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EXPLORING A COMPLEX MODEL OF STUDENT ENGAGEMENT IN MIDDLE SCHOOL: ACADEMIC SELF-EFFICACY BELIEFS AND ACHIEVEMENT

by

MARY BRENNAN

DISSERTATION

Submitted to the Graduate School

of Wayne State University

Detroit, Michigan

in partial fulfillment of the requirements of the degree of

DOCTOR OF PHILOSOPHY

2015

MAJOR: EDUCATIONAL PSYCHOLOGY

Approved By:

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Advisor Date

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DEDICATION

This project is dedicated to my husband Tim, my loving parents, and my sister Katie. This work would not have been possible without their unwavering support, wisdom, patience, love, and guidance.

ACKNOWLEDGEMENTS

There are many important and special people that have helped me through this process. I would like to thank Dr. Yoon for your continuing guidance and ongoing support over the last several years. Your encouragement, wisdom, and patience helped me to have the confidence to continue this journey when it seemed impossible. A special thank you to Dr. Somers, Dr. Pernice-Duca, and Dr. Marjorie Beeghly for your guidance throughout this process. I would also like to acknowledge and thank Jana Ranson for providing her expertise during the statistical analysis.

I would like to acknowledge the Brandon School District for supporting this research. Special thanks to Tina Chambers for allowing me to work with the wonderful students attending Brandon Middle School and to staff and teachers at BMS that supported me in the process of data collection. Last but not least, to my wonderful cohort members for motivating me and helping me through this journey.

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CHAPTER 1

INTRODUCTION

Active engagement in school is a critical part of a student's educational success and development into a functional and competent member of society. Students who are found to be more engaged in school earn better grades and show higher levels of psychological adjustment at school. On the other hand, students who are not engaged in the classroom are at greater risk for academic failure and school dropout, along with a variety of other poor outcomes (Appleton, Christenson, Kim & Reschly, 2006). These points make student engagement an important topic of research in regards to understanding what helps children, adolescents, and even young adults to be successful in their schooling.

Engagement behaviors encompass the daily tasks that are required for learning. These include school attendance, class attendance, following teacher directives, completing assignments (in-class and out-of-class), and having a positive attitude about specific subject areas and about school overall (Appleton et al., 2006). Skinner and Belmont (1993), among other prominent researchers investigating student engagement, have documented that there is a direct link between academic functioning and school engagement. Further, an inverse relationship with negative outcomes has been documented by numerous researchers. Lack of engagement in school has been found to be related to poor grades, behavioral difficulties, and even early school dropout (Skinner & Belmont, 1993). The purpose of this study is to examine academic self-efficacy and student engagement as critical variables involved in academic achievement among middle school students.

Varying definitions for the terms student engagement, school engagement, engagement in academics, or academic engagement have been put forth by numerous researchers. These conceptualizations may include varying dimensions of participation, behavior, affect, investment,

and motivation. Further, some researchers have put forth an understanding of engagement as a process, while others view it as an outcome (Christenson & Reschly, 2012). One definition of engagement, provided by Wang and Eccles (2013), states that student engagement can be thought of as the amount of interest, attention, inquisitiveness, confidence, and desire that students demonstrate while learning, which is likely to extend to the degree of motivation they have for learning or succeeding in their education.

As our understanding of student engagement grows within the literature, important implications regarding what it means for students to be at risk emerged as well. Empirical investigations by researchers such as Finn (1989) and Appleton, Christenson, and Reschly (2012) support the significant relationship between low levels of student engagement or disengagement and school dropout. Inversely, these studies imply that students who show higher levels of engagement in the classroom are at less risk for dropping out of school.

Various bodies of research that seek to understand and prevent school dropout has implicated that student engagement is enhanced and optimized in schools in which the academic and social environments offer opportunities for the students to feel competent and successful, autonomous and emotionally connected to others (Wang & Eccles, 2013). Further, much of this literature has shown that a decline in learning motivation and engagement is seen as students move from elementary into secondary schooling. One of the hypotheses for this is that secondary school settings are not commensurate with adolescent motivational needs (Christenson & Reschly, 2012). In addition, there are limited opportunities for student autonomy and decision making as well as less-caring and supportive teacher-student relationships. Conner and Pope's (2013) review on academic engagement finds that more than half of high school students are chronically disengaged. The National Research Council (2004) found that 40-60% of high school

students exert little effort in the school setting, do not complete assignments, and state that they are bored in school. As mentioned by Conner and Pope (2013), even in high schools with age-appropriate and challenging instruction, disengagement is found to be very common. Considering the positive outcomes associated with school engagement, it is critical in understanding significant factors contributing to younger students' engagement in school. Based on our understanding of high school disengagement leading to school dropout, it is critical to promote engagement in school early on. Benefits of the current research include implications for prevention of later school disengagement stemming from a better understanding of how to promote school engagement in elementary and middle school years.

Engagement and Risk Factors

Empirical research has identified numerous factors linked to academic failure and school-based difficulties (Finn & Zimmer, 2012). Status risk factors, also thought of as conditions, are sociodemographic or socioeconomic characteristics that are challenging to modify or overcome via school-based supports or interventions. Race/ethnicity, family income or socioeconomic status (SES), primary language spoken at home (i.e. English in the US), family structure (i.e. single-parent families) and teen pregnancy/parenthood are a few factors that have been found to be strongly linked to academic outcomes (Finn & Zimmer, 2012). School outcomes at one grade that impact later academic achievement and educational success are thought of as educational risk factors or events (Finn & Zimmer, 2012). Retention, poor grades, and test scores as well as behavior difficulties at one age/grade are associated with more difficulties as the student gets older. These struggles include school failure and dropout (Christenson & Reschly, 2012).

