their schoolwork at time 2. Findings suggest that GEAR UP participation was negatively related to student attitudes about speaking with their parent/guardian about their

Figure 4.5: Standardized Direct Effects of GEAR UP Student Discussing Schoolwork with a Teacher/Counselor at Time 2



$\chi^2 = 196.091$; DF = 128; CMIN/DF = 1.532; CFI = .930; RMSEA = .075. $^+p < .10$; $^*p < .05$; $^{**}p < .01$; $^{***}p < .001$. DF indicates degrees of freedom; CMIN/DF, chi-square to degrees of freedom ratio, CFI, comparative fit index; RMSEA, root mean squared error of approximation. ATT=Attitudes; SN=Subjective Norms; PBC=Perceived Behavioral Control. T1=Time 1; T2=Time 2. Note: Standardized parameter estimates are only shown for paths that were statistically significant. Insignificant paths between controls variables and theory of planned behavior constructs are not displayed.

Figure 4.6: Standardized Direct Effects of GEAR UP Student Discussing Schoolwork with School Parent Guardian at Time 2



$\chi^2 = 226.386$; DF = 138; CMIN/DF = 1.640; CFI = .914; RMSEA = .082. $^+p < .10$; $^*p < .05$; $^{**}p < .01$; $^{***}p < .001$. DF indicates degrees of freedom; CMIN/DF, chi-square to degrees of freedom ratio, CFI, comparative fit index; RMSEA, root mean squared error of approximation. ATT=Attitudes; SN=Subjective Norms; PBC=Perceived Behavioral Control. T1=Time 1; T2=Time 2. Note: Standardized parameter estimates are only shown for paths that were statistically significant. Insignificant paths between controls variables and theory of planned behavior constructs are not displayed.

schoolwork at the end of an academic semester ($\beta = -.22$; $p = .067$); however, this direct effect was marginal. Student participation in GEAR UP activities was not significantly associated with subjective norms and perceived behavioral control. No indirect effects on student behavioral beliefs were found in this study.

Discussing Schoolwork with Close Friends

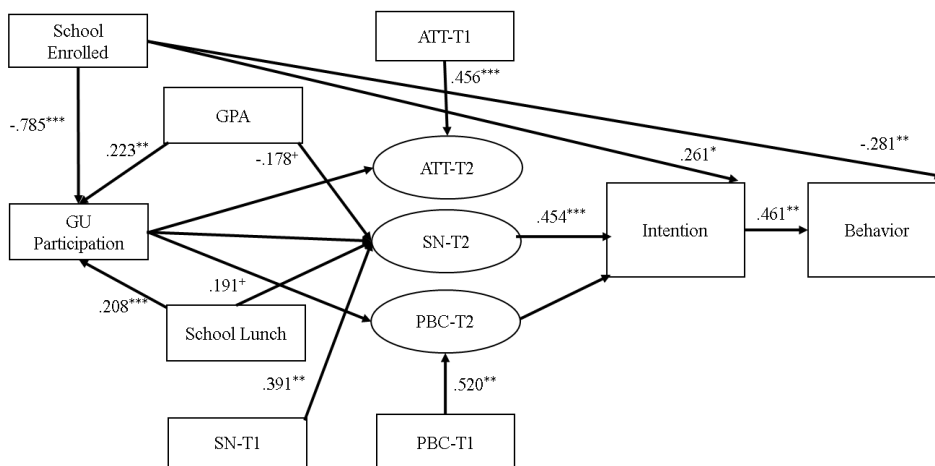
Direct effects & indirect effects. The SEM illustrated in Figure 4.7 shows that participation in GEAR UP was not related to student beliefs (attitudes, subjective norms, and perceived behavior control) about discussing schoolwork with a close friend at time 2. Indirect effects on student behavioral beliefs were also not found in this model. Other findings indicated control variables of GPA ($\beta = .22$; $p = .002$), school of enrollment ($\beta = -.79$; $p = .001$), and school lunch participation ($\beta = .20$; $p = .001$) were related to GEAR UP participation. Additionally, school lunch participation ($\beta = .19$; $p = .076$) and GPA ($\beta = -.18$; $p = .10$) marginally influenced subjective norms. Students' baseline attitudes ($\beta = .46$; $p = .001$), subjective norms ($\beta = .39$; $p = .003$), and perceived behavioral control ($\beta = .52$; $p = .003$) were significantly associated with their corresponding construct at time 2. School of enrollment was related to student intention ($\beta = .26$; $p = .029$) and behavior ($\beta = -.28$; $p = .005$). Additionally, student attitudes and perceived behavioral control were not significantly associated with intention.

Research Question 3

SEM results presented below address the third research question: to what extent does participation in GEAR UP activities affect student engagement in self-regulated learning behavior at the end of an academic semester?

Direct effects & indirect effects. Based on the SEM illustrated in Figure 4.4, the extent to which students participated in GEAR UP activities during an academic semester did not

Figure 4.7: Standardized Direct Effects of GEAR UP Student Discussing Schoolwork with a Close Friend at Time 2



$\chi^2 = 214.720$; $DF = 139$; $CMIN/DF = 1.545$; $CFI = .911$; $RMSEA = .076$. $^*p < .10$; $^{**}p < .01$; $^{***}p < .001$. DF indicates degrees of freedom; $CMIN/DF$, chi-square to degrees of freedom ratio, CFI , comparative fit index; $RMSEA$, root mean squared error of approximation. ATT =Attitudes; SN =Subjective Norms; PBC =Perceived Behavioral Control. $T1$ =Time 1; $T2$ =Time 2.
 Note: Standardized parameter estimates are only shown for paths that were statistically significant. Insignificant paths between controls variables and theory of planned behavior constructs are not displayed.

directly or indirectly affect SRL behavior. However, direct effects indicated that perceived behavioral control was related to SRL behavior ($\beta=.45$; $p=.004$) but was not significantly related to intention. SRL behavioral intention was also positively correlated with SRL behavioral engagement at the end of an academic semester ($\beta=.26$; $p=.024$). Indirect effects were also found, where student SRL subjective norms at time 1 influenced SRL intention ($\beta=.14$; $p=.028$) and SRL behavior ($\beta=.04$; $p=.031$) at time 2. Moreover, student subjective norms at time 2 indirectly influenced SRL behavior at time 2 ($\beta=.12$; $p=.045$). Additionally, perceived behavioral control at time 2 mediated the relationship between perceived behavioral control at time 1 and self-regulated learning behavior ($\beta=.26$; $p=.009$).

Research Question 4

SEM results presented below address the fourth research question: to what extent does participation in GEAR UP activities affect student engagement in conversations about their schoolwork with significant others at the end of an academic semester?

Teacher or Counselor

Direct effect & indirect effects. Participation in GEAR UP activities did not influence how often students spoke with a teacher or counselor about schoolwork at the end of an academic semester. Moreover, attitudes, subjective norms, and perceived behavioral control did not significantly influence student intentions or behavior. The association between student intention and behavior was also not statistically significant.

On the other hand, perceived behavioral control was positively related to attitudes ($\beta=.68$; $p=.004$), and attitudes positively influenced subjective norms ($\beta=.54$; $p<.002$). Indirect effects suggest that student perceived behavioral control at time 2 mediated the indirect relationship between perceived behavioral control at baseline and student attitudes at time 2 ($\beta=.45$; $p=.002$). Finally, both perceived behavioral control and attitudes at time 2 mediated the indirect relationship between perceived behavioral control at time 1 and subjective norms at time 2 ($\beta=.24$; $p<.001$).

Parent or Guardian

Direct effect and indirect effects. Participation in GEAR UP activities did not affect how often students spoke with a parent or guardian about schoolwork at the end of an academic semester. However, subjective norms were marginally associated with GEAR UP student intentions to speak with a parent/guardian about their schoolwork ($\beta=.967$; $p=.062$). Direct effects also indicated that subjective norms were positively associated with attitudes ($\beta=.63$; $p=.001$) and perceived behavioral control ($\beta=.73$; $p=.001$). Additionally, GPA ($\beta=.27$; $p=.091$) and school enrolled ($\beta=-.18$; $p=.084$) were associated with intention. Subsequently, intention at time 2 was positively related to a student talking to a parent/guardian about schoolwork ($\beta=.43$; $p=.001$). Indirect effects suggested that student intention at time 2 to speak with a parent/guardian about schoolwork mediated the indirect relationship between subjective norms

and behavior ($\beta=.25$; $p=.002$). Moreover, an indirect effect between time 1 intention and behavior was marginally mediated by intention at time 2 ($\beta=.08$; $p=.067$).

Close Friend

Direct effects and indirect effects. Participation in GEAR UP activities did not directly affect how often GEAR UP students spoke with a close friend about schoolwork at the end of an academic semester. However, a positive direct effect between subjective norms and intention ($\beta=.45$; $p=.001$) was found. Subsequently, student intention at time 2 was positively associated with behavior ($\beta=.46$; $p=.003$). Results also indicated that student perceptions of beliefs their close friends held regarding talking about schoolwork at time 2 mediated the indirect relationship between student subjective norms at time 1 and intention ($\beta=.13$; $p=.001$). Both subjective norms and intention at time 2 mediated the indirect relationship between student baseline subjective norms and behavior at time 2 ($\beta=.06$; $p=.001$). Finally, findings indicated that intention at time 2 mediated the indirect relationship between time 2 subjective norms and behavior ($\beta=.21$; $p=.001$).

Discussion

This study sought to investigate the extent to which student level of participation in GEAR UP influenced college preparation behavioral beliefs and engagement at the end of an academic semester in two areas: self-regulated learning and discussing schoolwork with significant others. These behavioral domains are important for students in pre-college access programs at earlier stages in the education continuum because mastering these behaviors promotes their college preparation and are key psychological non-cognitive indicators for college success (Emeka & Hirschman, 2006; Sedlacek & Sheu, 2006; St. John & Hu, 2006). Overall, study findings suggest that the extent to which students participated in GEAR UP activities

during an academic semester did not influence engagement in self-regulated learning at the end of a semester. Although participation did not affect the main outcome of interests in this study, there were interesting findings related to the main research questions that warrant discussion.

GEAR UP Participation & Self-Regulated Learning Behavior Attitudes

Unexpected but meaningful findings in this study were that participation in GEAR UP had negative effects on time 2 self-regulated learning (SRL) attitudes, and participation in GEAR UP activities mediated the negative relationship between GPA and self-regulated learning attitudes at time 2. Some would conclude, therefore, that participation in GEAR UP activities negatively affects student attitudes toward learning. However, making such conclusions would be inaccurate.

One possible methodological explanation is that the variation explained by GEAR UP participation on time 2 SRL attitudes is influenced by student prior attitudes. Analysis of covariance results in Appendix K indicate that SRL attitudes at time 1 were significantly related to time 2 SRL attitudes and explained 65% of variance in SRL attitudes at time 2 (that was not explained by GEAR UP activity participation). The relationship between student participation in GEAR UP activities and time 2 attitudes was marginally significant. Therefore, the negative effect observed may be more of a reflection of students' existing attitudes rather than their level of participation in GEAR UP activities.

An intervention explanation is that the level of participation in GEAR UP may have influenced student perceptions about themselves as self-regulated learners. Prior research suggests that interventions and school support are crucial in supporting student learning (Jackson & Nutini, 2002; Murray-Harvey, 2010). As described in Chapter 3, GEAR UP offered activities that challenged students to reflect on the way they learned their course content. Hence, it is

possible that some study participants thought of themselves as highly effective self-regulated learners but recognized areas needed for improvement through their participation in GEAR UP. There may be opportunities for this particular GEAR UP program to develop partnerships with schools and leadership to identify ways in which it can direct resources to gain insight on participant attitudes about incorporating and engaging in self-regulated learning behaviors.

Finally, a substantive explanation is that prior research suggests students have different emotional responses (e.g., stress, enjoyment, anxiety, hope, boredom, flow) to their learning and school settings which can affect academic performance (Pekrun, Goetz, Titz, & Perry, 2002). Given that participants in this study were highly motivated learners and achievers, they may have exhibited characteristics of flow, or a state of total involvement in an activity that consumes their complete attention despite being in highly stressful situations or settings (Seo, 2011). This strength based characteristic possessed by GEAR UP student participants is a testament to their academic achievement despite attending schools that are affected by federal accountability standards for learning and achievement. These contexts make it challenging for students to hold positive attitudes toward self-regulated learning as a college preparation behavior because of the emphasis placed on learning course content for performance on assessment testing. Hence, although unintended, participation in GEAR UP activities may add additional stress to the learning process and achievement for GEAR UP students. Therefore, pre-college access interventions like GEAR UP may need to pay close attention to how participants emotionally respond to the programs they provide and the accountability contexts of school settings.

Self-Regulated Learning Behavior and Perceived Behavioral Control

Study results confirmed that self-efficacy remains a critical psychological mechanism for students in their capability to engage in behaviors to achieve their learning goals. Informed by

the theory of planned behavior, data indicated that self-efficacy, control, and intention were key determinants of the extent to which students performed SRL behaviors. This is a critical finding considering that prior research has found that goal-setting and self-efficacy are critical aspects in self-regulated learning that influence the extent to which students monitor their behavior, assess their performance, and react to the progress being made toward accomplishing a goal (Eccles & Roeser, 2009; Schunk, 1990, 2008). Moreover, as suggested by self-regulated learning scholars, student self-efficacy for goal attainment is strongly influenced by their prior experiences and self-efficacy beliefs about self-regulated learning. Finally, these findings indicate that GEAR UP students were motivated to learn and believed they were highly capable and could control the extent to which they engage in SRL strategies of the course of an academic semester. Overall, it remains critically important for pre-college interventions like GEAR UP to collaborate with schools to develop strategies to further build on the strength-based psychological characteristics exhibited by participants in order to enhance their readiness to succeed and thrive in postsecondary settings.

Self-Regulated Learning Behavior and Subjective Norms

This study showed that engagement in self-regulated learning behaviors is influenced by the student perceived normative beliefs held by teachers/counselors and parents/guardians. This aligns with the literature where student motivation has been considered to be an important process that contributes to student maintenance of their attention, effort, and persistence in the learning process (Zimmerman & Schunk, 2004).

Moreover, results highlight the socializing role of school officials and parents in shaping and motivating students to engage in behaviors necessary for academic achievement and preparation for college. Recent self-regulated learning research calls for an integration of

learning as a psychological and interactive process, where learning is a socially constructed and shared experience (Järvelä & Järvenoja, 2011). Thus, student adoption of and engagement in self-regulated learning strategies may be influenced by various social and group situations. Future qualitative research is needed to examine how significant others motivate and influence students to engage in academic behaviors that promote college preparation.

Discussing Schoolwork with Parent/Guardian

This study shows that perceptions of the beliefs a parent or guardian holds about talking about schoolwork is a key factor influencing whether students intend to approach a parent about their schooling. This confirms prior research which has found parents/guardians to be highly influential in students' pursuit of and preparation for higher education (Allen & Griffin, 2006; Cabrera & La Nasa, 2001; Cates & Schaeffle, 2011; Gandara, 2001; Hossler, Schmit, & Vesper, 1999; Perna & Kurban, 2013; Tierney, 2002). Moreover, students' positive subjective norms to talk about their schoolwork with a parent or guardian influenced their attitudes and perceived behavioral control. Prior research has found positive linkages between parent involvement, academic achievement, and college enrollment (Legutko, 1998; Perna & Titus, 2005; Rowan-Kenyon, Bell, & Perna, 2008; Somers, Cofer, & VanderPutten, 2002; Wells, Seifert, Padgett, Park, & Umbach, 2011). Whether students perceived that parents are interested and supportive of the academics is critical to student motivation for having discussions about their grades, homework, and classes. This provides opportunities for school and pre-college programs to implement strategies that encourage students to involve their parents in their schooling. Therefore, study findings point to parental involvement continuing to be influential in student readiness and pursuit of college.

Discussing Schoolwork with a Close Friend

What is the perceived support GEAR UP students believe they receive from peers with regard to their grades, classes, and homework? This study sought to answer this question by examining GEAR UP student subjective norms, or their beliefs about talking with a close friend about schoolwork. Findings suggested that student perceptions about the beliefs close friends held toward talking about schoolwork influenced whether discussions actually took place during an academic semester. Particularly, GEAR UP students' subjective norms and behavioral engagement were mediated by intention, a key motivational factor within the theory of planned behavior. This finding is useful to understanding existing research which finds the long-term college plans of peers increase the probability of college enrollment (Antonio, 2004; Kiuru, Aunola, Vuori, & Nurmi, 2007; Sokatch, 2006). For instance, in a recent study, Ng, Wolf-Wendel, and Lombardi (2014) found that parents of pre-college access program participants desired that their children learned to better communicate with and be exposed to motivated peers who aspired to be academically successful and go to college. The results in this study suggest that subjective norms and intentions about discussing schoolwork with peers are key antecedents in determining whether students communicate their social and academic needs with their peers. There is much still to be discovered in future research about this phenomenon. Finally, there are opportunities for pre-college programs such as GEAR-UP and schools to develop supportive peer-to-peer initiatives that promote college preparation discussions within school settings.