According to Finn (1989), we often see various status and educational risk factors in the same individuals. The relationships among status risk factors are well supported in the literature.

Further, multiple academic risk factors are likely to be seen in one individual student mainly because school difficulties in one grade will interfere with that student's ability to be successful in later grades. School dropout is associated with factors such as poor academic performances, behavior difficulties, or socialization deficits, race, gender, and SES (Christenson & Reschly, 2012; Finn & Zimmer, 2012; Rumberger, 2000). Although educational and status risk factors are overwhelmingly linked to school failure and dropout, numerous students with these risk factors are still able to be successful in school and go on to postsecondary education. Rumberger (2000) argues that behaviors and characteristics that fall within the domain of school engagement can be critical protective factors for students with status and educational risk factors. Attendance, task initiation and completion, following teacher directives, optimistic attitudes regarding school assignments, subjects and courses are some of these behaviors and characteristics of school engagement identified for students who end up being successful and do not drop out early (Christenson & Reschly, 2012). Thus, school engagement has often been understood as a protective factor when it comes to educational risks (Finn & Zimmer, 2012)

Theoretical Models of Student Engagement

Finn (1989) introduced a model of student engagement referred to as the participation-identification model. This model includes features of both contextual and intrapersonal perspectives. Finn (1989) described how behavior and affect act in accordance to contribute to academic success. The behavioral component, or participation, includes behaviors such as attending to the teacher, responding to teacher directions and questions, and completing assignments as well as engaging in help-seeking behaviors and engaging in academic extracurricular activities. The affective component, or identification, includes students'

recognizing that school is both a social setting and a tool for enhancing personal development (i.e. belonging, bonding, attachment to school).

More recent theoretical conceptualizations of school engagement have shifted focus to promoting student outcomes across academic, behavioral, and affective capacities, suggesting a multidimensional approach in school engagement (Christenson & Reschly, 2012). For example, Appleton et al. (2006) conceptualize student engagement as a multi-component construct that incorporates three domains: ***behavioral*** (positive conduct, effort, participation), ***affective*** (belonging, interest, positive attitude about learning, optimism), and ***cognitive*** (investment in learning, learning goals, self-regulatory processes). Appleton et al.'s model differs slightly from Finn's (1989) earlier theoretical model and description of engagement. Finn's model included only behavioral (participation in class and school), and affective components (school identification, connectedness, value of learning), and neglected to consider the importance of cognitive functions involved in the investment of learning actives. Cognitive components, according to Appleton et al. (2006), can be thought of as less observable, internal indicators, such as self-regulation, personal goals and autonomy, and perceptions relevance of schoolwork to future goals and endeavors.

Appleton et al. (2013) provided a more detailed description with an expansion of components in their model of student engagement more recently. Appleton et al. (2013) put forth that the ***affective*** domain includes students building positive adult and peer relationships as well as their feelings about connectedness to the school environment. Student ***behavior*** such as attending school, actively participating, putting forth effort, and prosocial behaviors are viewed within the behavioral domain of the multidimensional framework of engagement. Lastly, ***cognitive*** features of the model also include thoughtfulness and willingness to put forth the effort

needed to understand complicated material and concepts as well as master complex skills. Appleton et al. (2013) also confirm that the role of context cannot be overlooked within a conceptualization of student engagement. Further, it is important to understand that the emergence of one single variable entailing each subtype is highly unlikely. It is more probable that markers underlying each domain are consistent with critical contexts such as relationships with peers and adults at school as well as family support (Appleton et al., 2013). The current research aims to examine the validity of this hypothesized model in a sample of middle school students.

Engagement, Persistence, and Academic Self-Efficacy

Using the participation-identification model, Finn and Zimmer (2012) discuss how a student's engagement behavior may look different as he/she moves through each grade, based on development, growth, and maturation of cognitive skills, as well as other important individual and contextual variables. The model, when viewed as a cycle, starts with early forms of student behavior such as participation (behaviors that students engage in that involve them in the activities of the classroom and school), leading over time to connectedness with school (identification, bonding with school) and in turn, to sustained participation.

Ideally, a young child enters school as a willing participant; he or she participates with encouragement or by interest in classroom activities. Over time, participation continues as long as the child has the minimal capacitates required to be successful and instruction is clear and appropriate. The student must experience some degree of success and as they progress through grades and autonomy increases, participation and success will ideally encourage the student's sense of identification with school, thus sustaining participation (Finn, 1989).

Persistence, or remaining engaged throughout schooling, is itself a critical outcome of education. Varying forms of persistence can range from continuous work on a challenging class

assignment or problem to graduation from high school to applying, entering, and successfully finishing postsecondary schooling (Christenson & Reschly, 2012). Factors contributing to engagement most likely impact persistence, much like the above described cycle of learning and continuing participation throughout schooling, as identification or school connectedness increases in older grades. This relates to the need for understanding factors contributing to school engagement in the middle school years. When these variables such as encouragement, appropriate instruction, or participation are lacking during earlier grades, eventual school dropout is a product of a process of withdrawal that may have begun in earlier grades (elementary or middle school) (Christenson & Reschly, 2012). The current study will seek to investigate if previous achievement affects engagement.

Self-efficacy is another construct that has been found to be related to school performance, academic achievement, student engagement, and persistence. According to Bandura (1997), self-efficacy is defined as an individual's belief that they can successfully achieve at a designated level on a task or attain a specific goal. Students' self-efficacy beliefs have been found to be related to school achievement and are an important variable pertaining to learning in academic settings (Pajares & Miller, 1994; Pajares, 1996; Bandura, 1997)

With respect to middle school students, the research has supported that students with higher levels of academic self-efficacy are likely to succeed and are better equipped for academic and occupational challenges later in life (Hoigaard et al., 2014). Students with lower levels of academic self-efficacy are more likely to demonstrate poor academic performances throughout their schooling and tend to struggle with other challenges, such as conduct problems and behaviors that adversely impact their school functioning (Driscoll, 2005). Although considered a separate construct from confidence and esteem, self-efficacy beliefs will likely effect a students'

self-confidence in their capabilities to perform a task at a particular level of competence (Bandura, 1997). Given these research findings, the present study uses a model with previous achievement hypothesized to directly link to academic self-efficacy.

As described above, a relationship between academic self-efficacy and achievement has been well supported, much like the link between student engagement and academic achievement. Not only are academic self-efficacy and student engagement important as independent variables in terms of their impact on learning, the two constructs also appear to be related when it comes to academic achievement (Linnenbrink & Pintrich, 2010). Social-Cognitive Theory states that self-efficacy leads to a greater willingness to spend more energy on completing a task, and hence to more involvement and participation in the tasks required (i.e. engagement). Research on academic self-efficacy has uncovered links between students' beliefs about their ability to complete academic tasks and their overall level of engagement in the classroom (Linnenbrink & Pintrich, 2010). Basically, a student with stronger beliefs about their ability to be successful at an academic activity (higher academic self-efficacy) is more likely to show active participation and engagement in school (Bandura, 1997). Based on this theory and research support, it was expected that student engagement likely plays a role in the link between self-efficacy and achievement. This hypothesized mediational mechanism, as it pertains to the link to achievement, has not been explored empirically in middle school age students. Since the current study aims to validate the three components of student engagement (cognitive, affective, behavioral), it is necessary to understand how self-efficacy may be related to each of these, and hence predicted overall student engagement.

Behavioral Engagement and Self-efficacy

Self-efficacy has been found to be related to the quantity of effort and the willingness to persist at tasks (Linnenbrink & Pintrich, 2010). Since self-efficacy likely influences a student's engagement in school, it will be interesting to explore the nature of this influence in terms of whether academic self-efficacy impacts a student's engagement in the three domains being confirmed in the current study. In regards to the basis for academic self-efficacy and behavioral engagement, research has implicated that students who have strong efficacy beliefs are more likely to put forth effort on challenging tasks and persist at that task when they have the necessary skills (Pintrich & Schunk, 2002). Further, Pintrich and Schunk (2002) found that students with higher self-efficacy were more likely to use adaptive and instrumental help-seeking behaviors in the classroom. Conversely, studies of help-seeking have consistently shown that students who have lower academic self-efficacy are less likely to seek help (Ryan & Pintrich, 1997). Effort, persistence and self-advocacy for adult help to be successful are all part of behavioral engagement. As stated by Linnenbrink and Pintrich (2010), a clear and stable generalization from effort, persistence, and help seeking research reviewed shows that self-efficacy beliefs are positively related to students' level of behavioral engagement. The current study will seek to understand this link in middle school students, also as it relates to their achievement.

Affective Engagement and Academic Self-efficacy

According to Linnenbrink and Pintrich (2010), the definition of affective engagement involves 'liking' for learning or the value students place on the learning process, and teachers want their students to have positive emotional experiences while they are learning. Research on motivation has shown that children in early elementary years can differentiate their self-efficacy for a doing a task ("can I do it") from their liking of the task or beliefs about the importance of the task ("why do I want to do it") (Eccles, Wigfield & Schiefele, 1998). According to Bandura

(1997), individuals first develop a sense of competence or efficacy at an activity, and from there they develop an interest and value for the activity. Wigfield (1994) suggested that this becomes stronger with age, although studies have not tested for the casual ordering of these variables.

Affect has not been explored as much as other constructs of engagement, but it is thought to play an important role in one's sense of efficacy beliefs regarding completing a task (Wigfield, 1997). Research has shown that students who develop a sense of efficacy at an academic-based activity are likely to develop both interest and value for the activity and learning (Pajares & Miller, 1994). Further, efficacy beliefs have been found to impact emotions (Wright & Mischel, 1982). More specifically, students who have higher levels of self-efficacy are more likely to experience positive emotions such as pride or happiness in the academic environment (Harter, 1992). In contrast, students with lower levels of self-efficacy generally experience negative emotions such as anxiety about the schoolwork (Bandura, Barbaranelli, Capara, & Pastorelli, 1996). It is less clear whether or not affective engagement is itself a separate component of student engagement, and is influenced by a student's academic self-efficacy.

Cognitive Engagement and Academic Self-efficacy

The quality of the effort in regards to deeper thinking or reasoning strategies and general cognitive engagement of learning has been found to be linked to self-efficacy perceptions (Pintrich, 1999). Pintrich and De Groot (1990) found that students who report higher efficacy beliefs were more likely to also report using various cognitive and self-regulatory strategies for learning. They also found that students who believed that they were capable of doing a task or their schoolwork were more likely to be cognitively engaged than those who had lower self-efficacy beliefs. Further, high self-efficacy beliefs were related to increases in utilization of deeper processing strategies such as organizational mechanisms as well as meta-cognitive strategies over

time (Wolters, Yu, & Pintrich, 1996). Wolters et al. (1996) argued that students who were confident in their skills were more likely to try to understand their schoolwork and think more deeply about it. Generally, the students who had higher self-efficacy beliefs were more thoughtful and reflective while working on school tasks in comparison to students who had lower self-efficacy beliefs and did not feel competent to begin with (Wolters, et al., 1996).

Purpose of Current Study

The current study examined student engagement and academic self-efficacy in predicting academic achievement in a sample of 7th and 8th grade students. The shift from elementary into middle school leaves many early adolescents reevaluating their academic self-beliefs and may begin the gradual process of disengagement. Academic performances and student engagement in middle school may have a critical impact on students' academic trajectories. Clearly, this is a critical time for researchers to examine young adolescents' school engagement and self-beliefs about academics. The first goal of the study was to validate the Appleton et al. (2006; 2013) model of student engagement in a sample of middle school students. Given that this three-component model has not yet been empirically validated among middle-school age students, there is a need to provide evidence of its validity among early adolescents.