Discussing Schoolwork with a Teacher/Counselor

This study explored which TPB constructs explained the extent to which GEAR UP students discussed schoolwork with a teacher or counselor. I found that students did not talk about schoolwork with a teacher or counselor nor were they motivated to do so. However, this study gains initial insight into GEAR UP students' perceptions about speaking with a school

official about schoolwork. Perceived behavioral control indirectly influenced subjective norms, and attitudes mediated this relationship. Moreover, attitudes and subjective norms directly influenced student engagement in discussions about schoolwork with a teacher or counselor. These findings were interesting given the changing role of school counselors in supporting student college readiness and college enrollment. Prior research has found stark differences in the challenges counselors face in supporting student college preparation in low SES school and high SES schools and challenges faced by increased administrative responsibilities (McDonough, 1997; Perna, 2007). Despite these potential barriers, students in this study held positive subjective norms and attitudes that influenced how often they spoke with a teacher or counselor about their schoolwork. This points to an opportunity for schools and this GEAR UP program to find ways to promote student conversations with teachers and counselors about their academics. An area for future research would be to determine whether these findings would remain consistent if teachers and counselors were treated separately as significant other referents.

Limitations

There are study limitations to consider for future research. More information is needed about the connection between attitudes and motivation in the context of precollege intervention s. Intrinsic task value may be informative in how it is represented as a behavioral attitude construct. Specifically, intrinsic value may provide additional insight into the affective orientations students have toward engaging in metacognitive strategies that promote learning and support received from significant others (Eccles, 2004; Eccles & Midgley, 1991). GEAR UP students may have placed more intrinsic value in carrying out certain self-regulated learning tasks compared to others. The same could be said for students who value talking to a particular significant other over another. These factors were not examined in this study, but should be

considered in future research. Moreover, this study could have used additional conceptualization and assessment of behavioral intentions among GEAR UP adolescents. Given that students have various schooling, familial, and social experiences, concepts such as goal intentions and implementation intentions may be needed in future research. Gollwitzer (2006) argues that setting and striving to reach one's behavioral or outcomes goals are key antecedents to observing the intention-behavior relationship. Moreover, a student's commitment to carry out these goals is predicated by the situations students are presented with and the intended behavior being assessed. Thus, future studies may want explore and understand the circumstances or situations that have to occur in order for students to engage in various behaviors that promote their readiness for college.

Conclusion

In closing, this study revealed that GEAR UP student engagement in college preparation behaviors (i.e., self-regulated learning and discussing schoolwork with significant others) was influenced by perceived behavioral norms of significant others and their perceived capabilities for behavioral performance. Intention, a motivational construct within the theory of planned behavior, is a factor in the association between these psychosocial mechanisms and behavioral engagement for study participants over the course of an academic semester. Finally, although the extent of student participation in GEAR UP activities did not influence college preparation behaviors, it negatively influenced student self-regulated learning attitudes. This information provides opportunities for researchers and practitioners to assess the assumed connection between program implementation and student beliefs about engaging in self-regulated learning strategies. Thus, resources and programs that strengthen and support student understanding and

engagement in behavioral strategies are critical for success in postsecondary education and remain critical in the college preparation process.

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CHAPTER V

Study 3

Chapters 1 and 3 established that despite increases in the number of accredited degree-granting (2-year and 4-year) institutions, and growth in undergraduate enrollment at such institutions in recent decades (Jones, 2013; Perna & Jones, 2013; Synder, 2013; Synder & Dillow, 2010), gaps in educational opportunities remain between racial/ethnic and socioeconomic groups. Given that the United States enrolls students in greater percentages than other industrialized countries, yet, produces less college graduates (OECD, 2014), increasing college preparation opportunities for underrepresented students will remain an issue of national importance. Likewise, both chapters also established that investment in pre-college access programs is a key priority in public and private sectors to reduce educational opportunity gaps.

Prior research indicates that pre-college interventions provide the following: 1) opportunities for students to develop trusting and supportive relationships with significant others that lead to successful navigation of the college preparation process (St. John, Hu, & Fisher, 2011); 2) decreased financial barriers to higher education and the promotion of academic success (St. John, 2008; St. John & Hu, 2006); 3) opportunities to engage in enrichment and leadership activities that further student preparation for college and academic success (Allen, Bonous-Hammarth, & Suh, 2004; Hurtado, Nelson Laird, & Perorarzio, 2004); and, 4) identification and cultivation of student academic and social-cognitive strengths in schools that may have challenges in preparing students for college (St. John & Trent, 2008; Trent, Nicholson, & McKillip, 2008).

However, key knowledge gaps exist related to the actual and perceived barriers and opportunities of students. Specifically, the extent to which students experience structural barriers and opportunities, and how their perceptions of those barriers and opportunities influence their beliefs about engaging in precollege interventions and college preparation behaviors is unexplored in higher education research. Understanding these connections is vital for identifying how structural inequality - which creates inequities - affect student beliefs about engaging in behavioral strategies that will enhance their social and academic success in secondary and post-secondary education settings. Therefore, exploring the influential role that participation in pre-college outreach interventions play in this context is essential given their pragmatic goals of expanding college access opportunities to low-income students.

Study Purpose and Research Questions

Chapter 4 showed that self-regulated learning and speaking with significant others, as indicators of student college readiness (Conley, 2008, 2013; Conley, McGaughy, Kirtner, Valk, & Martinez-Wenzl, 2010), are also critical behavioral precursors to college preparation. Mastering both areas is especially critical in postsecondary environments where one is expected to be an autonomous learner.

The purpose of this study is to explicate the extent to which student socioeconomic background (e.g., parent education background), and student appraisals of their higher education opportunities (e.g., college aspirations and college expectations) affect relationships between college preparation behavioral beliefs, participation in GEAR UP activities, and performance of college preparation behaviors during an academic semester. The specific research questions pursued in the present study are:

- 1) Does student socioeconomic status (SES) moderate relationships between student college preparation behavioral beliefs (i.e., attitudes, subjective norms, and perceived behavioral control) and college preparation behavior plans (i.e., intention) at the beginning of an academic term (time 1)?
- 2) Does student SES moderate relationships between student college preparation behavioral beliefs and plans, and level of participation in GEAR UP activities at time 1?
- 3) Do college aspirations or college expectations moderate relationships between student college preparation behavioral beliefs, and college preparation behavioral plans at time 1?
- 4) Do college aspirations or college expectations moderate relationships between student college preparation behavioral beliefs, college preparation behavioral plans, and level of participation in GEAR UP activities at time 1?
- 5) To what extent do SES, college aspirations, or college expectations moderate relationships between student level of participation in GEAR UP activities, college preparation behavioral beliefs, and college preparation behavior plans at the end of an academic semester (time 2)?

Literature Review

Initiatives focused on increasing college access are primarily concerned with addressing ways of improving educational opportunities as a means of fostering social mobility for historically vulnerable groups in the United States. Understanding factors that shape student educational opportunities has remained a topic of interest among researchers.

Early Research on Parental Influences on Educational Attainment

Early status attainment research found educational attainment to be determined by parent occupational and educational background (Blau & Duncan, 1967). It was later found that parent educational expectations and encouragement influenced student educational aspirations and

attainment (Haller & Portes, 1973). Particularly, the relationship between mothers' educational attainment and student aspirations were found to be weak compared to the relationship between fathers' educational attainment and aspirations (Kandel & Lesser, 1969). Early scholars conceptualized student aspirations as orientations toward objects that influenced student behavior in order to ensure that desires became realized. Researchers believed that during the aspiration process, significant others facilitated how student aspirations were developed for various forms of educational and occupation attainment. Moreover, evidence suggested that significant others used their own experiences of obtaining their education to convey educational expectations to students (Haller & Portes 1973; Swell et al., 1969).

SES & Educational Attainment

Many studies since have sought to understand additional factors that explain the influence of aspirations on educational attainment. For instance, Jackson, Kacanski, Rust, Beck (2006) and Rojewski (1997) revealed that students who believed that barriers existed in attaining high-paying occupations were more likely to be unsure of or have lower educational aspirations to attend college compared to students who believed otherwise.

Parental education involvement has been found to effect student education aspirations among students from high and low SES backgrounds. Trusty (2002; 1998) found that among students from low SES backgrounds, high parental involvement in educational activities contributed to high education expectations among students. In addition, among students from high SES backgrounds, parent participation in school activities positively predicted student expectations to attend college.

Family composition and educational aspirations are also correlated with educational attainment. Heard (2007) found that, compared to students living with married biological

parents, for each year students lived with a married father-stepmother or with non-biological parents, the likelihood of having high educational expectations to attend college was reduced. Another key finding in this study was that the odds of students expecting to attend college declined by 50% when mothers left the household before the 8th grade, compared to 25% if mothers left the household after the 8th grade. Together, these findings highlight the need to consider how family members shape student education expectations.

Structural Inequalities & Educational Attainment

Although status attainment research provides knowledge about associations between social origins, aspirations, and educational achievement, most of these studies were primarily conducted with white middle class families; reduced the educational attainment process to student variations in learned motives and skills; and, did not scrutinize the structural constraints historically imposed on disenfranchised groups in the United States (Kerckhoff & Campbell, 1977). Unequal educational opportunities are a reflection of continued racial inequalities experienced by urban low-income youth of color and continue to be a barrier to educational mobility in the United States (Epps, 1995; Ladson-Billings, 2013; O'Connor, Hill, & Robinson, 2009; Welner & Carter, 2013).

Arguably, the educational inequities observed and experienced by urban racial/ethnic minorities in schools are a consequence of racial stratification (Ogbu, 1983, 1999, 2008; Ogbu & Gibson, 1991), and lead to the reproduction of opportunity gaps. Opportunity gaps have been defined as “cumulative differences in access to key educational resources that support learning at home and at school such as expert teachers, personalized attention, high-quality curriculum opportunities, good educational materials, and information resources” (Darling-Hammond, 2013; Welner & Carter, 2013). For instance, low-income urban minority students are more likely to

attend schools that are ill resourced, understaffed, and overcrowded (Kozol, 1991, 2005). Moreover, urban minority students are more likely to be tracked into non-college bound educational curriculums such as special education (Artiles & Bal, 2008; Blanchett, Mumford, & Beachum, 2005; Blanchett, 2006,2009) and encounter school personnel who carry lower expectations for their learning and educational success (Irvine & York, 1993). Finally, opportunity disparities begin as early as kindergarten where achievement gaps are observed between urban minority students and their white counterparts (Barnett, 2013).

Formal School Supports & Educational Attainment

Such barriers have profound implications for the way students are academically supported and the perceptions others form about students' higher education prospects. Informed by McDonough's concept of organizational habitus, Diamond, Randolph, and Spillane (2004) explored how organizationally embedded educational expectations of schools shaped a teacher's beliefs about the academic capabilities of students and a teacher's sense of responsibility for the learning of students from various racial, ethnic, and socioeconomic backgrounds. Findings indicated that a higher proportion of school officials (e.g., teachers and principals) in schools with predominately low-income African American students did not hold strength-based beliefs about student academic abilities (i.e., ability to read and compute at high levels, engage in high order thinking, and master course materials). Rather, they emphasized challenging circumstances students faced within their family (e.g., unstable family composition), community (e.g., neighborhood crime and violence), and behavioral deficits (e.g., lack of discipline, disrespect towards adult authority) as reasons for lower student academic ability. Additionally, school officials within these contexts were less likely to demonstrate a strong sense of responsibility for student academic outcomes. This was due to their beliefs that family background limited their

ability to teach effectively, and that students were incapable of doing challenging work. On the other hand, school officials working in settings with predominately low-income white and Asian students were more likely to hold positive orientations about student academic ability, developmental attributes, motivational attributes, and behavioral attributes, and have a collective responsibility for student learning.

The opportunities schools provide to students for postsecondary educational success can affect student appraisals about college opportunities. When considering the higher education opportunities of adolescents, McDonough (1997) found that counselors working in high socioeconomic schools were more likely than their counterparts at low SES schools to provide college counseling to 9th and 10th grade students, and utilize resources to organize campus visits and assess college readiness through standardized testing. Often, students attending these schools had the financial means and knowledge to pay for college, thus college counseling did not emphasize this aspect of the college-going process. Students in low-SES schools, on the other hand, did not receive college counseling until their senior year because counselors focused their efforts on retention and disciplinary issues (McDonough 1997). Pitre (2006) found that students who perceived that their high school was not preparing them well for college admission, or were unsure about how well they were being prepared, were less likely to aspire to attend college, compared to students who were more confident in their preparation.

Knowledge Gaps: Implications of Precollege Programs for Urban Minority Youth

Overall, existing research demonstrates that urban minority youth continue to face ongoing challenges within schools, families, and communities that affect their college preparation, and future college admission and enrollment. Urban minority students and their families are often left to navigate and adapt to the challenges these barriers produce. Research indicates that

they often respond to these challenges by incorporating available strength-based cultural resources in order to maintain their psychological well-being and overall quality of life (Bowman, 1990, 2006; Spencer, 1999; Spencer, Cole, DuPree, Glymph, & Pierre, 1993). Additionally, the informal social and academic support students receive (i.e., significant other encouragement, racial/ethnic socialization) also assist students with these challenges, and positively promote their achievement, developmental, and college enrollment outcomes (Bowman & Howard, 1985; Eccles, 2004).

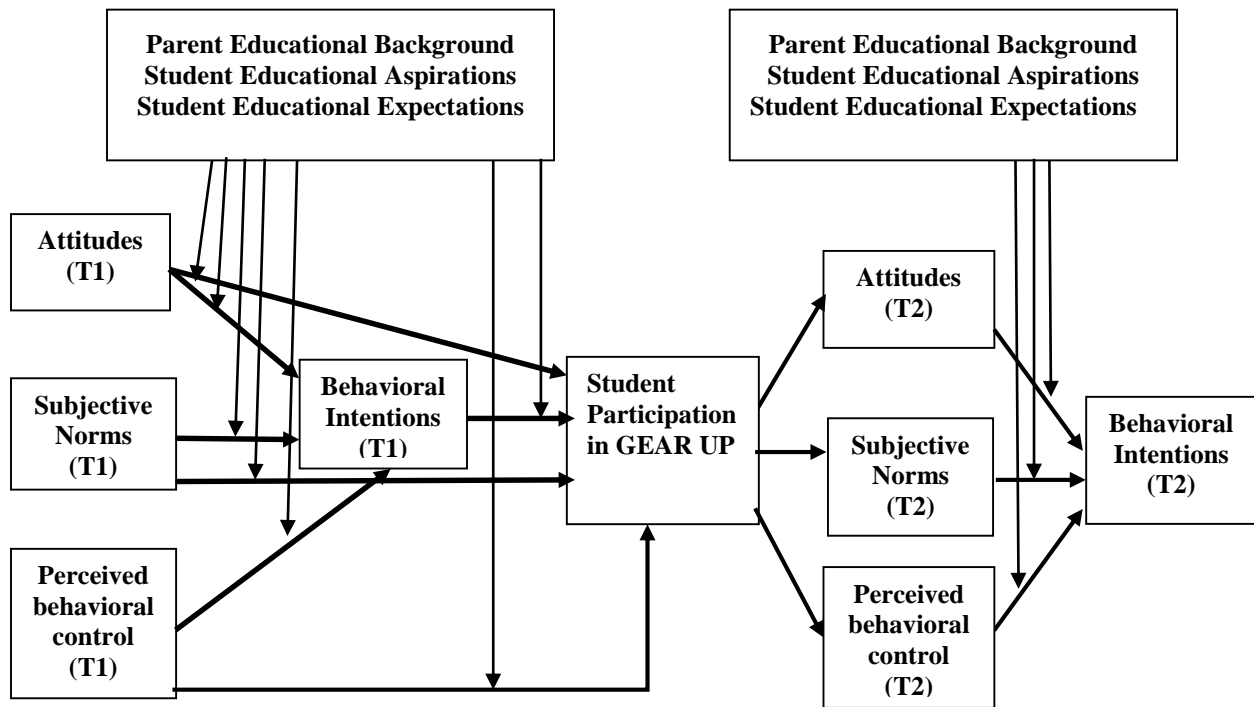
More knowledge is needed, however, about how formal resources (e.g., pre-college programs), and the opportunities they provide, influence students' behavioral beliefs and plans for academic success despite the barriers they face. This knowledge is worth investigating because it can further inform ways to increase and create higher education opportunities for urban minority adolescents (St. John, et al., 2011). Pre-college access programs are charged with reducing opportunity gaps and increasing college access. Knowing how participation effects students' behavioral beliefs (e.g., self-regulated learning and engaging with significant others) and perceptions of educational opportunities is important for higher education practitioners and policy stakeholders to understand because it reveals the degree to which these programs promote educational opportunity among participants.

Conceptual Framework

Guided by social psychology theory, a central assumption in this study's conceptual framework is that behavior is a function of the person and their environment (Lewin, 1944; Lewin & Gold, 1999). Behavioral engagement is not assumed to occur based on an individual's volition; rather, student appraisals of resources, opportunities, and circumstances outside of their control affects their behavior.

Figure 5.1 illustrates how social background characteristics (e.g., parent education background) and student perceptions of their educational trajectories (e.g., education aspirations & expectations) influence the relationship between student behavioral beliefs (e.g., attitudes, subjective norms, perceived behavioral control) and behavioral plans (i.e., intention). The key behavioral strategies often discussed as essential precursors for college readiness and college success are academic behaviors (e.g., engagement in metacognitive strategies that reflect ownership for one’s learning) and contextual skills and awareness (e.g., becoming knowledgeable about one’s own progress about attending college) (Conley, 2013). Proxies that reflect these behavioral strategies in this study are self-regulated learning and talking to significant others about student grades, homework, and classes (i.e., schoolwork).