The second goal was to test a meditational model of student engagement in the relation between academic efficacy and academic achievement. Figure 1 depicts the proposed path of previous achievement, academic efficacy and student engagement. The current literature on student engagement and academic self-efficacy supports that the level of student engagement in the classroom as well as the students' beliefs about their ability to be successful academically will be positively related to academic performance (Appleton et al., 2006; Bandura, 1997). In addition, previous academic performance most likely contributes to the student's beliefs about their

capability to perform academically. It has been argued that students with high academic efficacy approach academic tasks differently (Bandura, 1986, 1997) and are more likely to persist (Bandura, 1997; Multon, Brown & Lent, 1991). The current study hypothesizes that academic self-efficacy, influenced by previous academic achievement, leads to current academic achievement through its effect on three areas of student engagement.

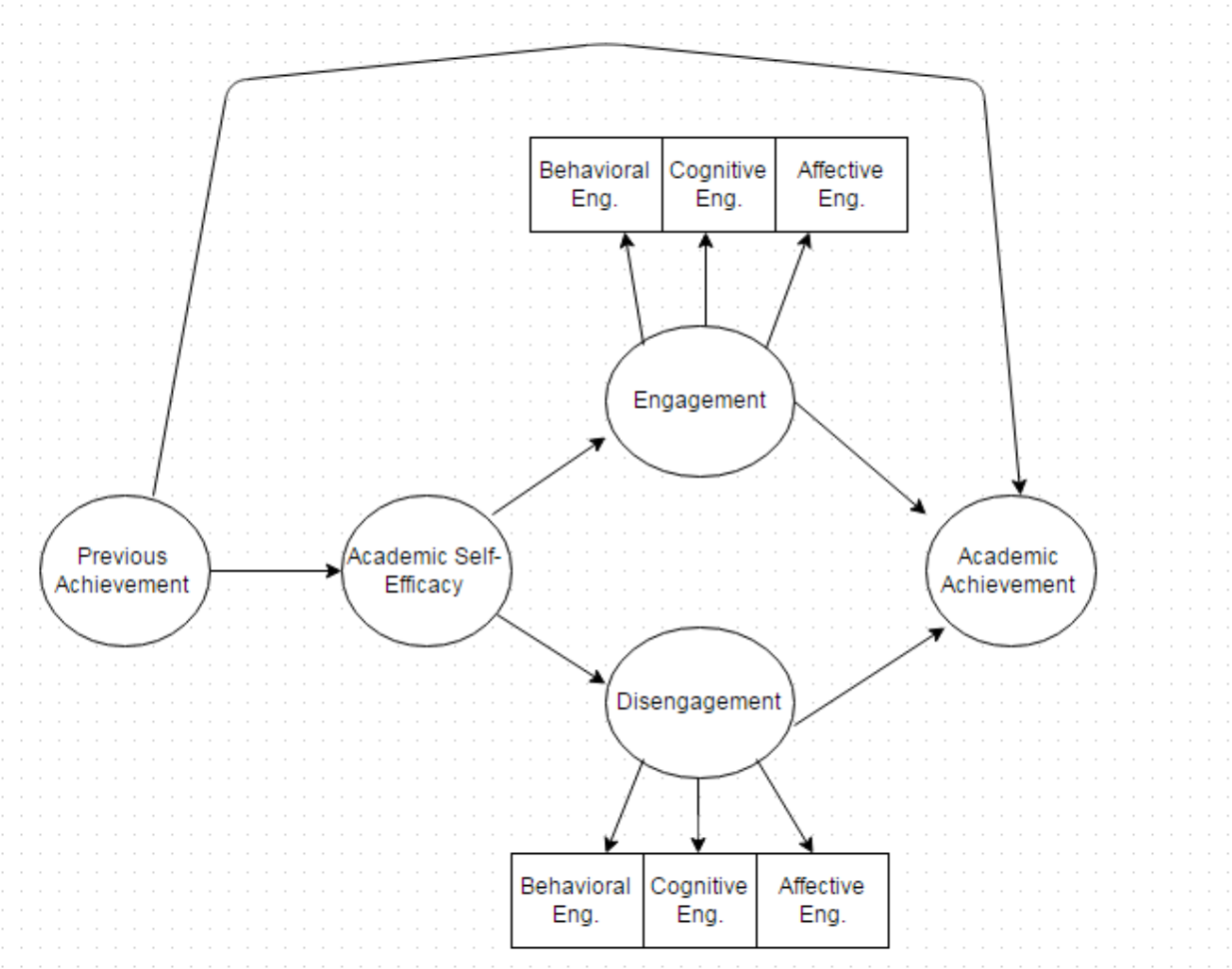


Figure 1. Proposed model for the relationships among previous achievement, academic self-efficacy, student engagement, and academic achievement.

Research Questions

1. Do the three domains of Appleton's model of engagement (behavioral, cognitive, and affective) hold as a measure of overall school engagement in 7th and 8th students? It is expected that three domains will be confirmed.
2. What is the role of previous academic achievement and student engagement or disengagement in current academic achievement? It is hypothesized that previous academic achievement and current levels of engagement will predict academic achievement.
3. What is the role of academic self-efficacy in three domains of engagement (behavioral, cognitive, or affective)? It is hypothesized that academic self-efficacy will be related to behavioral engagement, cognitive engagement, and affective engagement.
4. Does student engagement or disengagement mediate the relationship between academic self-efficacy beliefs and academic achievement? It is hypothesized that student engagement will serve as a mediator between academic self-efficacy beliefs and academic achievement.

CHAPTER 2
LITERATURE REVIEW

Student Engagement

In the 1980s, student engagement was thought of as a way to understand and reduce student levels of boredom, isolation, and drop out. Engagement was described as the student's "psychological investment and effort directed toward understanding, learning, and/or mastering the knowledge, skills or crafts that academic work is intended to promote" (Newmann, 1992, p.12). According to Christenson, Reschly and Wylie (2012), school engagement refers to a student's active involvement in a learning activity.

Past research that examines student engagement had focused on how to properly define the construct. Christenson et al. (2012) found that previous studies viewed student engagement as a construct that encompassed behaviors only. However, the current literature base has progressed in finding that student engagement is likely multidimensional, incorporating an array of behaviors, cognitive functions, and affective components that need to be looked at simultaneously, rather than thought of as distinct or discrete factors involved in active engagement in learning (Skinner & Belmont, 2003). With this understanding of the complexity underlying the construct of engagement, Appleton, Christenson and Furlong (2008) point out that that researchers continue to encounter difficulty in their attempts to develop a clear definition of student engagement that can be utilized to improve conceptual understanding and move research efforts forward.

Theoretical Models of Student Engagement

There is continuing debate surrounding the number of components or dimensions involved in student engagement (Appleton, Christenson & Reschly, 2006; Skinner & Belmont, 2003). Researchers can generally agree that the exact number ranges from two to four latent variables

which include behavioral, cognitive, emotional, and academic engagement. Skinner and Belmont (1993) have often focused on the role of affective processes in their work on student engagement. Some researchers have narrowed in on the role of school context and argued that school reform is necessary to modify levels of student engagement (Furrer & Skinner, 2003). Other researchers, like Dunleavy and Milton (2009), have highlighted intrapersonal dynamics and self-systems processes. Pintrich and De Groot (1990) report on the importance of cognitive and meta-cognitive strategies in student engagement, specifically, associating engagement levels with students' use of cognitive, metacognitive, and self-regulatory strategies to self-monitor and influence their learning processes (Pintrich & De Groot, 1990).

An important model of engagement put forth in the late 1980s, the participation-identification model (Finn, 1989), includes features of both contextual and intrapersonal aspects. This model included the behavioral component that underlies participation and involvement in the activities of the classroom as well as the affective component (identification), which referred to students' feelings about being an important member of the school environment and a sense of belonging to school. One of the most influential and frequently used theoretical models of student engagement has been put forth by Appleton, Christenson, and Reschly (2006). Based on the work of Finn (1989), these researchers have theorized that engagement is a multidimensional construct that requires awareness of affective connections within the academic setting, proactive student behavior, and cognitive components of learning.

Cognitive Engagement

Cognitive engagement refers to the 'expenditure' of meaningful or thoughtful energy needed to understand complex idea in order to go above and beyond minimal requires for passing. These particular behaviors can be identified as initiating questions for clarification, persisting

with difficult tasks, doing more than what was assignment (going beyond the minimal expectations), reviewing previously learned materials, and using self-regulated strategies and other cognitive skills to guide learning. Appleton et al. (2008) indicate that higher levels of cognitive engagement facilitate students' learning of complex concepts. Cognitive engagement draws on the concept of investment. This includes thoughtfulness and willingness to put forth the effort needed to understand complicated material and concepts as well as master complex skills. Cognitive engagement is often thought of as closely related to 'academic' engagement.

According to Christenson and Reschly (2012), "a child's or adolescent's ability to become cognitively engaged may be limited by the development of his/her prefrontal cortex and limbic system, which inform higher order reasoning" (p.97). The opposite may also be true, in which cognitive development can be enhanced and strengthen through engagement in tasks. When adolescence is reached, the individual may have better developed self-regulation and they begin to be more purposeful, thoughtful, and focused. In addition, they may be able to hypothesize and think about numerous strategies or outcomes/consequences for these hypotheses at the same time, rather than only being able to narrow in on one at a time. Cognitive engagement is considered by the researchers as an 'internal investment of cognitive energy' and the thought processes required to achieve more than a minimal comprehension of the material (Finn, 1989).

Affective Engagement

Affective engagement is considered the level of emotional response distinguished by feelings of involvement in school as a place and series of activities and tasks that are worth pursuing. Affective engagement offers incentive for students to participate behaviorally and to persist in school events and activities. Students that are thought to be affectively engaged feel included and have a sense of belonging to the school and the school community. They also tend

to feel that school is a significant part of their lives and they can recognize that school gives them the tools for accomplishments outside of school. This is also thought of as valuing and placing importance on school and school involvement. Affective engagement can be thought of as the drive or motivation underlying the investment of energy that is needed for the other components.

The affective component refers to feelings, interests, perceptions and attitudes toward school. Perceptions of belongingness, the perceived benefits and value of learning and education and specific importance of school in helping the students reach a certain goal are central to engagement. In one particular review, the multi-conceptual approach that the authors discuss integrates several motivational concepts such as value and interest attributed to school and its academic outcomes while also considering behavior as a critical marker of student engagement/disengagement (Archambault et al., 2009). This component also refers to positive and negative reactions to teachers, peers, school subjects, and school environment. This construct is thought to create ties to the institution of school and influence the students' willingness to complete work. It also refers to the students' emotional reactions in the classroom, which includes interest level, happiness, and anxiety levels (Appleton et al., 2006).