Figure 5.1. Intersections of opportunity gaps, GEAR UP participation, and student engagement in college readiness behavioral strategies



With this premise in mind, this study's conceptual framework was informed by the theory of planned of behavior (Fishbein & Ajzen, 2010). This theoretical framework has been tested in studies across various fields and disciplines. Behavioral engagement is informed by behavioral motivation, or intention. *Intention* is an individual's subjective probability of engaging in a behavior, and is assumed to determine behavioral engagement as a result of one's behavioral attitudes, subjective norms, and perceived behavioral control. *Attitudes* represent students' affect toward (i.e., value and emotion) and evaluation of (i.e., behavioral consequences) a behavior. *Subjective norms* consider students' interpretation of the behavioral norms significant others (i.e., teachers, counselors, parents, and close friends) communicate. Behavioral engagement is influenced by whether they comply with those behavioral norms, and this depends on the degree to which they value the opinions of significant others. *Perceived behavioral control* (PBC) considers students' perceptions of whether they are capable of and have control over engaging in a behavior. In total, it is assumed that students who hold favorable attitudes, are motivated to comply with the normative beliefs of significant others, and believe they are capable and have control over engaging in college preparation behaviors are more likely to form intentions to and actually engage in those behaviors.

A central tenet of the theory of planned behavior is that behavioral engagement is influenced by factors outside an individual's control, otherwise known as actual control (Ajzen, 1991; Fishbein & Ajzen, 2010). Perceived behavioral control is often used as a proxy for the relationship between behavioral engagement and an individual's perception that performing the behavior in question is not completely under their control (Terry & O'Leary, 1995). This study sought to extend the theory of planned behavior by using indicators of actual control that reflect

the resources and opportunities that may impede or enhance student ability to perform behaviors that enhance their college enrollment opportunities.

Although acknowledged in the TPB, factors that are beyond student behavioral control are often not included in studies that use this framework. Thus in this study, parent education background, college aspirations, and college expectations are considered factors that affect students' behavioral beliefs and motivation to engage in behaviors that support their readiness for college. Including these indicators of actual control extends TPB because they represent factors that are outside student behavioral control and can affect their beliefs and plans to participate in an intervention that promotes preparation for college. Moreover, these factors represent opportunity gaps that influence student beliefs about whether engaging in behavioral strategies produce favorable educational outcomes, and whether students believe they can approach a significant other that can meet their academic and college preparation needs.

Methodology

A non-experimental panel survey study (Babbie, 1990, 2010) was used to explore the relationships between college preparation behavioral beliefs (e.g., attitudes, subjective norms, and perceived behavioral control), college preparation behavioral plans (e.g., intention), and student participation in GEAR UP activities at two time points over the course of an academic semester. The college preparation behaviors were (1) discussing schoolwork with significant others and (2) self-regulated learning. A sample of eighth and ninth grade student participants completed a baseline survey (n=118) and a follow-up survey (n=96). Chapter 3 describes this study's sample characteristics and data collection procedures. The following sections briefly describe provide a narrative of the measurement and analysis techniques used to answer this

study's research questions, and items measuring college preparation behaviors at time 1 and time 2.

Measurement

Self-regulated learning (SRL). Assessed at the start and end of an academic semester (time 1 & time 2), items that measured self-regulated learning behavior within the TPB framework were adapted from the *Academic Self-efficacy for Self-Regulated Learning Scale* (ASE-Learning Scale) (Zimmerman, 2000; Zimmerman, Bandura, & Martinez-Pons, 1992). This 11-item scale originally measured 9th & 10th grade student's perceived capability to use strategies that promoted self-regulated learning. This scale yielded high internal consistency ($\alpha = .87$). Tables 3.2 and 4.1 (in previous chapters) display items that reflected self-regulated learning behavioral beliefs (e.g., attitudes, subjective norms, perceived behavior control) and behavior plans (i.e., intention) within the TPB framework at time 1 and time 2. In this study, items that represented self-regulated learning beliefs and behaviors at time 1 and time 2 were not considered as latent constructs due to small sample size and the number of parameters in the analytical model. Mean composite scores were computed for each TPB construct and were based on measurement analysis conducted in study 1 and study 2. Reliability analysis for mean composite scores was also performed.

SRL attitudes. As in the first two studies, SRL attitudes assessed students' evaluation of and emotion toward self-regulated learning. Each item was rated on a 7-point semantic differential scale with five bi-polar adjective pairings (good-bad; useful-useless; important-not important; stressful-stress free; exciting-boring). Cronbach alpha estimates at time 1 ($\alpha = .91$) and time 2 ($\alpha = .89$) indicated that SRL attitudes yielded high internal consistency.

SRL subjective norms. Items that served as two dimensions of subjective norms - motivation to comply and normative beliefs - were measured on a 5-point summated Likert scale (1=strongly disagree, 5=strongly agree). Both dimensions were combined and averaged for each significant other referent (e.g., teacher/counselor, parent/guardian) to reflect self-regulated learning subjective norms at time 1 and time 2. To maximize internal consistency, dimensions of self-regulated learning subjective norms of close friends were not combined and averaged at time 1, but were averaged at time 2. Cronbach alpha estimates at time 1 ($\alpha=.91$) and time 2 ($\alpha=.94$) indicated that SRL subjective norms of a teacher/counselor yielded high internal consistency. Likewise, SRL subjective norms of a parent/guardian also yielded high internal consistency at time 1 ($\alpha=.97$) and time 2 ($\alpha=.93$). Finally, dimensions of student subjective norms of close friends at time 1, normative beliefs ($\alpha=.96$) and motivation to comply ($\alpha=.97$), produced high internal consistency. Finally, high internal consistency was observed for student subjective norms of close friends at time 2 ($\alpha=.96$).

SRL Perceived Behavioral Control (PBC). SRL PBC assessed student *self-efficacy* and *control* over engaging in self-regulated learning behaviors at time 1 and time 2. Both of these dimensions were measured on 5-point summative Likert scales (1=no control, 5=full control; 1= extremely unlikely, 5=extremely likely). Cronbach alpha estimates at time 1 ($\alpha=.97$) and time 2 ($\alpha=.87$) indicated that SRL PBC yielded high internal consistency

SRL Intention. SRL intention measured whether students planned to engage in self-regulated learning behavior over the course of an academic semester, and was measured on a 5-point summative Likert Scale (1=definitely not, 5=definitely). SRL intentions at time 1 ($\alpha=.93$) and time 2 ($\alpha=.90$) produced high internal consistency.

Discussing schoolwork with significant others (SWSO). Items assessing *discussing of schoolwork with significant others* did not come from a prior scale. This scale was constructed using measurement conventions from the TPB framework and was informed by prior research, which has consistently found that support from significant others effected student college aspirations, college preparation, and college enrollment. Analysis was conducted to test the reliability of these items.

SWSO Attitudes. Items representing SWSO attitudes (i.e., teacher/counselor, parent/guardian, close friend) were anchored by five adjective pairs (good-bad; useful-useless; important-not important; stressful-stress free; exciting-boring). A mean score was computed across significant other referents. A higher score indicated a student favorable attitude about speaking with significant others about their schoolwork. SWSO attitudes at time 1 ($\alpha=.86$) and time 2 ($\alpha=.90$) yielded high internal consistency.

SWSO Subjective Norms. SWSO subjective norms reflected students' perceived *normative beliefs* of and *motivation to comply* with the norms significant others held about discussing schoolwork. Each dimension and corresponding observed items were measured on a 5-point summative Likert scale (1=strongly disagree, 5=strongly agree). Both sets of items were combined across all referents, and a mean score was computed to represent student subjective norms about talking to significant others about schoolwork. Internal consistency (α) of items reflecting subjective norms of discussing schoolwork with significant others at time 1 and time 2 were .72 and .82 respectively.

SWSO Perceived Behavior Control (PBC). SWSO PBC was measured by dimensions of *control and self-efficacy*. For each significant other referent, control was measured by a 7-point semantic differential scale with a single bi-polar adjective pairing (up to me - not up to

me). Self-efficacy was measured for each referent on a 5-point summative Likert scale (extremely likely - extremely unlikely). Both sets of items were combined across all referents and a mean score was computed to represent PBC of discussing schoolwork. SWSO PBC at time 1 ($\alpha=.66$) and at time 2 ($\alpha=.69$) yielded moderate internal consistency.

SWSO Intentions. SWSO intentions at time 1 and time 2 were rated on the same 5-point summated Likert scale as SRL intentions. A combined mean score across all referents was computed to represent intention to discuss schoolwork with significant others at time 1 ($\alpha=.60$) and time 2 ($\alpha=.77$).

Moderator Variables. Moderators in this study were mother education background, student college aspirations, and student college expectations. Given that the study sample was predominately African American, mother's educational background was chosen as the primary indicator of socioeconomic status (SES), because of its demonstrated validity in explaining academic achievement (Duncan, Brooks-Gunn, & Klebanov, 1994; Slaughter & Epps, 1987) and educational attainment (Coleman, 1968; Epps, 1995) among Black adolescents. Study participants rated mother's education background on a six point ordinal scale (1=did not finish high school thru 6=doctoral degree) in response to the following item: "How far did each family member go in school?" For this study, students who reported that their mothers' received a college degree make up the reference group in the analysis (i.e., moderate educational attainment). Student educational aspirations were rated on a six point ordinal scale (1=graduate from high school thru 6=JD, PhD, or MD) with the following item: "As things stand now, how far do you hope to go in school?" Student educational expectations were rated on the same six point ordinal scale by the following item: "As things stand now, how far do you think you will actually go in school?"

GEAR UP Participation. Eighth and ninth grade GEAR UP participation was measured by using participation information collected by a GEAR UP program. Data were collected from sign-in sheets that the program used to track student participation. The amount of time students participated in a GEAR-UP activity was the metric used to measure participation as a continuous variable. For each student, time in an activity was measured by a decimal fraction. The total number hours of participation in GEAR UP activities was computed for each student during their time in the study (e.g., 8th, and 9th grade). Chapter 3 provides a description of the GEAR UP activities students participated in during the study.

Control Variables. The following demographic background information, collected from students, was controlled for in this study: gender, race, ethnicity, father's education, school lunch participation, grade point average, and the school they attended during the study. To control for intervention selection bias, student involvement in school based and community based activities at baseline was also included in the analysis.

Data Analysis

Path analysis was the main analysis technique used to examine effects between student attitudes, subjective norms, perceived behavioral control, and intentions at time 1 and time 2. Path analysis is the appropriate technique to use when there is a hypothesized structural model between observed variables (Kline, 2011) as it allows for simultaneous testing of relationships between observed variables. As previously mentioned, TPB variables were not conceptualized as latent variables due to sample constraints and model complexity. First stage moderated path analysis was performed to test the direct effects between intention and its antecedents (attitudes [ATT], subjective norms [SN], and perceived behavioral control [PBC]) at time 1 and time 2. Second stage moderated path analysis was conducted to test the direct effect between time 1

intention and student participation in GEAR UP. Maximum likelihood parameter estimation was used to analyze study data using the AMOS statistical package. Unstandardized direct effect estimates for path models tested in this analysis can be found in Appendices P through R.

Fit statistics and direct effects were estimated for path models examining self-regulated learning. Separate path models were conducted for each type of subjective norm referent (teacher/counselor, parent/guardian, and close friend). Moderating effects of SES, college aspiration, and college expectation were tested on each path between intention and its antecedents (ATT, SN, and PBC), and the direct paths between antecedents of intentions and GEAR UP participation. At time 2, moderating effects for each path between intention and its antecedents were tested; here again, separate models for each subjective norm referent were used.

Direct effects and fit statistics were also tested for path models assessing student intentions to have discussions with significant others about schoolwork. For this behavior, separate path models *were not tested* for each significant other referent. Instead, attitudes, subjective norms, perceived behavioral control, and intention were each examined with mean scores representing all significant other referents (teacher/counselor; parent/guardian; close friend), because the data suggested that separate analysis with observed TPB items would be unreliable.

At time 1, moderating effects for each path between intention and its antecedents (ATT, SN, and PBC) were tested. Time 2 included moderating effects for each path between intention and its antecedents. Only path models that produced significant results are reported. Finally, as in the first two studies, the expectation maximization (EM) algorithm was used as a model-based

imputation method for replacing missing data by imputing a value that is greater than or equal to one (Moon, 1996; Roth, 1994).

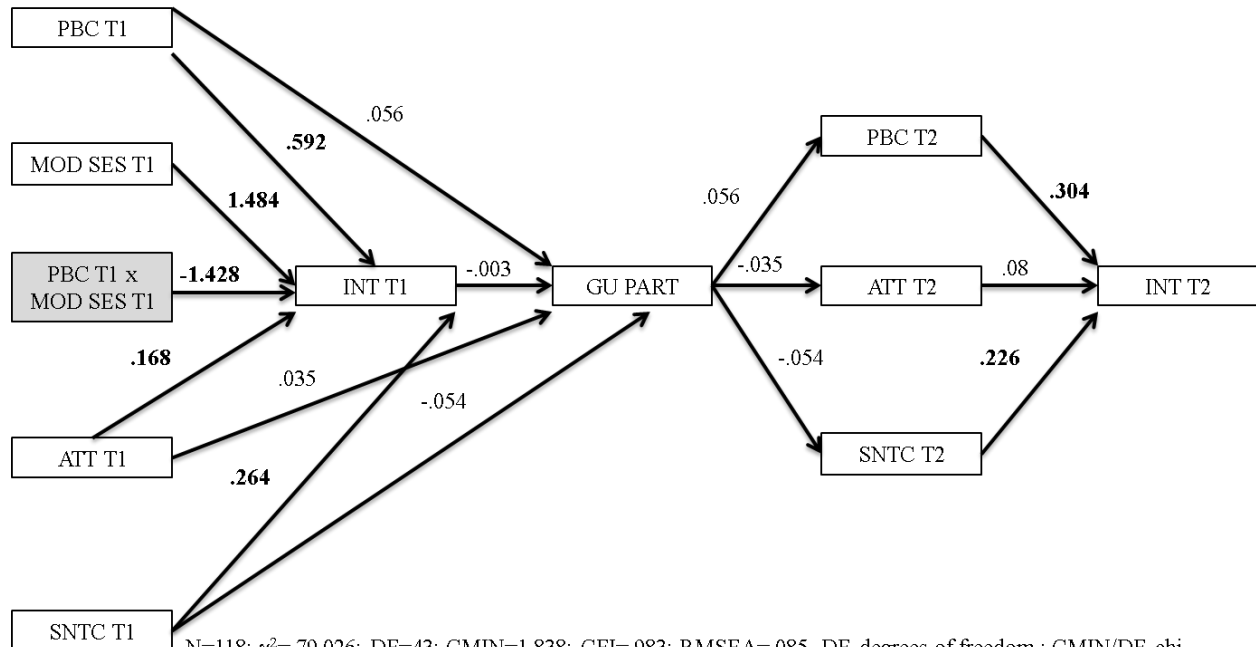
Results

Research Question 1

The path analysis results presented below address this study's first research question: Does student socioeconomic status (SES) moderate relationships between student college preparation behavioral beliefs (i.e., attitudes, subjective norms, and perceived behavioral control) and college preparation behavior plans (i.e., intention) at the beginning of an academic term (time 1)?

Self-regulated learning (SRL). Figures 5.2 - 5.4 display standardized main effects and interaction effects of TPB constructs on self-regulated learning intentions at time 1 (1st stage moderation). As shown in Figure 5.2, the direct effects of student attitudes ($\beta=.17, p=.02$), subjective norms of a teacher/counselor ($\beta=.26, p<.001$), and perceived behavioral control ($\beta=.59, p<.001$) on intention were positive and statistically significant. These findings suggest that favorable SRL attitudes positively affected student intentions to engage in SRL behaviors. Likewise, the more students initially believed that a teacher/counselor thought they should engage in SRL, the stronger their intention to engage in that behavior. Finally, this model indicated that strong student beliefs that they could perform SRL at the start of an academic semester positively affected their intention to perform SRL behavior. The interaction effect suggests that this relationship depended on mother's education background ($\beta= -1.428; p=.003$).

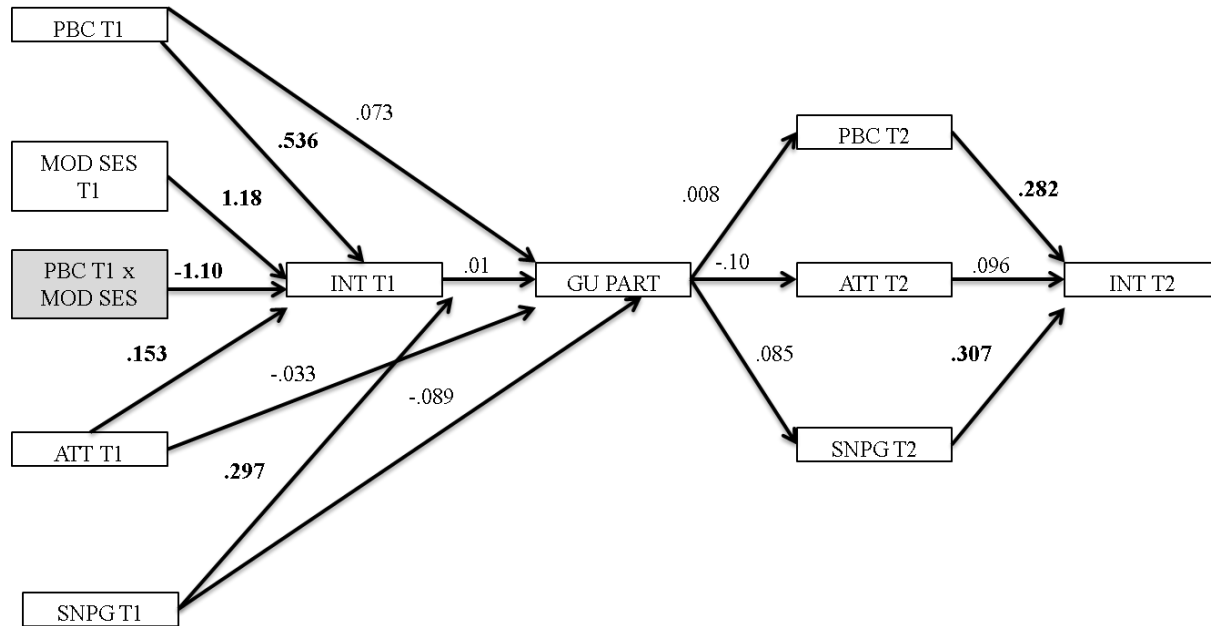
Figure 5.2: Self-Regulated learning path model examining main and interaction effects of attitudes, subjective norms of a teacher/counselor, and perceived behavioral control on intention at time 1.



N=118; $\chi^2= 79.026$; DF=43; CMIN=1.838; CFI=.983; RMSEA=.085. DF, degrees of freedom; χ^2 , chi-square to degrees of freedom ratio; CFI, comparative fit index; RMSEA, root mean squared error of approximation. ATT=Attitude; SNTC=Subjective Norm of a Teacher/Counselor; PBC=Perceived Behavioral Control; MOD SES=Moderate Socioeconomic Status; INT= Intention; T1=Time 1; T2=Time 2
 Note: Parameter estimates are standardized. Statistically significant paths with a $p < .05$. are bolded. This path model controls for the relationship between the same theory of planned behavior variable at T1 & T2. All paths were significant.

Findings in Figure 5.3 indicated that attitudes ($\beta=.15, p=.03$), subjective norms of a parent/guardian ($\beta=.30, p<.001$), and perceived behavioral control ($\beta=.54, p<.001$) positively affected student intention at time 1. Similar to the previous path model, GEAR UP students’ favorable emotions and evaluations (i.e., attitudes) toward SRL, beliefs that a parent or guardian thought they should engage in SRL, and beliefs that they were capable of regulating their own learning, positively affected their intentions to engage in SRL behavior. The interaction effect indicates that the PBC-intention relationship depended on mother’s education background ($\beta= -1.10; p=.027$).

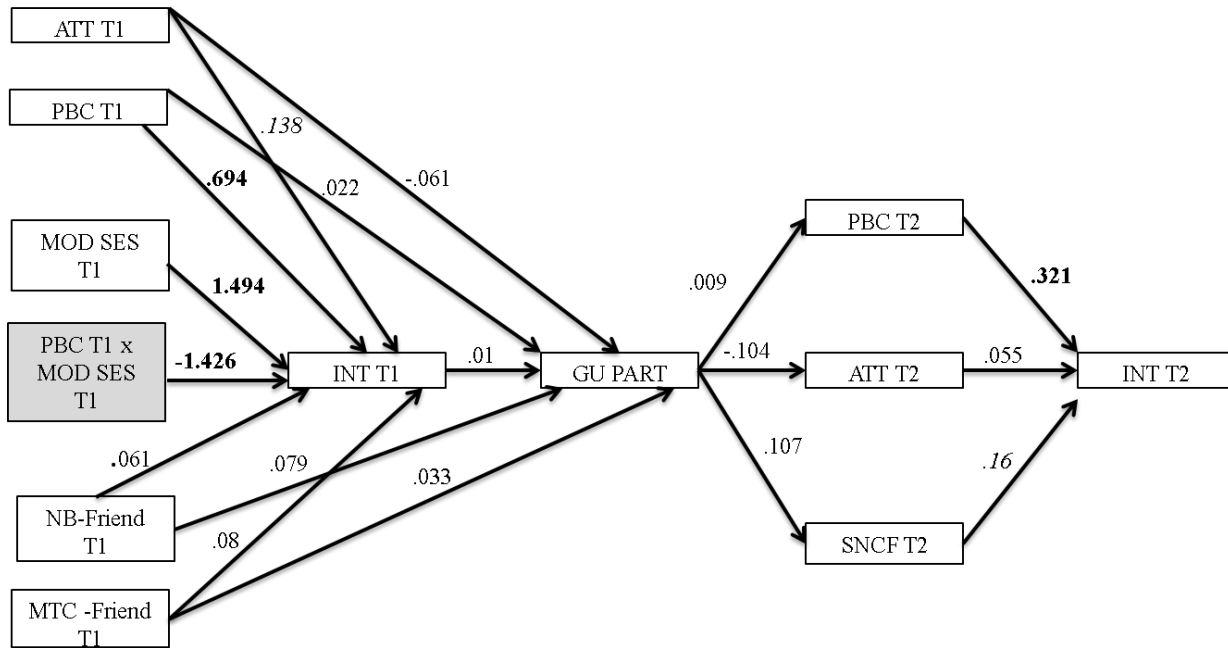
Figure 5.3: Self-Regulated learning path model examining main and interaction effects of attitudes, subjective norms of a parent/guardian, and perceived behavioral control on intention at time 1.



N=118; $\chi^2=79.616$; DF=43; CMIN=1.852; CFI=.983; RMSEA=.085. DF, degrees of freedom; CMIN/DF, chi-square to degrees of freedom ratio; CFI, comparative fit index; RMSEA, root mean squared error of approximation. ATT=Attitude; SNPG=Subjective Norm of a Parent/Guardian; PBC=Perceived Behavioral Control; MOD SES= Moderate Socioeconomic Status; INT= Intention; T1=Time 1; T2=Time 2
 Note: Parameter estimates are standardized. Statistically significant paths with a $p<.05$. are bolded. This path model controls for the relationship between the same theory of planned behavior variable at T1 & T2. All paths were significant.

Results in the path model illustrated in Figure 5.4 indicated GEAR UP students SRL attitudes and SRL subjective norms of a close friend at time 1 did not influence their behavioral intentions. However, SRL PBC ($\beta=.69, p<.001$) was the only construct to have a significant and positive effect on intention at time 1. This suggests that the PBC-intention relationship at time 1 was consistently strong and positive regardless of student perceptions of the norms significant others held about SRL behaviors. Finally, the interaction effect suggested that the PBC-intention relationship in this path model also depended on mother’s education background ($\beta= -1.43; p=.005$).

Figure 5.4: Self-Regulated learning path model examining main and interaction effects of attitudes, subjective norms of a close friend, and perceived behavioral control on intention at time 1.

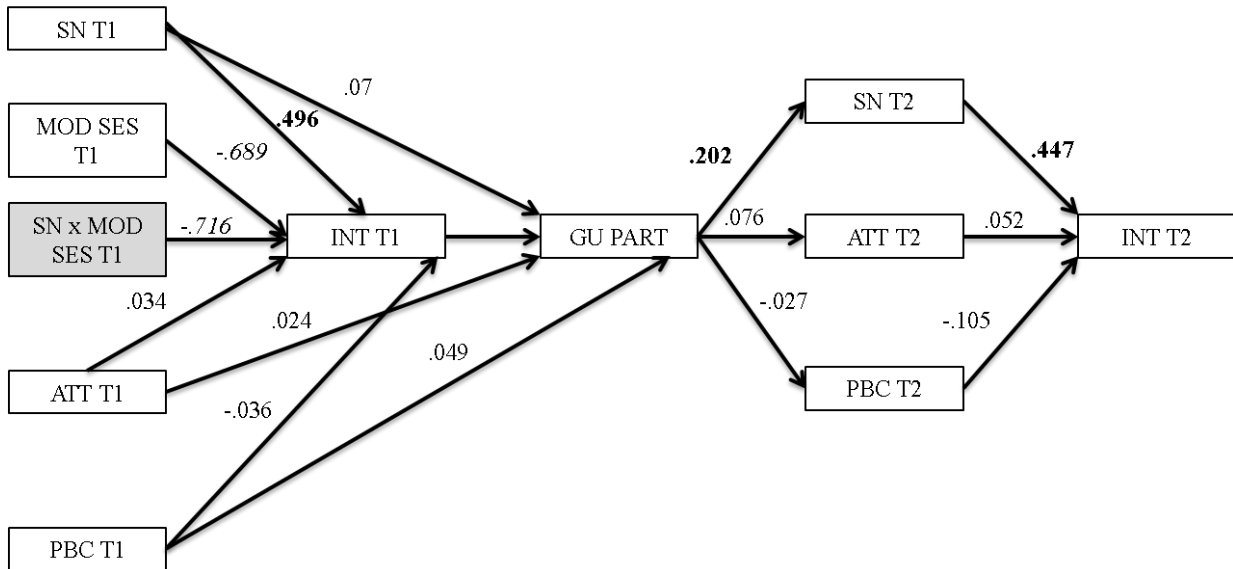


N=118; $\chi^2=77.433$; DF=43; CMIN=1.648; CFI=.987; RMSEA=.074. DF, degrees of freedom; CMIN/DF, chi-square to degrees of freedom ratio; CFI, comparative fit index; RMSEA, root mean squared error of approximation. ATT=Attitude; NB= Normative Belief; MTC=Motivation to Comply PBC=Perceived Behavioral Control; MOD SES=Moderate Socioeconomic Status; INT= Intention; T1=Time 1; T2=Time 2
 Note: Parameter estimates are standardized. Statistically significant estimates with a $p<.05$. are bolded and estimates with a p -value between .06-.10 are italicized. This path model controls for the relationship between the same theory of planned behavior variable at T1 & T2. All paths were significant.

Discussing Schoolwork with Significant Others. Findings shown in Figure 5.5

indicated that subjective norms was the only behavioral belief that positively affected GEAR UP student intention to discuss their grades, homework, or classes at the beginning of an academic term ($\beta=.50$; $p<.001$). This evidence indicates GEAR UP students believed that significant others wanted to talk to them about schoolwork and positively affected their plans to do so. The interaction effect suggests that this relationship depended, marginally, on the mother's education background ($\beta= -.72$; $p=.06$).

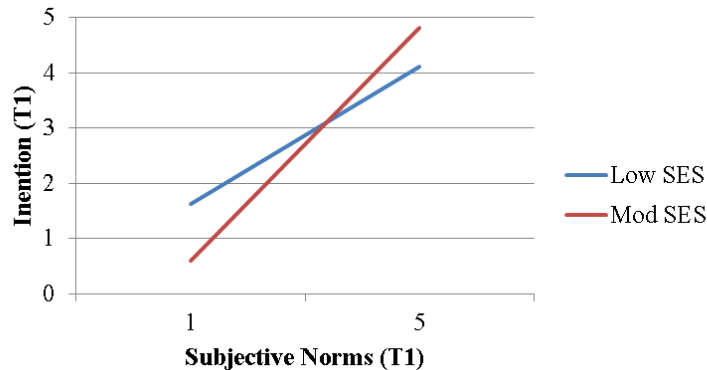
Figure 5.5: Discussing schoolwork with significant others path model examining main and interaction effects of attitudes, subjective norms, and perceived behavioral control on intention at time 1.



N=118; $\chi^2=111.642$; DF=59; CMIN=1.892; CFI=.974; RMSEA=.087. DF, degrees of freedom; CMIN/DF, chi-square to degrees of freedom ratio; CFI, comparative fit index; RMSEA, root mean squared error of approximation. ATT=Attitude; SN=Subjective Norm; PBC=Perceived Behavioral Control; MOD SES=Moderate Socioeconomic Status; INT= Intention; T1=Time 1; T2=Time 2
 Note: Parameter estimates are standardized. Statistically significant paths with a $p<.05$. are bolded. This path model controls for the relationship between the same theory of planned behavior variable at T1 & T2. All paths were significant.

The interaction plot in Figure 5.6 indicates that for both low and moderate SES students, those with stronger subjective norms were more likely to express intentions to talk with significant others about schoolwork.

Figure 5.6: Moderating effect of SES on the relationship between subjective norms and intention to discuss schoolwork with significant others at time 1 (n=118)

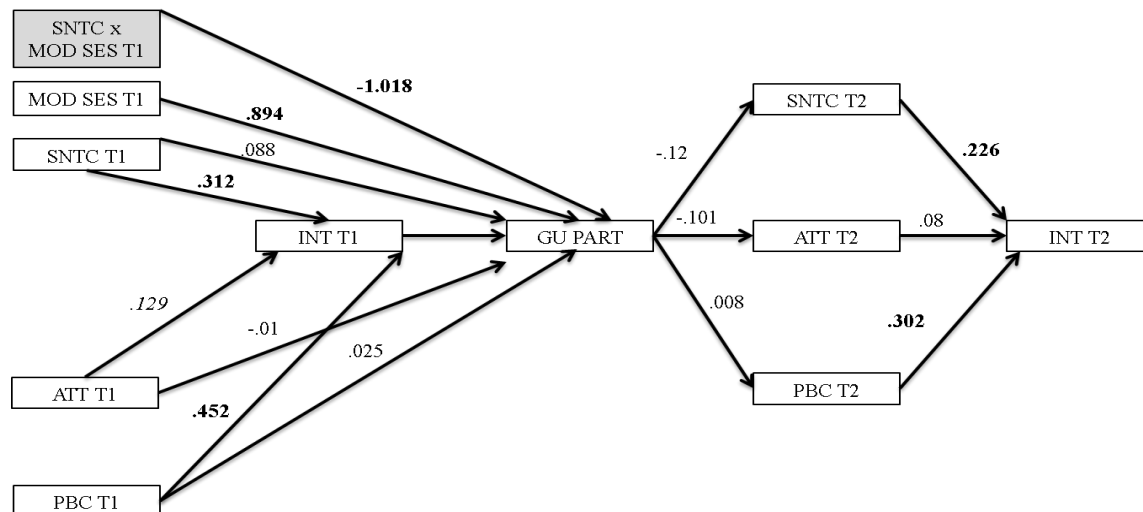


Research Question 2

The path analysis results below address this study's second research question: does student SES moderate relationships between student college preparation behavioral beliefs and plans, and level of participation in GEAR UP activities at time 1?

Self-regulated learning (SRL). Results shown in Figure 5.7 indicate that student SRL attitudes, subjective norms of a teacher/counselor, and perceived behavior control at time 1 did not significantly affect student level of participation in GEAR UP activities. Results did indicate that the effect of SRL subjective norms of a teacher/counselor depended on mother's education background. This is evident by the negative moderating effect of SES on the relationship between SRL subjective norms of a teacher or counselor and level of participation in GEAR UP activities ($\beta = -1.02$; $p = .01$). A simple effect of subjective norms of a teacher or counselor on GEAR UP participation was observed for moderate SES students ($\beta = -.71$; $p < .001$).

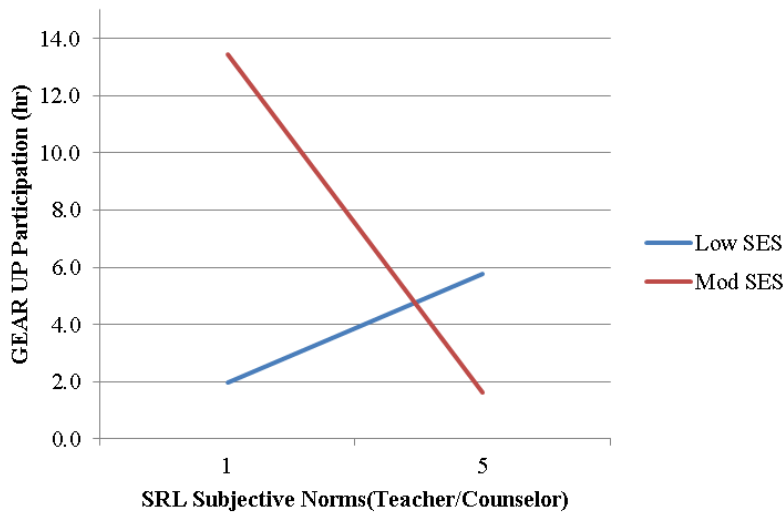
Figure 5.7: Self-Regulated learning path model examining main and interaction effects of attitudes, subjective norms of a teacher/counselor, and perceived behavioral control on GEAR UP participation at time 1.



N=118; $\chi^2 = 72.796$; DF=43; CMIN=1.693; CFI=.986; RMSEA=.077. DF, degrees of freedom; CMIN/DF, chi-square to degrees of freedom ratio; CFI, comparative fit index; RMSEA, root mean squared error of approximation. ATT=Attitude; SNTC=Subjective Norm of a Teacher/Counselor; PBC=Perceived Behavioral Control; MOD SES=Moderate Socioeconomic Status; INT= Intention; T1=Time 1; T2=Time 2
 Note: Parameter estimates are standardized. Statistically significant paths with a $p < .05$, are bolded. This path model controls for the relationship between the same theory of planned behavior variable at T1 & T2. All paths were significant.

When examining this interaction effect further in Figure 5.8, evidence suggests that the relationship between SRL subjective norms of a teacher or counselor and the level of participation in GEAR UP activities was stronger for students who reported that their mother attained at least a four-year college degree (moderate SES). Thus, for moderate SES GEAR UP students, as SRL subjective norms increased, their participation in GEAR UP activities declined; however, for low SES students, as SRL subjective norms increased so did their participation in GEAR UP activities. Therefore, the extent to which GEAR UP students believed that a teacher or counselor wanted them to engage in self-regulated learning affected their level of participation in GEAR UP activities most for those whose mother had a college degree.