Behavioral Engagement

Behavioral engagement refers to the idea of increased participation; this component has been defined as entailing positive conduct and absence of disruptive behaviors, involvement in learning (effort, persistence, concentration, attention, initiating questions), and participation in school-related activities Appleton et al. (2008) state that attendance, suspensions, volunteering answers in the classroom, and extra-curricular activity participation are part of behavioral engagement. In addition, both cognitive and emotional engagement are not clearly or overtly exhibited or easily observed by others and are determined by the extent to which the student

values or identifies with the activities and whether they believe the activities to be relevant to their future. Since the construct of school engagement involves both behaviors and attitudes, various researchers discuss behavioral engagement as positive behaviors including involvement in school-related tasks and participation in extracurricular activities (Archambault et al., 2009).

Developmental Considerations of Engagement

In regards to developmental tasks of childhood and adolescence, Christenson and Reschly (2012) argue that the components of student engagement cannot be fully observed without the appropriate developmental foundation via the achievement of developmental tasks. In linking developmental tasks and engagement, the authors recognize the broader context of positive development. For example, a child or teen may be having difficulty engaging behaviorally in school-based tasks if they lack the required motor or social abilities to take part. Socialization skills may be achieved via participation in peer interaction and play, a central developmental activity of early childhood that continues to develop through middle childhood (Christenson & Reschly, 2012). During that time, peer relationships may be founded on common or shared interests and the ability to count on one another. Further, children are presented with having to cooperate within peer groups and participate appropriately in organized activities and team sports, which improves on their socialization and social reciprocity (Furrer & Skinner, 2003). These skills in particular can in turn impact a child's likelihood to be engaged, and a child that has higher levels of engagement may be more likely to successfully meet developmental expectations regarding peer connections and friendship establishing (Christenson & Reschly, 2012).

Similar hypotheses can be made regarding emotional engagement in that deficits in the limbic system or lack of social competencies can restrict a child or adolescents ability to have affective connections to others and/or contexts. The continued growth and development of

behavioral, cognitive, and socioemotional abilities, matched with the collections and accumulations of experiences in various contexts (not just school) create a need for understanding the connection between developmental tasks and student engagement across developmental periods (Christenson & Reschly, 2012).

Contextual Influences of Student Engagement

Social Factors

Researchers like Furrer and Skinner (2003) have highlighted the importance of school context and relatedness or connections with social figures (i.e. teachers and peers) at school when it comes to student engagement. Teachers' conditions of structure that incorporates clear goals and instant feedback, autonomy support, and opportunities for involvement as well as caring, supportive relationships all aid student engagement (Furrer & Skinner, 2003). Involvement has been a concept of focus among researchers who have also termed it as 'warmth', teacher support and positive student-teacher relationships (Connell & Wellborn, 1991; Furrer & Skinner, 2003). In a meta-analytic review of 92 studies, Conner and Pope (2013) report that many studies reviewed found a positive relationship between strong teacher-student relationships and both engagement and achievement, though the link between engagement was higher than achievement (Klem & Connell, 2004; Marks, 2000; Wolley & Bowen, 2007).

Based on other research studies, Conner and Pope (2013) have implicated the organizational structure of school size as significant in terms of student engagement. For example, a higher level of engagement among students is found in smaller schools with smaller class sizes (Akey, 2006; Corno & Mandinach, 1983). One hypothesis for this finding may be that smaller schools improve engagement through the underlying mechanism of teacher-student relationships (Ames, 1992). In smaller classes, teachers may be able to build more positive and closer

relationships with their students. This review implicates many other school and classroom factors related to engagement at school: involvement, which fosters strong student-teacher relationships (Connell & Wellborn, 1991), sense of belonging (Fredricks et al., 2004), relevance of learning material and even instructional practices in the classroom (Pope, 2001).

Student engagement stems partly from Social Control Theory (Archambault et al., 2009; Hirshi, 1969). This theory places emphasis on individual feelings of belonging and attachment to social institutions. The 'bonds' are characterized by commitment, beliefs, attachment, and engagement. Rumberger and Larson (1998) discuss social engagement as an important variable in school outcomes as well. Social engagement behaviors are thought to be a factor of academic adjustment and achievement. Social engagement is defined by behaviors such as attendance, rule following, and activities participation in school activities (Rumberger & Larson, 1998). Rumberger and Larson (1998) state that social engagement, along with academic engagement, is critical for understanding the process underlying premature school dropout.

School, Grade Level Considerations and Individual Differences

Pope (2001) reports that students attending high-performing schools tend to show greater levels of engagement. According to Connell and Wellborn (1991), genuine, meaningful student engagement in high school tends to be rare. The National Research Council (2004) documented that 40-60 percent of high school students are chronically disengaged in that they may be inattentive, exert little effort, do not complete tasks and report that they are bored. Even in schools that offer appropriately challenging curriculum and instruction, disengagement is common (Lambert, 2007). Other school-level aspects that have been supported in the literature as influential to student engagement include "school size and class size, the curricular approach and pedagogical, the school schedule, and student-voice initiatives" (Conner & Pope, 2013, p.1428).

Connor and Pope (2013) indicate that research on engagement has traditionally considered questions about contextual variations as well as individual differences. Wolley and Bowen (2007) and Yazzie-Mintz (2010) found that younger students are more engaged than older students. These same researchers uncovered that females are consistently more engaged in the classroom than males. Research conducted on engagement variables that considered race and ethnicity has been less consistent. Pope's (2001) research on individual differences in levels of student engagement in high school student sample found that students from various racial and ethnic backgrounds exhibited signs of disengagement. Further, Marks (2000) found no racial differences in levels of student engagement.

Academic Self-efficacy

The construct of self-efficacy, specifically, task-specific academic self-efficacy, has been investigated as one of the student characteristics related to academic achievement. Academic self-efficacy is often thought of as a motivational concept that impacts an individual's performance on academic tasks, as well as overall school success (Multon, Brown & Lent, 1991). Much like the construct of student engagement, an abundance of research on self-efficacy has uncovered that the construct is a robust predictor of motivation and performance across time, numerous environments, and various populations (Bandura, 1986, 1997; Multon Brown & Lent, 1991).