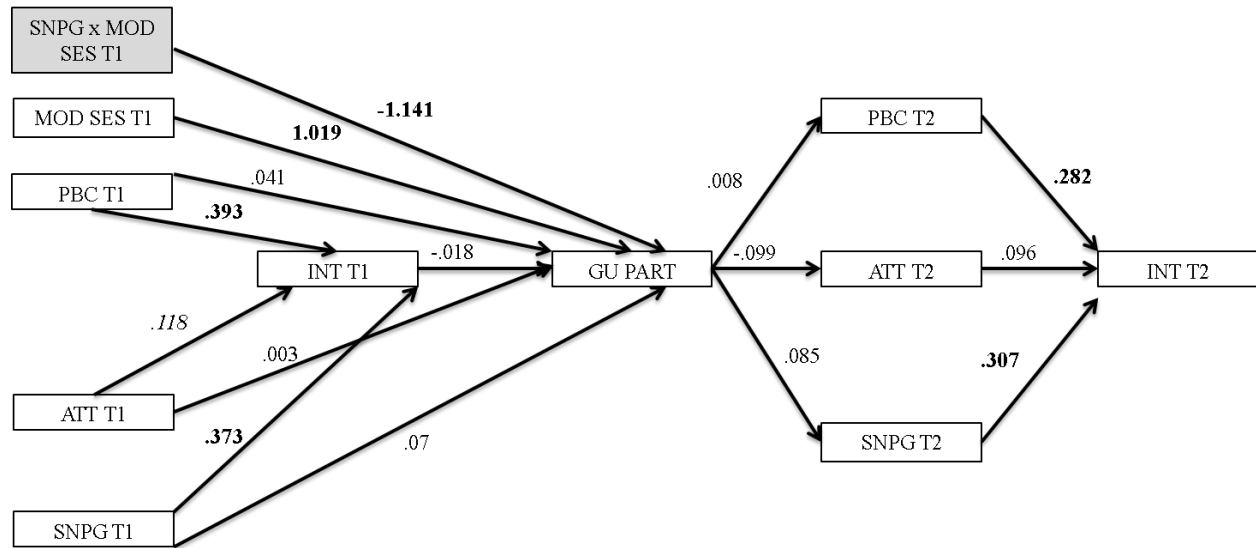
Figure 5.8: SES moderation on the relationship between self-regulated learning subjective norms of a teacher or counselor and level of participation in GEAR UP activities at time 1 (n=118).



Results shown in Figure 5.9 indicate that student SRL attitudes, subjective norms of a parent or guardian, and perceived behavior control at time 1 did not significantly affect student level of participation in GEAR UP activities. Results did indicate that the effect of SRL subjective norms of a parent or guardian depended on mother’s education background. This is evident by the negative moderating effect of SES on the relationship between SRL subjective

norms of a parent or guardian and level of participation in GEAR UP activities at time 1 ($\beta = -1.14$; $p = .01$). A simple effect of subjective norms of a parent/guardian on GEAR UP participation was also observed for moderate SES students ($\beta = -.77$; $p < .001$).

Figure 5.9: Self-Regulated learning path model examining main and interaction effects of attitudes, subjective norms of a parent/guardian, and perceived behavioral control on GEAR UP participation at time 1.



N=118; $\chi^2 = 76.026$; DF=43; CMIN=1.768; CFI=.985; RMSEA=.081. DF, degrees of freedom; CMIN/DF, chi-square to degrees of freedom ratio; CFI, comparative fit index; RMSEA, root mean squared error of approximation. ATT=Attitude; SNPG=Subjective Norm of a Parent/Guardian; PBC=Perceived Behavioral Control; MOD SES=Moderate Socioeconomic Status; INT= Intention; T1=Time 1; T2=Time 2
 Note: Parameter estimates are standardized. Statistically significant paths with a $p < .05$. are bolded. This path model controls for the relationship between the same theory of planned behavior variable at T1 & T2. All paths were significant.

Identical to the moderation effects found in Figure 5.8, data illustrated in Figure 5.10 indicate that the relationship between SRL subjective norms of a parent or guardian and the level of participation in GEAR UP activities was stronger for students who reported that their mother attained a four-year college degree or higher (moderate SES). Overall, the degree to which GEAR UP students believed that a parent or guardian wanted them to engage in self-regulated learning affected student level of participation in GEAR UP activities most for those whose mother had a college degree.

Figure 5.10: Moderating influence of SES on the effect between GEAR UP participation and student subjective norms about engaging in self-regulated learning behaviors at time 1 (n=118).



Discussing schoolwork with significant others. Moderating effects were not found in path models that examined the relationship between student beliefs and intention to discuss their schoolwork with significant others at the beginning of an academic term.

Research Question 3

This study sought to answer the following research question: do college aspirations or college expectations moderate relationships between student college preparation behavioral beliefs, and college preparation behavioral plans at time 1? Evidence indicated that neither student college aspirations nor education expectations moderated relationships between GEAR UP student behavioral beliefs (e.g., attitudes, subjective norms, perceived behavioral control) and behavioral intention at time 1.

Research Question 4

This study also sought the answer the following research question: do college aspirations or college expectations moderate relationships between student college preparation behavioral beliefs, college preparation behavioral plans, and level of participation in GEAR UP time 1? No significant moderation effects of college aspirations or college expectations on the relationship between GEAR UP student behavioral beliefs (e.g., attitudes, subjective norms, perceived behavioral control), behavioral intention, and GEAR UP participation at time 1 were found.

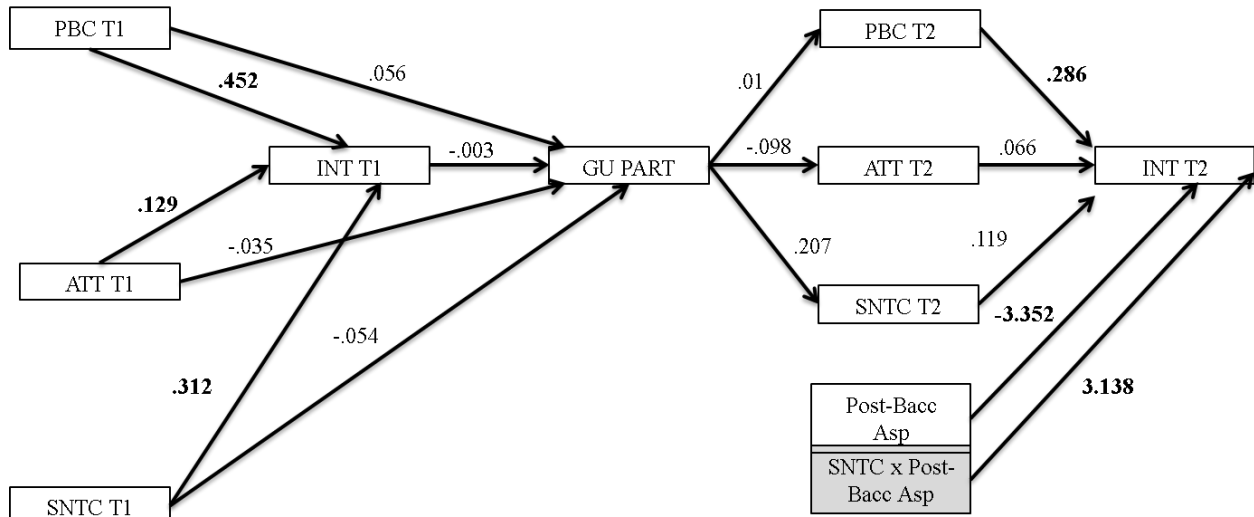
Research Question 5

The final research question examined in this study was - to what extent does SES, college aspirations, or college expectations moderate relationships between student level of participation in GEAR UP activities, college preparation behavioral beliefs and college-going behavior plans at the end of an academic semester (time 2)?

Self-regulated learning (SRL). Results from the path model illustrated in Figure 5.11 indicate that perceived behavioral control positively affected GEAR UP student SRL intention at time 2 ($\beta=.29$; $p<.001$). The relationship between student SRL subjective norms of a teacher or counselor and intentions to engage in SRL behavior depended on GEAR UP student college aspirations at time 2. This was evident by the positive moderating effect of college aspirations on this relationship ($\beta= 3.14$; $p=.045$).

When examining this interaction effect further in Figure 5.12, evidence indicated college aspirations were a key moderator on the relationship between SRL subjective norms of a teacher or counselor and SRL behavioral intention at time 2. Among students with post-baccalaureate

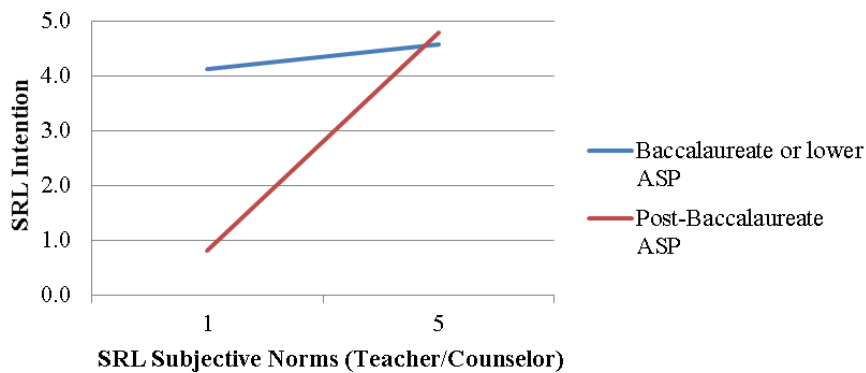
Figure 5.11: Self-Regulated learning path model examining main and interaction effects of attitudes, subjective norms of a teacher/counselor, and perceived behavioral control on intention at time 2.



N=96; $\chi^2=78.226$; DF=40; CMIN=1.956; CFI=.982; RMSEA=.09. DF, degrees of freedom; CMIN/DF, chi-square to degrees of freedom ratio; CFI, comparative fit index; RMSEA, root mean squared error of approximation. ATT=Attitude; SNTC=Subjective Norm of a Teacher/Counselor; PBC=Perceived Behavioral Control; Post Bacc=Post-Baccalaureate Aspiration; INT= Intention; T1=Time 1; T2=Time 2
 Note: Parameter estimates are standardized. Statistically significant paths with a $p<.05$. are bolded. This path model controls for the relationship between the same theory of planned behavior variable at T1 & T2. All paths were significant.

degree aspirations, as subjective norms increased, so did their intentions to engage in self-regulated learning behavior at time 2; however, this was not observed for students with baccalaureate college aspirations. Moreover, students with low SRL subjective norms and baccalaureate degree aspirations had higher SRL behavior intention at time 2 than students with post-baccalaureate degree aspirations. Finally, among students with high SRL subjective norms, minimal differences in SRL intentions were observed between students with baccalaureate and post-baccalaureate degree aspirations. Therefore, the extent to which GEAR UP students believed, at the end of an academic term, that a teacher or counselor wanted them to engage in SRL, affected student plans to engage in SRL behaviors primarily for those students who had post-baccalaureate degree aspirations.

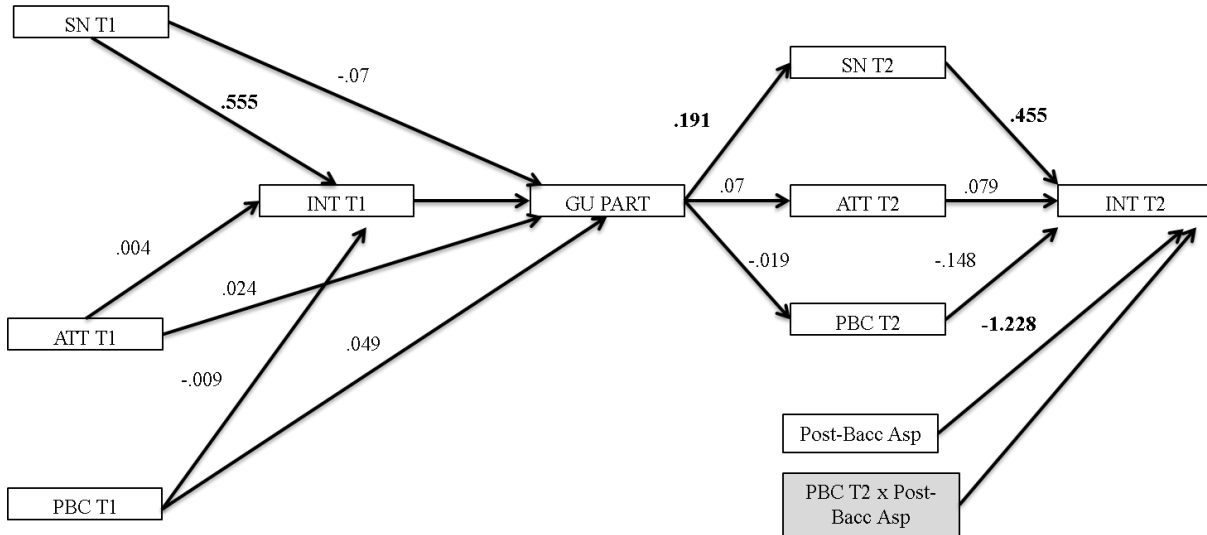
Figure 5.12: Moderating effect college degree aspirations on the relationship between self-regulated learning subjective norms and intention at time 2 (n=96)



Discussing schoolwork with significant others. Figure 5.13 illustrates that the relationship between GEAR UP student subjective norms and intentions to discuss schoolwork with significant others at time 2 was positive and statistically significant ($\beta = .46$; $p < .001$). The relationship between perceived behavioral control and intention depended on GEAR UP student college aspirations at time 2. This was evident by the positive moderating effect of college aspirations on this relationship ($\beta = 1.39$; $p = .02$).

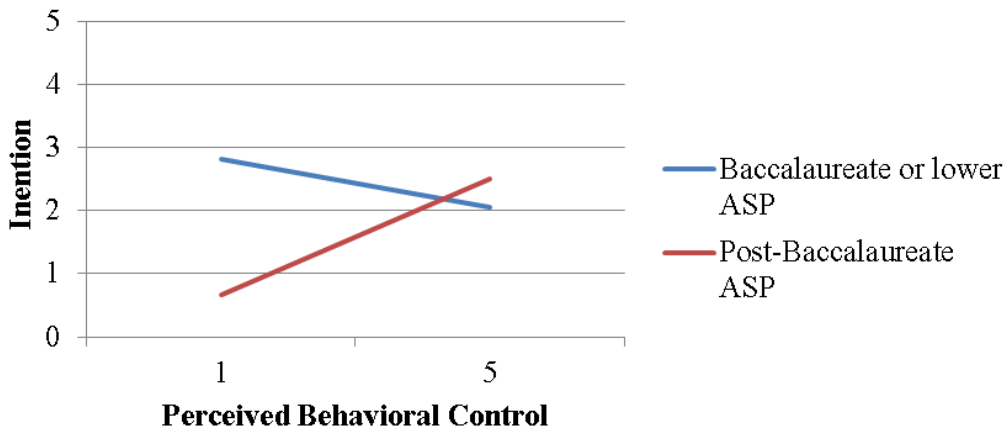
Moderating effects illustrated in Figure 5.14 suggest that the relationship between perceived behavioral control and intention was stronger for GEAR UP students who aspired to attain a post-baccalaureate degree than GEAR UP students who aspired to attain less than a post-baccalaureate degree. Among GEAR UP students with post-baccalaureate degree aspirations, as perceived behavioral control increased, so did their intentions to discuss their grades, homework, or classes with significant others at the end of an academic term. Moreover, students with low perceived behavioral control and baccalaureate degree aspirations had higher intentions to discuss schoolwork with significant others than students with post-baccalaureate degree aspirations. Furthermore, intention declined as perceived behavioral control increased among

Figure 5.13: Discussing schoolwork with significant others path model examining main and interaction effects of attitudes, subjective norms, and perceived behavioral control on intention at time 2.



N=96; $\chi^2=100.760$; DF=58; CMIN=1.757; CFI=.976; RMSEA=.079. DF, degrees of freedom; CMIN/DF, chi-square to degrees of freedom ratio; CFI, comparative fit index; RMSEA, root mean squared error of approximation. ATT=Attitude; SN=Subjective Norm; PBC=Perceived Behavioral Control; Post Bacc Asp=Post-Baccalaureate Aspirations; INT= Intention; T1=Time 1; T2=Time 2
 Note: Parameter estimates are standardized. Statistically significant paths with a $p < .05$. are bolded. This path model controls for the relationship between the same theory of planned behavior variable at T1 & T2. All paths were significant.

Figure 5.14: Moderating effect on the relationship between college degree aspirations and intention to discuss schoolwork with significant others at time 2 (n=96)



students with post-baccalaureate degree aspirations; yet, for students with post-baccalaureate degree aspirations, as perceived behavioral control increased so did their intention to have discussions with significant others about their schoolwork. Therefore, when examining the extent to which GEAR UP students believed that they could discuss their schoolwork with significant others, their intentions to have such discussions differed for those students who had post-baccalaureate degree aspirations vs. baccalaureate degree aspirations.

Discussion

This chapter began with reference to opportunity gaps experienced by students and the ways in which schools, families, and communities contribute to barriers that impede student chances for secondary and postsecondary success. Moreover, this chapter referenced whether student involvement in pre-college access programs reduced opportunity gaps by influencing eighth and ninth grade student behavioral beliefs and behavioral motivation about engaging in strategies (self-regulated learning and discussing schoolwork with significant others) that supported their readiness to thrive in secondary and postsecondary educational settings.

The theory of planned behavior (TPB) was used to explain these relationships; however, to extend the TPB, I investigated the extent to which opportunity structures (e.g., mother's education background) moderated relationships between student behavioral beliefs and behavioral motivation. Additionally, informed by prior research that examined the influence of minority student perceptions of their educational and career opportunities on their academic engagement and achievement (Mickelson, 1990; Ogbu, 2008), I investigated whether student college aspirations or college expectations moderated behavioral and motivational constructs reflected in the TPB. This approach allowed for the testing of direct indicators of actual control

with a predominately racial/ethnic minority adolescent sample participating in a pre-college intervention.

Three main conclusions emerged from study findings. First, student initial perceptions and adoption of self-regulated learning norms from school officials (i.e., teacher/counselor) and family members (i.e., parent/guardian) affected pre-college access program participation during an academic semester. Second, SES moderated the relationship between behavioral SRL intention (i.e., motivation) and its determinants (i.e., subjective norms and perceived behavioral control). Third, students' college aspirations moderated relationships between their college preparation behavioral and motivational beliefs at the end in an academic semester.

Self-regulated Learning Norms, Significant Others & GEAR UP Participation

Mothers' education affected the degree to which GEAR UP students believed and adopted behavioral norms (learning and discussing schoolwork) of significant others and the extent that they participated in GEAR UP activities. Past research suggests that the type of support students receive from significant others affects decisions related to searching for colleges to attend and the degree to which they take advantage of various opportunities in pre-college access programs (St. John, et al., 2011). This study further informs existing research by revealing that student participation in pre-college access programs affects whether significant others encourage and support engagement in self-regulated learning behaviors. The higher education background of a parent, and significant others' expectations for GEAR UP students to be self-regulated learners, were also influential. This result is also intriguing because prior research suggests that the trust students place in significant others to support their college preparation affects eventual college enrollment (St. John, et al., 2011; Stanton-Salazar, 1997). This study identifies that the adoption of significant other behavioral norms is a critical element of trust that

affects the extent students take advantage of formal support offered by pre-college access interventions early in the education pipeline. Therefore, strategies and action must take place among college access researchers and practitioners to find ways to incorporate school officials and parents into their college access practice in order to accurately identify the self-regulatory learning needs and beliefs of participants. These processes must be considered by all key stakeholders in order to increase educational opportunities for students from low and high socioeconomic backgrounds.

College Aspirations and College Preparation Behavioral Motivation

This study discovered that student college aspirations affected behavioral motivation (i.e., intention) by way of subjective norms and perceived behavioral control. This was evidenced by the stronger relationship between students' perceptions of SRL subjective norms of a teacher or counselor and intentions among GEAR UP students who aspired to attain a post-baccalaureate degree (vs. those with lower educational aspirations). Additionally, college aspirations also moderated the relationship between student perceived behavioral control and intention to engage in SRL behavior at the end of an academic term.

One explanation of these findings is that GEAR UP students are still at the stage of understanding for themselves what it means to successfully prepare for college. Consequently, they rely on the norms, information, and support from significant others in school settings or formal interventions. Thus, in this study, GEAR UP students with post-baccalaureate degree aspirations perceived self-regulated learning and discussing schoolwork with significant others as a normative behaviors. These normative perceptions are supported by prior studies which find that the nature of opportunities teachers and staff provide to students through instructional and interpersonal means, as perceived by adolescents, is associated with achievement, academic

competence, mental health, and value for academics (Roeser, Eccles, & Sameroff, 2000).

Therefore, this study confirms that the ways schools and interventions shape expectations for engaging in college preparation behaviors affects GEAR UP student intention to perform such behaviors, especially among students with aspirations of attaining a post-baccalaureate degree.

A final explanation of these findings is that GEAR UP students may differ in their motivation for learning. Research suggests student achievement motivation is guided by ideas of one's learning being driven by a fixed mindset or a growth mindset. Dweck (1986; 2006; 1988) finds in her research that students with fixed mindsets are driven to learn by their performance, and seek to gain favorable judgments of their competence as well as avoid negative judgments of their competence from significant others. On the other hand, students with a fixed mindset learns in order to increase their knowledge about a topic, and attributes failure to their effort rather than their competence. Thus, it is possible that GEAR UP students with post-baccalaureate aspirations have characteristics of fixed mindset learners, where their motivation to engage in self-regulated learning behavior is strongly influenced by perceived competency-based expectations of a teacher or counselor to engage in self-regulated learning. On the other hand, among GEAR UP student with baccalaureate degree aspirations or lower, their motivation to learn is not driven by the expectations of a teacher or counselor. Rather, this group of GEAR UP students is highly motivated to regulate their own learning, and this is possibly driven by their adoption of a mastery orientation toward learning and achievement. Further research is needed to explicate the meaning of these findings among participants in pre-college access intervention.

Opportunities, Barriers, and the Theory of Planned Behavior

Overall, these study findings run contrary to and extend the assumptions indicated in the TPB by conveying that the constrained and unconstrained educational opportunities students

experience, that are beyond individual behavioral control, affect relationships within the TPB. Moreover, this study's contribution is supported by blocked opportunity research, which has found that student educational attitudes are shaped by their own and the experiences of significant others in their family and community environment with regards to opportunities for social mobility, which in-turn effects students' academic engagement in school settings (Mickelson, 1990, 2008). Whether students hold abstract attitudes (e.g., education is a vehicle for social mobility for social groups), or concrete attitudes (e.g., realistic appraisals about social mobility within the opportunity structure for social groups based on current and historical experiences), dictates student engagement in school settings despite their educational values. Thus, this study initially reveals that a similar process may be occurring for GEAR UP students with baccalaureate and post baccalaureate degree aspirations, where their appraisals of their educational opportunities affects motivation to engage in self-regulated learning.

Limitations

There are study limitations to consider for future research. Examining moderating effects of TPB constructs in an academic semester only provides a brief snapshot into the experiences of GEAR UP students within their schools and families. Future research should conduct longitudinal studies to identify how the effects identified in this study are manifested and observed over time. Moreover, ethnographic qualitative studies are also necessary in future research to better capture how students perceive and adopt norms communicated by significant others about engaging in behaviors that promote their preparation for college. Another study limitation lies with how participation was measured. This study, and the studies presented in Chapters 3 and 4, conceptualized and measured student participation as the total amount of hours each student participated in GEAR UP activities during the study. This approach allowed me to

maximize participation variation to understand relationships between student college preparation behavioral beliefs, intention, and exposure (i.e., dosage) to pre-college intervention activities across two time points within an academic semester. However, future research should consider additional approaches to understand the effect of student participation in pre-college access programs by specific types of program activities. Finally, although the TPB theoretically emphasizes direct effects and indirect effects (i.e., mediation) among its constructs, this study could not make casual claims given its panel research design and use of correlational data. Future research should incorporate quasi-experimental designs to strengthen the degree in which causality can be inferred using this theoretical framework. As found in the first two studies, having a lower sample limited my ability to obtain significant estimates in my analysis. Finally, the condensed measure of subjective norms for the discussing schoolwork with significant others behavior limited my ability to determine which referent was explaining the most variance in the observed relationships found in this study.

Conclusion

To close, this study found that 8th and 9th grade student participation in GEAR UP depended on interactions between socioeconomic background, college aspirations, and their behavioral and motivational beliefs about engaging in self-regulated learning behavioral strategies. Initial evidence is established for college access policy stakeholders and college access practitioners to develop ways to assess and address the non-cognitive strengths of pre-college intervention participants. Additionally, given that teachers and counselors have a direct role in shaping students' learning experiences by the learning norms they create in classrooms, it may be beneficial for college access practitioners to continue to develop partnerships with these school officials in order to promote student learning. Having these partnerships could enhance

student experiences in schools and pre-college interventions, which in turn, could affect their academic achievement early in education pipeline. Finally, this study revealed that the strategies pre-college access interventions use to increase student participation may depend on how they assess student motivation and behavioral beliefs about themselves as self-regulated learners, their educational opportunities, and their appraisals of higher education attainment.

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CHAPTER VI

Conclusions

In this dissertation I sought to gain further insight into the psychological processes that drive behavioral engagement in strategies that promote college preparation among 8th and 9th grade students. Understanding how these processes facilitated participation in a pre-college access intervention such as GEAR UP was the objective of the first study. The extent to which program participation, and characteristics that represented opportunity gaps, facilitated relationships between student behavioral beliefs, intention, and performance using the theory of planned behavior were the main objectives of the second and third studies.

Knowledge was gained about how parent educational background and student college aspirations affected engagement in college preparation behaviors and pre-college intervention participation. Data suggest that learning and academic success depend upon the degree to which students comply with perceived norms of significant others. Consistent with prior research, I found that the formal and informal support significant others provided to students to develop and engage in self-regulated learning strategies was essential for student success (Conley, 2013; Perna & Jones, 2013). My research differs from prior studies, however, by considering and finding evidence that student social cognitions toward behaviors that promote college preparation affected their participation in a pre-college intervention. Thus, my dissertation advances research in two areas: 1) the use of theory driven action research to understand social cognitions of students within pre-college access interventions; and, 2) the extension and application of the theory of planned behavior to take into account mechanisms that are often

assumed by researchers but not explicitly assessed in studying issues of college access among underrepresented students.

Extension and Application of the Theory of Planned Behavior

The theory of planned behavior (TPB) was the theoretical framework that guided this dissertation study. This framework allowed me to examine student attitudes, subjective norms, perceived behavioral control, intentions, and behavioral engagement surrounding self-regulated learning strategies and discussing schoolwork with significant others. These behaviors were critical in this dissertation because I assumed that they were key antecedents to student academic success in secondary and postsecondary education settings. I sought to extend the theory of planner behavior in each study.

The first study extended the TPB by introducing GEAR UP as an actual opportunity and specified participation to be a behavior that was influenced by students' existing behavioral beliefs and intentions. GEAR UP participation was assessed as dosage (i.e., time spent in GEAR UP) to capture how student level of exposure in a pre-college access intervention was informed by their social cognitions about self-regulated learning and developing academic relationships with significant others. This approach has not been used in studies informed by the TPB, or in existing studies on pre-college access programs.

The second study extended the TPB by examining average student gains in each construct as a result of their schooling, familial, and intervention experiences over the course of an academic semester. A key finding from this study was recognizing that participation in GEAR UP negatively affected student attitudes about self-regulated learning. This highlights the potential assumptions students make about themselves as self-regulated learners. Specifically, students may have *initially* thought they were engaging in self-regulated learning strategies.

However, after participating in GEAR UP programming, their ideas about what it meant to effectively engage in these strategies may have changed.

The third study revealed that the influence of TPB constructs depended on student socioeconomic background and college aspiration. These analyses extend traditional methods of testing the TPB, and confirm that the opportunities students are presented with affect their engagement in GEAR UP and their motivation to engage in strategies that promote their academic success. To advance research using TPB, future studies need to consider using additional indicators of the systematic barriers students face to their college preparation affect when examining their engagement in interventions like GEAR UP.

Theory-Driven Action Research

This dissertation has implications for the way researchers and practitioners understand student involvement in college access interventions. Studies that examine the psychological orientations of students (e.g., aspiration) within college access interventions tend to be evaluation studies that are not driven by theory (Cowley, 2000; Muraskin, 2003; Standing, Judkins, Keller, & Shimshak, 2008; Walsh & Educational Resources Information, 2008). This makes it difficult to fully ascertain how perceptions are manifested in student behavior, and how perceptions connect to objectives of college access programs (e.g., enhancing college readiness and opportunity) and experiences with significant others (e.g., schools officials, family members, and peers) outside of the intervention context.

To address this drawback, I sought to understand how students translate their motivational and behavioral beliefs into processes that promote academic success and preparation for college. As a result of using the TPB framework in an intervention context, this dissertation suggests that the normative and control beliefs students hold about self-regulated

learning affect the extent to which they participate in GEAR UP activities, and this effect is strongest for students whose mothers' have a baccalaureate degree (i.e., non-first generation college students). Moreover, these findings also reveal that the resilient characteristics possessed by underrepresented middle and high school students - perceived behavioral control and intention - dictated their level of involvement in the pre-college access program. Thus, this dissertation challenges implicit assumptions about who benefits from engaging in pre-college access interventions, and provides avenues for future research on the experiences of first-generation and non-first generation students in these interventions.

Parent involvement in and teacher sponsorship of GEAR UP activities are consistently identified as pressing issues among researchers and practitioners because of the importance of parents and teachers in supporting participant college pathways (Hagedorn & Fogel, 2002; Swail & Perna, 2002; Yonezawa, 2002). This dissertation shows that the behavioral norms supportive adults communicate to students influence student plans and engagement in strategies that promote college preparation and participation in GEAR UP activities. The theory-in-action approach I used in this research (St. John, 2013), along with study findings, can help guide program practitioners and researchers in developing strategies to work with parents and teachers to find ways support to participant college-going opportunities by communicating, supporting, and developing the resilient strengths participants possess.

In closing, this dissertation study was conducted to highlight the strength-based developmental characteristics students bring into intervention settings. Although the need to conduct research that adheres to high scientific standards will remain, future research on college access interventions will benefit from collaborations with practitioners because of the complex ways in which interventions support the academic and psychological needs of individual

students. This approach is highly relevant when striving to accurately assess the developmental characteristics of pre-college access program participants and create learning contexts that address variations in developmental characteristics. This is also important to consider when determining the effectiveness of education pipeline interventions because it helps clarify who is represented and the psychological and structural mechanisms that drive utilization of formal resources offered by these programs.

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Appendix A

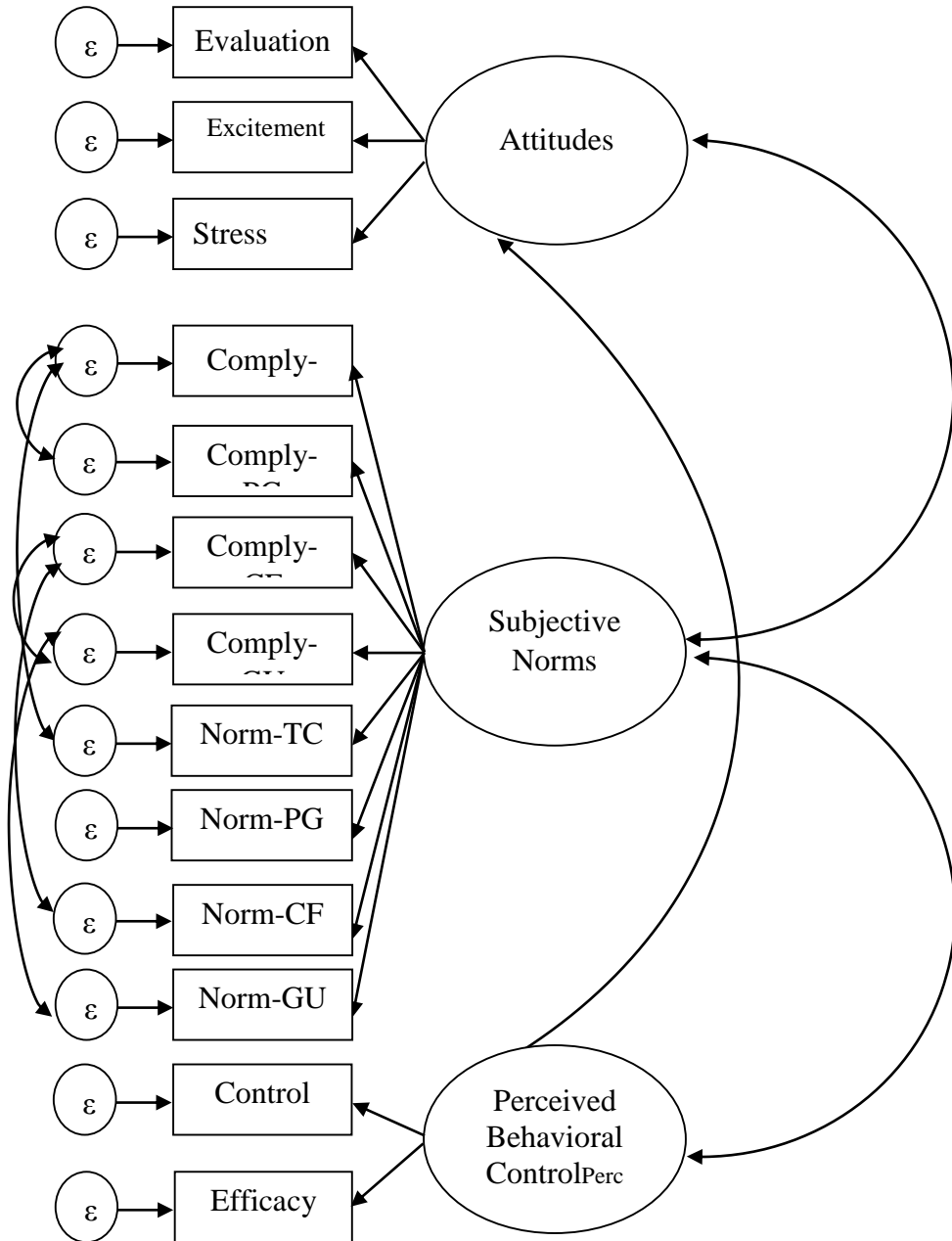
CFA Hypothesis Testing Description for Self-Regulated Learning

Three observed variables were hypothesized to represent self-regulated learning behavior attitudes as a latent construct (evaluation, excitement, stress). Eight observed variables were hypothesized to serve as distinct dimensions of student subjective norms of self-regulated learning behavior as a latent construct: motivation to comply and perceived normative beliefs of each significant other referent. Two observed variables were hypothesized to represent student perceived behavioral control for self-regulated learning as a latent construct (control beliefs and efficacious beliefs). This hypothesized measurement model specified 26 regression weights, 3 covariances, and 16 variances for a total of 45 parameters.