It is the motivational component of self-efficacy beliefs that appears to be critically linked to academic performance in college students (Komarraju & Nadler, 2013). Better academic performances are linked with increased confidence and are likely to encourage individuals to take more responsibility for successful task execution. Students that have higher capacity and better performance and receive better evaluations report higher levels of self-efficacy (Schunk, 1984). Variations in levels of self-efficacy are also manifested across grades as students continue to get

feedback on their performance and lower achieving students report less confidence and higher performing students report higher self-confidence and place more emphasis and value on their learning. In sum, it is the complex motivational orientation associated with academic self-efficacy that makes it an important predictor of academic achievement levels (Zimmerman, 2000). Given the complexity of the relationship between motivation and engagement and its relationship to self-efficacy and academic achievement, these components require further examination in younger students.

As is consistent with social-cognitive theories, self-efficacy perceptions can be more clearly understood in terms of their mutual influence with other personal processes and functions such as interest and learning as well as environmental variables and behavior (Schunk, 1984). So even though beliefs of competency and ability are an important motivational process, they do not act in isolation to influence behavior. Similar to student engagement, environmental and situational factors also heavily influence one's self-efficacy beliefs (Bandura, 1997).

Another central trait of self-efficacy beliefs is that they can range in specificity, varying from general academic areas to highly "microanalytic level of analysis" (Bandura, 1997). For example, self-efficacy beliefs may relate to perceived capability to learn math or achieve specific grades in a class; however, they are most effectively conceptualized as perceptions of capacity to perform specific tasks in the realm of a particular context (Cleary, 2009). According to Bandura (1997), self-efficacy influences choice of actives, effort, expenditure, persistence and achievement.

According to Kamarraju and Nadler (2013), self-efficacy is most likely improved when self-regulated students manage their internal and external environment actively, by following a scheduled routine for study and review, illustrating their intentions to achieve, identifying the

level of effort required, and understanding whom to ask for support or help with the task. The importance of self-efficacy increases when we consider students who perform poorly, not because they lack the knowledge of meaningful strategies, but because they do not have the confidence to apply these strategies in starting and executing tasks. It has been documented by Zimmerman (2000) that teaching students to develop self-regulated learning mechanisms appears to be an effective way for improving self-efficacy, motivation, and performance.

Self-efficacy and Academic Outcome Research

According to social cognitive theory, self-efficacy beliefs function within a broader construct of self-theories that underlie motivation and performance (Bandura, 1997). Dweck (1999) and Kamarruju and Nadler (2013) argue that children's implicit beliefs regarding their intelligence may influence feelings of self-efficacy, the goals they follow, and their level of academic achievement.

Based on the development of cognitive skills in children within a model of motivated learning, Schunk (1984) posited that as a result of previous educational experiences as well as aptitudes, children develop efficacy and outcome expectations for various cognitive tasks. Overall, research that has primarily focused on elementary age children (Zimmerman, 2000; Robins & Pals, 2002) has continued to hypothesize links among children's self-efficacy beliefs, motivation, and performance. More specifically, a continuous feedback loop exists in which efficacy and outcome expectations influence students' motivation (effort and persistence), which in turn helps to determine performance outcomes; performance feedback subsequently affects efficacy and outcome expectancies.

Multon, Brown, and Lent (1991) conducted a meta-analysis on the relation of self-efficacy beliefs with academic outcomes. Based on existing research at that time that self-efficacy beliefs

are related to and predictive of success and persistence in certain academic majors for college students, the authors tested the hypothesis that self-efficacy beliefs are positively related to academic performance and academic persistence, and explored potential moderators. Their investigation found support for the hypothesized relationships of self-efficacy beliefs to academic performance and persistence. Specifically, the authors uncovered that the relation of self-efficacy to performance varied by students' status of achievement, with stronger relations found among the lower achieving students. This supports that self-efficacy effects may be more facilitative for low-achieving students. Age and situation/domain-specific nature of the task were also found to be moderators, suggesting that researchers pay attention to factors such as difficulty of the task, stage of learning, and the individuals' performance skills when looking at self-efficacy in relation to persistence and achievement (Multon, Brown & Lent, 1991).

Reeve and Lee (2014) discuss and review the various benefits that self-efficacy provides students. These include 'optimistic and resilient' beliefs and expectations that energize and facilitate positive educational outcomes such as learning, engagement, and skillful performance. However, Reeve and Lee (2014) note that the main pathway to changes in self-efficacy beliefs is via direct mastery experiences. Engagement in a task only, is unlikely to increase task-specific self-efficacy as task engagement is as likely to yield inefficacy signals as it is to yield efficacy signals, especially during new and unfamiliar learning activities. It is more likely that a meaningful increase in a students' engagement is what is necessary to yield new efficacy signals that are capable of growing a confident and resilient sense of "I can do this." (Bandura, 1997).

Reeve and Lee (2014) conducted their own research study on classroom engagement and academic motivation. The study was completed with a sample of 313 high school students using a 3-wave longitudinal research design. Achievement data and measures of students' subject-

specific motivation and engagement were collected. Motivation indicators included self-efficacy, mastery goals, and psychological need-satisfaction. The results ultimately supported that engagement was predictive of corresponding changes in motivation, which included the construct of self-efficacy and mastery goals. Students' baseline (initial) level of engagement in the classroom predicted changes in their early semester classroom engagement which further predicted changes in their end of semester motivations (self-efficacy included) (Reeve & Lee, 2014).