CFA Hypothesis Testing Description for Discussing Schoolwork with Significant Others

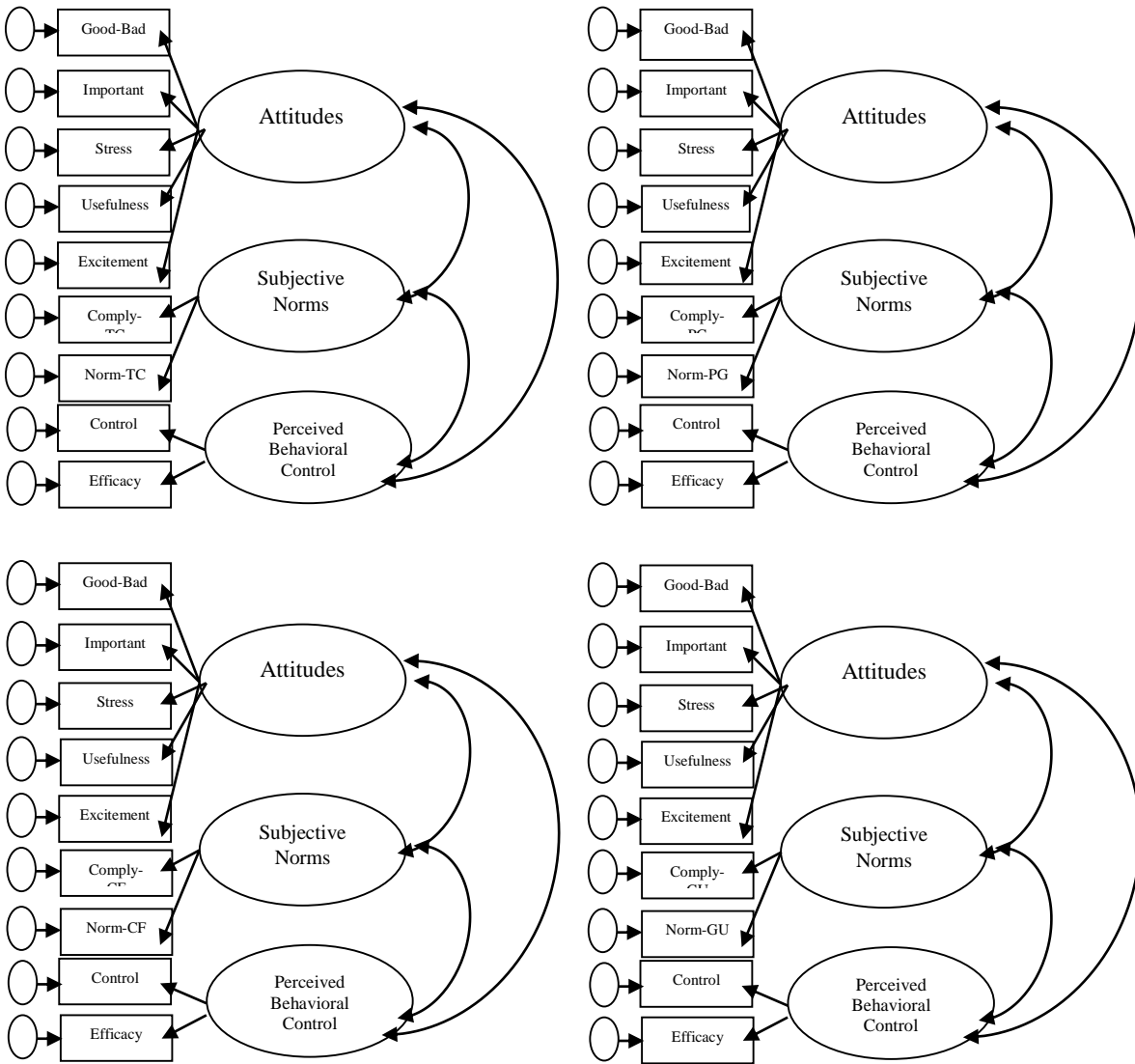
Five observed variables were hypothesized to represent the latent construct of student attitudes toward speaking with each referent about their schoolwork. Two observed variables were hypothesized to reflect dimensions of student subjective norms as a latent construct. Finally, two observed variables served as indicators for perceived behavioral control. To adhere to the theoretical assumptions of the TPB, attitudes and subjective norms were correlated with observed variables of perceived behavioral control. Perceived behavioral control was not included in modified CFAs and SEMs for each referent as each model estimated negative variances. Negative variances indicate that regression weights and model fit estimates may be unreliable due to small sample size or inaccurate modeling (Jöreskog, 1993). Each hypothesized CFA specified 20 regression weights, 1 covariance, and 11 variances for a total of 32 parameters. Modification indices and theory suggested that adding covariances among error terms between affective and evaluative components of attitudes would improve model fit. The TPB posits that an individual's attitudes are influenced by their behavioral beliefs.

Appendix B



Modified Measurement Model (CFA) for Self-Regulated Learning at baseline.
 PG=Parent/Guardian; TC=Teacher/Counselor; GU=GEAR UP staff; and, CF=Close Friend.
 Comparative Fit Index = .93; Root Mean Square Error of Approximation= .07
 Note. Covariances among errors terms between each significant other referent regarding motivation to comply and normative beliefs were added because of potential differences

Appendix C



Hypothesized Measurement Model (CFA) for discussing schoolwork with significant others (clockwise from top left: Teacher/Counselor (TU); Parent/Guardian (PG); GEAR UP Staff Member (GU); and, Close Friend (CF)).
 TC: Comparative Fit Index (CFI) = .88; Root Mean Square Error of Approximation (RMSEA) = .12
 PG: CFI = .86; RMSEA = .13
 CF: CFI = .92; RMSEA = .11
 GU: CFI = .86; RMSEA = .14

Appendix D

Standardized and Unstandardized Coefficients for Modified Self-Regulated Learning CFA

Observed Variable	Latent Construct	β	B (SE)
Behavioral Evaluation	Attitudes	0.43**	0.40 (.10)
Excitement	Attitudes	0.71***	1.034 (.16)
Stress	Attitudes	0.73***	0.92 (.14)
Motivation to Comply-TC	Subjective Norms	0.74***	0.58 (.06)
Motivation to Comply-PG	Subjective Norms	0.86***	0.57 (.05)
Motivation to Comply-CF	Subjective Norms	0.49**	0.42 (.08)
Motivation to Comply-GU	Subjective Norms	0.64***	0.49 (.07)
Normative Beliefs-TC	Subjective Norms	0.77***	0.53 (.06)
Normative Beliefs-PG	Subjective Norms	0.90***	0.61 (.05)
Normative Beliefs-CF	Subjective Norms	0.52***	0.40 (.07)
Normative Beliefs-GU	Subjective Norms	0.62***	0.52 (.07)
Control Beliefs	Perceived Behavioral Control	0.76***	0.54 (.06)
Efficacious Beliefs	Perceived Behavioral Control	0.96***	0.64 (.05)

Note. CFA= confirmatory factor analysis; TC = teachers/counselors; PG=parent/guardian; CF=close friends; GU=GEAR UP staff; β = standardized coefficient; SE= standard error of unstandardized coefficient; B= unstandardized coefficient. Standard errors for unstandardized estimates were calculated using bootstrapping; standard errors for standardized estimates are not provided by the statistical package when conducting CFA.

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Appendix E

Standardized and Unstandardized Coefficients for Modified CFA to discuss schoolwork with significant others

Observed Variable	Latent Construct	Teacher/Counselor		Parent/Guardian		Close Friend	
		β	B(SE)	β	B(SE)	β	B(SE)
Good-Bad Experience	Attitudes	0.72***	0.92(.12)	0.84***	1.36 (.13)	0.78**	1.29 (.14)
Excitement	Attitudes	0.31*	0.39 (.13)	0.56***	0.95 (.15)	0.67**	1.01 (.13)
Stress	Attitudes	0.39*	0.59 (.16)	0.60***	1.06 (.16)	0.65**	1.02(.14)
Usefulness	Attitudes	0.68**	1.08 (.15)	0.76**	1.14 (.13)	0.82**	1.56 (.16)
Importance	Attitudes	0.74**	1.01 (.13)	0.50***	0.60 (.11)	0.63**	1.05 (.15)
Motivation to Comply	Subjective Norms	0.72***	0.76 (.10)	0.77***	0.83 (.09)	0.92**	1.12 (.09)
Normative Belief	Subjective Norms	0.78**	0.84 (.10)	0.65***	0.61 (.08)	0.77**	0.96 (.10)

Note. CFA= confirmatory factor analysis; β = standardized coefficient; SE= standard error; B= unstandardized coefficient. * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

Appendix F

Self-Regulated Learning SEM Model Modification & Model Fit Description

Modification indices suggested that adding 9 covariances on error terms between latent constructs, GEAR UP participation, and control variables for a total of 125 parameters. Given that attitudes, subjective norms and perceived behavioral control were endogenous variables being predicted by GEAR UP participation, their error terms were also correlated. This correlation was justified because these latent factors have been measured to consistently predict intentions in prior studies using the theory of planned behavior (Ajzen, 1991; Fishbein & Ajzen, 2013). Moreover, given that GEAR UP is a school based intervention where teachers are at times involved in activities in classroom settings, the error terms of students subjective norms of teacher/counselor and participation in GEAR UP activities were correlated. Furthermore, modification indices suggested that the covariance between the school attended by students and GEAR UP participation error term should be added to the final SRL SEM. Finally, a direct path from GPA to participation was also added to the modified SRL SEM. These additions were necessary given that it was found in Chapter 3 that these factors were found to influence student participation in GEAR UP. This SEM for indicated moderate fit between the implied measurement model and observed data ($\chi^2/df=1.527$; CFI=.902; RMSEA=.074). The standardized factor loadings assessing attitudes ranged from .186 to .652. The standardized factor loadings for SRL subjective norms ranged from .538 to .597. Standardized factor loadings for perceived behavioral control ranged from .419 to .519.

Discussing Schoolwork with Significant Others SEM Model Modification & Model Fit Description

Model modification was conducted under the premise that each SEM would specify different parameters for each significant other referent. This premise was driven by the assumption that student variation in dimensions of the theory of planned behavior constructs would be based on their perceived experience discussing their schoolwork with each referent. Thus, the modified SEM for teachers/counselors contained 68 regression weights, 29 covariances, and 22 variances for a total of 119 parameters.

The SEM for parents/guardians included 73 regression weights, 23 covariances, and 22 variances for a total of 118 parameters. Finally, the SEM for close friends encompassed 72 regression weights, 23 covariances, and 22 variances for a total of 117 parameters. To improve model fit of SEMs for close friends and parents/guardians, direct paths from attitudes and subjective norms to behavioral engagement were added. For the parent/guardian SEM, direct paths from subjective norms to attitudes and perceived behavioral control were added in order to improve model fit. For the teacher/counselor SEM, the direct path from perceived behavioral control to behavioral engagement and covariances between control variables (GPA and school attended) and participation were added to improve model fit.

These SEMs indicated moderate fit to implied measurement model and observed data at time 2 (teacher/counselor- $\chi^2/df=1.532$; CFI=.930; RMSEA=.075, parent/guardian- $\chi^2/df=1.640$; CFI=.914; RMSEA=.082, close friend- $\chi^2/df=1.545$; CFI=.911; RMSEA=.076). Standardized factor loadings for student *attitudes* about speaking about their schoolwork to a teacher/counselor parent/guardian, and close friend ranged from .427 to .718, .453 to .949, and .268 to .885, respectively. Additionally, standardized factor loadings for *subjective norms* for talking about their schoolwork with a teacher/counselor, parent/guardian, and close friend ranged from .509 to .609, .560 to .768, and .800 to .808, respectively. Finally, standardized factor loadings for student *perceived behavioral control* to talk to about their schoolwork with a teacher/counselor, parent/guardian, and close friend ranged from .280 to .597, .210 to .751, and .152 to .417, respectively.

Appendix G

Paired Sample T-Test of Students Discussing Schoolwork with a Teacher/Counselor

	<u>Time 1</u>		<u>Time 2</u>		Paired Mean		df	t	p
	M	SD	M	SD	Diff.	SD			
T2 ATT-T1 ATT	5.01	1.02	5.15	1.44	.14620	1.37	95	1.043	.300
T2 SN-T1 SN	3.45	.948	3.68	1.04	.23668	.918	95	2.524	.013**
T2 PBC-T1 PBC	4.50	.936	4.63	1.21	.12848	1.12	95	1.124	.264
T2 Intention- T1 Intention	3.51	1.20	3.52	1.28	.013	1.37	95	.096	.924

Note. ATT=Attitudes; SN=Subjective Norms; PBC=Perceived Behavioral Control. T1=Time 1; T2=Time 2. M=Mean; SD=Standard Deviation; DF=Degrees of Freedom; T=T-Score. ⁺ $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$. (n=96)

Appendix H

Paired Sample T-Test of Students Discussing Schoolwork with a Parent/Guardian

	<u>Time 1</u>		<u>Time 2</u>		Paired Mean		df	t	p
	M	SD	M	SD	Diff.	SD			
T2 ATT-T1 ATT	5.05	1.18	5.35	1.55	.29978	1.34	95	2.190	.031*
T2 SN-T1 SN	3.80	.865	3.93	.923	.13676	.788	95	1.700	.092 ⁺
T2 PBC-T1 PBC	4.70	1.06	4.76	1.15	.09346	1.25	95	.727	.469
T2 Intention- T1 Intention	3.72	1.20	3.68	1.20	-.038	1.25	95	-.295	.769

Note. ATT=Attitudes; SN=Subjective Norms; PBC=Perceived Behavioral Control. T1=Time 1; T2=Time 2. M=Mean; SD=Standard Deviation; DF=Degrees of Freedom; T=T-Score. ⁺ $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$. (n=96)

Appendix I

Paired Sample T-Test of Students Discussing Schoolwork with a Close Friend

	<u>Time 1</u>		<u>Time 2</u>		Paired Mean		df	t	p
	M	SD	M	SD	Diff.	SD			
T2 ATT-T1 ATT	5.05	1.18	5.35	1.55	.34905	1.45	95	2.356	.021*
T2 SN-T1 SN	3.80	.865	3.93	.923	.36666	1.23	95	2.900	.005**
T2 PBC-T1 PBC	4.70	1.06	4.76	1.15	-.04252	1.22	95	-.341	.734
T2 Intention- T1 Intention	3.72	1.20	3.68	1.20	.343	1.47	95	2.276	.025*

Note. ATT=Attitudes; SN=Subjective Norms; PBC=Perceived Behavioral Control. T1=Time 1; T2=Time 2. M=Mean; SD=Standard Deviation; DF=Degrees of Freedom; T=T-Score. ⁺ $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$. (n=96)

Appendix J

Paired Sample T-Test for Self-Regulated Learning

	<u>Time 1</u>		<u>Time 2</u>		Paired Mean		df	t	p
	M	SD	M	SD	Diff.	SD			
T2 ATT-T1 ATT	5.14	.946	4.95	1.09	-.19539	.824	95	-2.321	.022*
T2 SN-T1 SN (TC)	4.34	.564	4.34	.584	.00019	.738	95	.003	.998
T2 SN-T1 SN (PG)	4.39	.476	4.45	.522	.05166	.584	95	.866	.389
T2 SN-T1 SN (CF)	3.89	.720	3.99	.718	.10436	.735	95	1.390	.168
T2 PBC-T1 PBC	4.32	.526	4.32	.602	.00324	.558	95	.057	.955
T2 Intent-T1 Intention	4.45	.521	4.37	.607	-.07483	.606	95	-1.208	.230

Note. ATT=Attitudes; SN=Subjective Norms; PBC=Perceived Behavioral Control. TC=Teacher/Counselor; PG=Parent Guardian; CF=Close Friend. T1=Time 1; T2=Time 2. M=Mean; SD=Standard Deviation; DF=Degrees of Freedom; T=T-Score. ⁺ $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$. (n=96)

Appendix K

Analysis of Covariance (ANCOVA) of TPB Constructs Examining Self-Regulated Learning

	Time 1		Time 2		F Value	Sig	Partial Eta ^{2b}
	M	SD	M	SD			
SRL Attitudes ^a	5.30	1.08	4.95	1.11	75.64	.000	.649
SRL SNTC	4.28	0.69	4.32	0.59	1.23	.273	.029
SRL SNPG	4.37	0.67	4.45	0.52	6.51	.015	.137
SRL SNCF	3.81	0.82	3.98	0.73	7.53	.009	.155
SRL PBC	4.27	0.68	4.32	0.60	10.45	.002	.203

Note. ATT=Attitudes; SN=Subjective Norms; PBC=Perceived Behavioral Control. TC=Teacher/Counselor; PG=Parent Guardian; CF=Close Friend. M=Mean; SD=Standard Deviation; DF=Degrees of Freedom; Time 1 Sample Size (n=118); Time 2 Sample Size (n=96)

a. GEAR UP Participation was marginally related Time 2 SRL attitudes when time 1 attitudes was considered as a covariate (p=.07)

b. This reflect the partial effect size of Time 1 TPB constructs as covariates on its corresponding Time 2 TPB construct

Appendix L

Analysis of Covariance (ANCOVA) of TPB Constructs Examining Discussing Schoolwork with Significant Others^{ab}

	Time 1		Time 2		F Value	Sig	Partial Eta ^{2c}
	M	SD	M	SD			
ATT	5.06	0.99	5.21	1.18	29.82	.000	.421
SN	3.46	0.72	3.71	0.86	16.95	.000	.298
PBC	4.86	1.12	4.64	0.91	3.596	.065	.081

Note. ATT=Attitudes; SN=Subjective Norms; PBC=Perceived Behavioral Control. TC=Teacher/Counselor; PG=Parent Guardian; CF=Close Friend. M=Mean; SD=Standard Deviation; DF=Degrees of Freedom; Time 1 Sample Size (n=118); Time 2 Sample Size (n=96)

- a. Significant others referent collapse into a single category in order to maximize the covariance matrix for each TPB construct given the study's sample size.
- b. Participation did not significantly relate to TPB constructs at time 2.
- c. This reflect the partial effect size of Time 1 TPB constructs as covariates on its corresponding Time 2 TPB construct

Appendix M

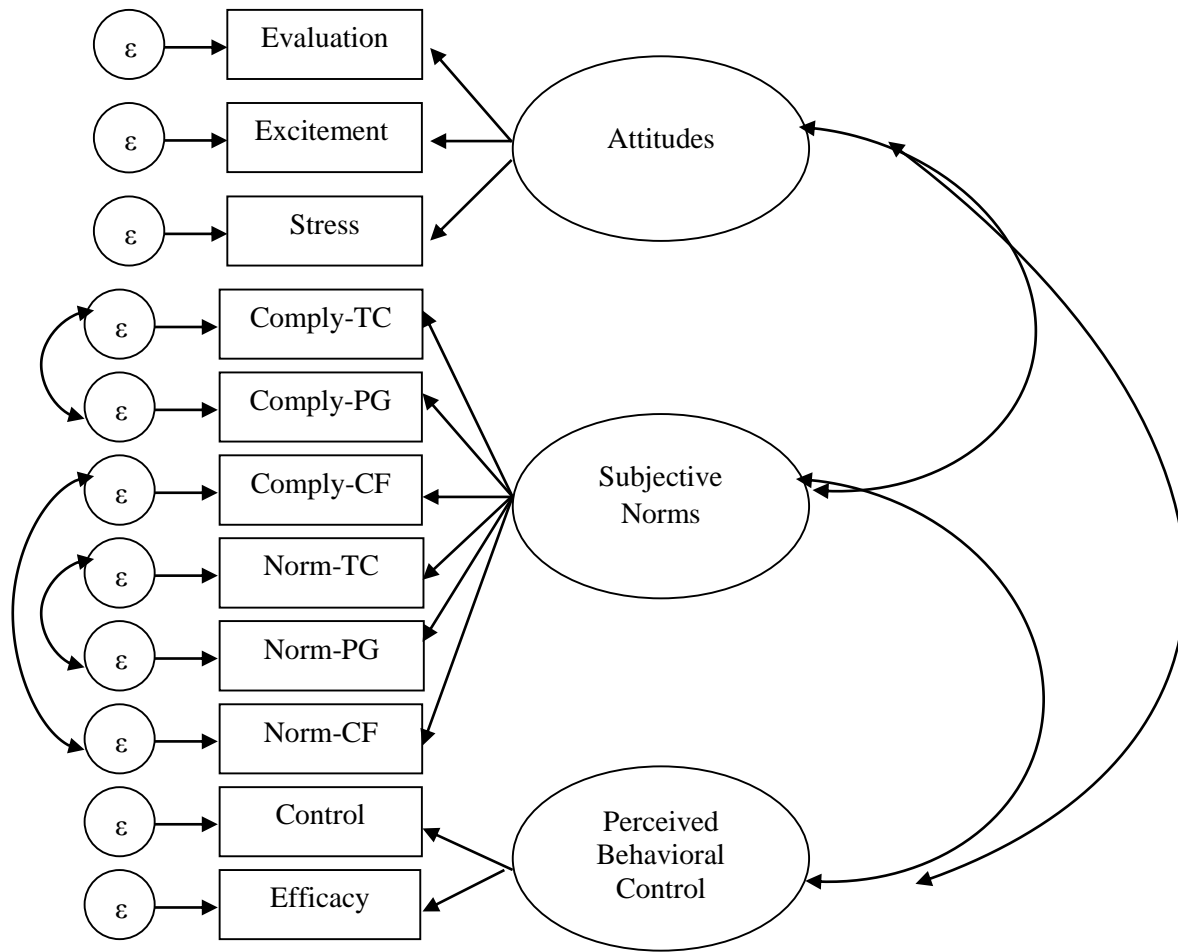
CFA Hypothesis Testing Description for Self-Regulated Learning (Time 2)

For the CFA model for self-regulated learning, three observed variables were hypothesized to represent the latent construct student attitudes toward self-regulated learning behavior (evaluation, excitement, stress). Six observed variables were hypothesized to serve as distinct dimensions of student subjective norms of self-regulated learning behavior as a latent construct (motivation to comply and perceived normative beliefs of all referents). Two observed variables were hypothesized to represent student perceived behavioral control for self-regulated learning as a latent construct (control beliefs and efficacious beliefs). This CFA hypothesized model specified 22 regression weights, 3 covariances, and 14 variances for a total of 39 parameters. As shown in Appendix N, modification indices and theory suggested that adding covariances among errors terms between each significant other referent regarding motivation to comply and normative beliefs were necessary because of potential differences students may have in adopting TPB dimensions of SRL behavior for each referent. Despite the low RMSEA fit statistic, this modified CFA was included in the analysis of the full structural model.

CFA Hypothesis Testing Description for Discussing Schoolwork with Significant Others (Time 2)

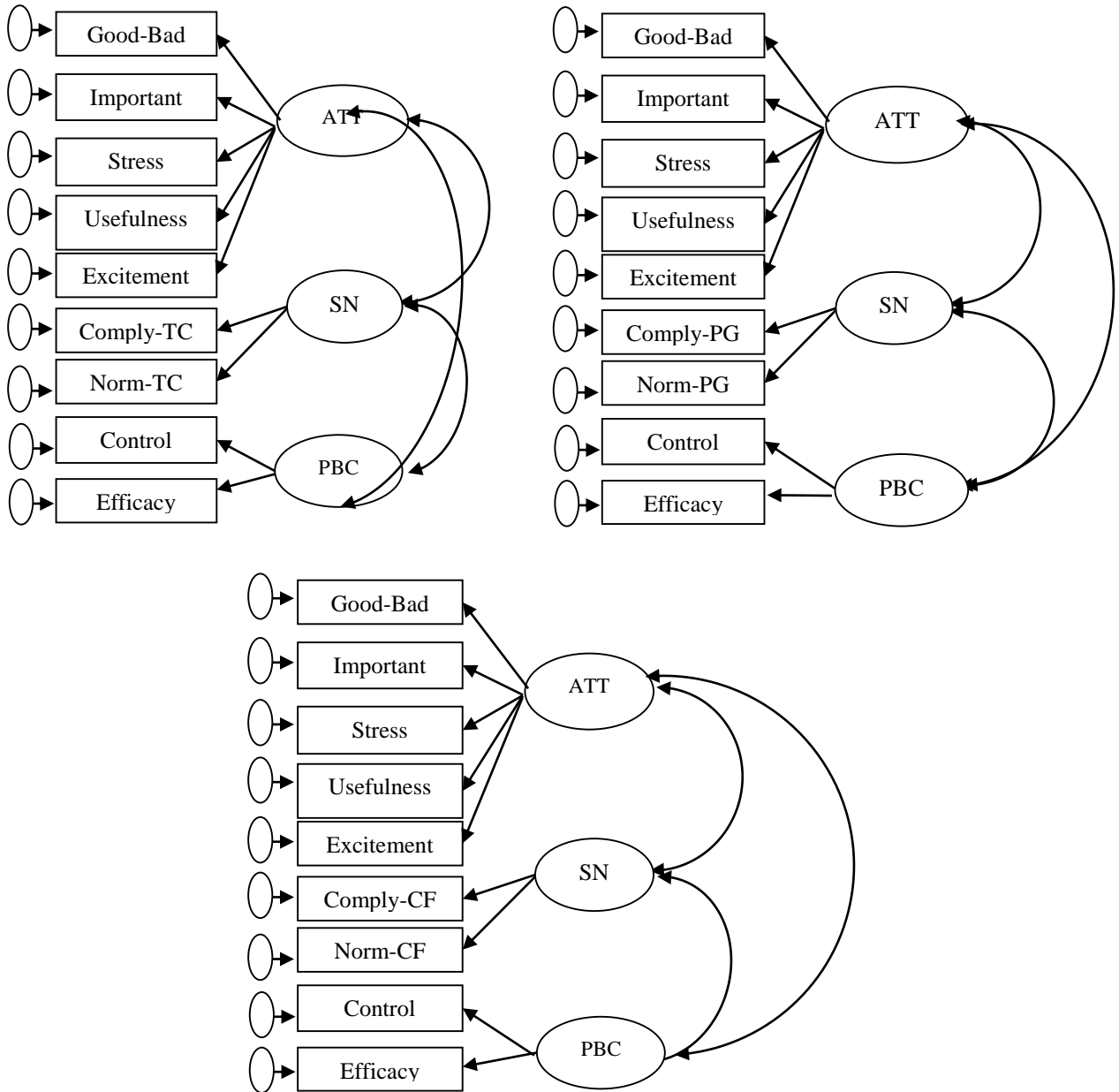
Appendix O illustrates the hypothesized CFA model for discussing schoolwork with significant others. This hypothesized measurement model was constructed for each significant other referent. The measurement model for each significant other referent contained five observed variables that were hypothesized to represent attitudes as a latent construct. Two observed variables were hypothesized to reflect dimensions of student subjective norms as a latent construct (e.g., normative beliefs; motivation to comply). Finally, two observed variables served as indicators for perceived behavioral control as a latent construct (e.g., self-efficacy and control over behavior). The hypothesized CFA for each referent specified 18 regression weights, 3 covariances, and 12 variances for a total of 33 parameters. Modification indices and theory suggested that the addition of covariances among errors terms between affective and evaluative components of attitudes. The TPB posits that individual attitudes are influenced by behavioral beliefs. These beliefs are formed based on a person's emotional and evaluative orientations about the behavior and the consequences of engaging in the behavior. These attitudinal components were correlated and included in modified SEMs for each significant other referent.

Appendix N



Modified Measurement Model (CFA) for Self-Regulated Learning at Time 2. Comparative Fit Index = .90; Root Mean Square Error of Approximation = .11

Appendix O



Hypothesized Measurement Model (CFA) for discussing schoolwork with significant others (Teacher/Counselor; Parent/Guardian; Close Friend) at Time 2

Note. TC=Teacher/Counselor; PG=Parent/Guardian; CF=Close Friend. ATT=Attitudes; SN=Subjective Norms; CF=Close Friends.

TC: Comparative Fit Index (CFI) =.93; Root Mean Square Error of Approximation (RMSEA) =.12; PG: CFI=.89; RMSEA = .16; CF: CFI=.93; RMSEA = .11.

Appendix P

Table 1: Multiple Regression Analysis Testing Self-Regulated Learning: 1st Stage Moderation-Intention and its antecedents at Time 1.

Moderator, stage, time point, and parameter	Unst.	SE	t	R ²
Stage 1 & T1-Direct Effects (DV: Intention) ^a				0.58
Attitudes	0.10	0.04	2.42*	
SNTC	0.24	0.07	3.55***	
PBC	0.53	0.09	6.24***	
Female	0.15	0.08	1.93*	
Black	0.00	0.00	1.26	
# of School Activity Involvement	-0.06	0.04	-1.45	
School Enrolled	-0.02	0.11	-0.20	
GPA	-0.04	0.08	-0.48	
College Expectations > 4yr Degree	-0.38	1.12	-0.34	
College Expectations X PBC	0.05	0.25	0.19	
College Aspirations > 4yr degree	0.48	1.12	0.43	
College Aspirations X PBC	-0.08	0.25	-0.32	
HI-SES	2.09	0.66	3.20**	
HI-SES X PBC	-0.45	0.15	-3.02**	
Stage 1 & T1-Direct Effects (DV: Intention) ^b				0.58
Attitudes	0.09	0.04	2.18*	
SNPG	0.27	0.08	3.46***	
PBC	0.48	0.09	5.12***	
Female	0.11	0.08	1.36	
Black	0.01	0.00	1.76	
# of School Activity Involvement	-0.05	0.04	-1.19	
School Enrolled	-0.04	0.11	-0.36	
GPA	-0.10	0.08	-1.19	
College Expectations > 4yr Degree	0.22	1.13	0.20	
College Expectations X PBC	-0.08	0.25	-0.31	
College Aspirations > 4yr degree	0.18	1.13	0.16	
College Aspirations X PBC	-0.02	0.25	-0.06	
HI-SES	1.66	0.69	2.41*	
HI-SES X PBC	-0.35	0.16	-2.21*	
Stage 1 & T1-Direct Effects (DV: Intention) ^b				
Attitudes	0.08	0.04	1.77	
CF-Motivation to Comply	0.05	0.07	0.74	
CF-Normative Belief	0.05	0.08	0.60	
PBC	0.62	0.09	7.36***	
Female	0.16	0.08	2.05*	
Black	0.00	0.00	1.25	
# of School Activity Involvement	-0.06	0.04	-1.33	
School Enrolled	-0.10	0.12	-0.91	
GPA	-0.06	0.08	-0.74	
College Expectations > 4yr Degree	0.06	1.17	0.05	
College Expectations X PBC	-0.04	0.26	-0.16	
College Aspirations > 4yr degree	0.50	1.17	0.42	
College Aspirations X PBC	-0.09	0.26	-0.34	
HI-SES	2.11	0.71	2.96***	
HI-SES X PBC	-0.45	0.16	-2.78**	

Note: N=118; SES=Socioeconomic Status; SN=Subjective Norms; TC=Teacher/Counselor; PG=Parent/Guardian; CF=Close Friend; GPA= grade point average; Unst=unstandardized path coefficient; SE=standard error; DV=dependent variable; t= critical ratio; R²= square multiple correlation coefficient

^a df = 43. ^b df = 47

* p < .05. ** p < .01. *** p < .001.

Appendix Q

Table 2: Multiple Regression Analysis Testing: 2nd stage Moderation- from intention to GEAR UP Participation at Time 1.

Moderator, stage, time point, and parameter	Unst.	SE	<i>t</i>	R ²
Stage 2 & T1 -Direct Effects (DV: GEAR UP Participation)^a				0.77
Intention	-0.22	0.81	-0.27	
Female	0.39	0.71	0.55	
Black	-0.06	0.03	-2.45	
GPA	0.16	0.71	0.22	
# of School Activity Involvement	1.50	0.36	4.22 ^{***}	
School Enrolled	-17.00	1.01	-16.81 ^{***}	
PBC	0.45	0.73	0.61	
Attitudes	-0.02	0.36	-0.07	
SN-PG	0.79	0.84	0.94	
College Expectations > 4yr Degree	8.63	10.57	0.82	
College Expectations X SN-PG	-1.51	2.37	-0.64	
College Aspirations > 4yr degree	4.75	10.42	0.46	
College Aspirations X SN-PG	-1.41	2.34	-0.60	
HI-SES	17.54	6.96	2.52 ^{**}	
HI-SES X SN-PG	-4.32	1.54	-2.80 ^{**}	
Stage 2 & T1 -Direct Effects (DV: GEAR UP Participation)^a				0.76
Intention	-0.29	0.81	-0.36	
Female	0.31	0.73	0.43	
Black	-0.04	0.02	-1.54	
GPA	-0.06	0.72	-0.08	
# of School Activity Involvement	1.45	0.37	3.98 ^{***}	
School Enrolled	-17.06	1.04	-16.42 ^{***}	
PBC	0.27	0.74	0.37	
Attitudes	-0.07	0.36	-0.19	
SN-TC	0.95	0.80	1.19	
College Expectations > 4yr degree	-0.51	9.73	-0.05	
College Expectations X SN-TC	0.59	2.16	0.27	
College Aspirations > 4yr degree	9.52	8.98	1.06	
College Aspirations X SN-TC	-2.51	2.00	-1.25	
HI-SES	15.38	6.20	2.48 ^{**}	
HI-SES X SN-TC	-3.90	1.40	-2.79 ^{**}	

Note: N=118; SES=Socioeconomic Status; SN=Subjective Norms; TC=Teacher/Counselor; PG=Parent/Guardian; GPA= grade point average;

Unst=unstandardized path coefficient; SE=standard error; DV=dependent variable; *t* = critical ratio; R²= square multiple correlation coefficient

^a *df* = 43.

* *p* < .05. ** *p* < .01. *** *p* < .001.

APPENDIX R

Table 3: Multiple Regression Analysis Testing : 1st Stage Moderation - Intention and its Antecedents at Time 2

Moderator, stage, time point, and parameter	Unst.	SE	t	R ²
Stage 1 & T2-Direct Effects (DV: Intention) ^a				0.44
Attitudes	0.03	0.04	0.78	
SN-TC	0.12	0.11	1.07	
PBC	0.27	0.09	3.153***	
Female	0.06	0.09	0.68	
Black	0.00	0.00	-0.35	
# of School Activity Involvement	0.05	0.05	1.13	
SchoolEnrolled	0.04	0.14	0.28	
GPA	-0.03	0.10	-0.27	
Intention-T1	0.19	0.08	2.292*	
College Expectations > 4yr Degree	1.44	2.03	0.71	
College Expectations X SN-TC	-0.28	0.45	-0.61	
College Aspirations > 4yr degree	-4.19	1.96	-2.134*	
College Aspirations X SN-TC	0.88	0.44	2.009*	
HI-SES	-0.78	1.01	-0.77	
HI-SES X SN-TC	0.17	0.22	0.74	

Note: N= 96; SES=Socioeconomic Status; SN=Subjective Norms; TC=Teacher/Counselor; PG=Parent/Guardian; GPA= grade point average; Unst=unstandardized path coefficient; SE=standard error; DV=dependent variable; t= critical ratio; R²= square multiple correlation coefficient

^a $df = 40$.

* $p < .05$. ** $p < .01$. *** $p < .001$.