Research reviewed by Diseth (2009) has shown that expectancy of future card markings (grades) is based on both previous achievements and related to actual achievement outcomes. With respect to goal orientation, other researchers have put forth that self-efficacy is an antecedent of achievement goals which affect achievement behavior indirectly, through achievement goal adoption (Diseth, 2009). With this groundwork, Diseth (2009) examined the relation between perceived self-efficacy and achievement in a sample of undergraduate psychology students. The study found that self-efficacy appraisals make a positive contribution to academic achievements. Diseth's (2009) research study supported that prior achievement (HS grade point average) predicted both self-efficacy and later achievement measures (exam grades), and the mediation analysis completed within the study found that self-efficacy mediated the effect of HS grade point average on later student achievement. Also uncovered was the meditational role of goal orientations in the relationships between self-efficacy and academic achievement. What is relevant in Diseth's (2009) study is the highlight of the importance and predictive power of previous mastery experiences and that prior academic achievements are considered to be a vital source of expectancy beliefs.

Sources of Academic Self-Efficacy

Research reviewed by Usher and Pajares (2005) on academic self-efficacy and beliefs students hold about their capabilities and learning abilities shows support that these beliefs are critical and often powerfully influential on academic performance. Further, Bandura (1997) wrote that self-efficacy beliefs of learners are likely linked to achievement in subject areas such as reading, mathematics, and writing. Researchers like Usher and Pajares (2005) that have conducted research using Bandura's (1997) theoretical underpinnings of self-efficacy have found evidence that students who believe they can be successful academically are likely to display greater interest in their academic tasks, set more challenging goals, put forth more effort, and show resilience in the face of difficulties. Usher and Pajares (2005) discuss the importance of the sources of these beliefs that learners hold. Sources of self-efficacy were first written about by Bandura (1986; 1997) and are documented by Reeve and Lee (2014) and Fong and Krause (2013) among others. They include factors such as personal behavior history, vicarious experiences, verbal persuasion, and physiological activity. Modeling by the teacher, instruction, and continuous feedback are also reliable situational supports that work to strengthen students' self-efficacy beliefs (Fong & Krause, 2013).

Usher and Pajares (2005) examined the impact of Bandura's (1997) hypothesized sources of self-efficacy on the academic and self-regulatory beliefs of students entering middle school or junior high, with a special focus on sources of academic self-efficacy beliefs in middle school age children. They found that perceived mastery experiences (as one of Bandura's proposed sources of self-efficacy beliefs) accounted for the greatest proportion of the variance. An important gender difference was revealed that girls reported that social persuasions 'powerfully informed' their academic and self-regulatory self-efficacy. The results also found that students who were below

grade level in reading reported fewer mastery experiences and lower academic self-efficacy than did students who were above grade level in reading (Usher & Pajares, 2005).

Academic Self-efficacy and Student Engagement

Walker, Greene, and Mansell (2006) conducted a study that was designed to explore several malleable aspects of student motivation (including self-efficacy) that may help in understanding why students engage (or do not engage) in academic work. Specially, the researchers examined identification with academics, intrinsic and extrinsic motivation, and self-efficacy and how those constructs may predict student engagement (specifically, cognitive engagement). The focus on cognitive engagement is specific to the amount and type of strategies that learners use. Overall, the research study found that intrinsic motivation, self-efficacy and identification with academics all contributed unique variance to predictive meaningful cognitive engagement. Walker et al. (2006) state that their study contributes to the volume of research findings regarding the power of beliefs about one's ability to be successful at completing academic tasks. The theory of self-efficacy by Bandura (1986) appears to hold when achievement and positive achievement-related outcomes are predicted.

Research conducted by Schunk (1984) and Goldfried and Robins (1982) also examined self-efficacy beliefs and student engagement. Both research studies had shown that students who feel confident in their academic abilities are more likely to engage in difficult tasks that lead to higher levels of competence. Two research studies completed by Ouweneel et al. (2013) looked specifically at university students' self-efficacy, student engagement, and academic outcomes (GPA). The first study found that changes in self-efficacy aligned with similar changes in study engagement, but not with changes in study performance. They concluded that self-efficacy in an

academic setting appears to be related to subjective measures like student engagement, but not to objective measures like GPA.

Ouweneel et al. (2013) provide a theoretical explanation that self-efficacy is related to study engagement first, after which it will have an influence on performance. In the second study of this research, an experimental design was used in which some external factors were controlled for. Specifically, levels of self-efficacy were manipulated. Participants were assigned to one of three self-efficacy conditions; positive feedback group, negative feedback group, or no feedback (control) group. The results of study two revealed that manipulated changes in self-efficacy had a significant impact on changes in scores on task engagement and task performance. Specifically, students who received positive feedback regarding their performance with the aim of increasing levels of self-efficacy also showed increases in actual task performance. In sum, the authors report that their findings show students with increased self-efficacy also increased in engagement and performance over time (Ouweneel et al., 2013).

Self-efficacy is thought to be positively related to engagement, mainly because it results in more willingness to put forth effort and expend energy on task completion or assignments (Walker, Greene, & Mansell, 2006). Ouweneel et al. (2013) indicate that efficacious students tend to regulate their motivation by setting goals for themselves, and are then more likely to have higher levels of engagement. Further, goal setting and planning may add to engagement through goal achievements. Other research by Breso, Schaufeli and Salanova (2007), using a correlational design, has demonstrated the positive relationship between self-efficacy and engagement as well. Interestingly, manipulated changes in self-efficacy were linked to parallel changes among levels of dedication, as was shown in an intervention study with students (Breso et al., 2007).

According to Walker (2003), changes in motivation preceded corresponding changes in engagement. Situationally generated interest and increased self-efficacy are considered to be consistent precursors to subsequent and later developments and gains in students' effort (behavioral engagement), enthusiasm (affective engagement), and strategic thinking (cognitive engagement) (Schraw & Lehman, 2011). The research by Reeve and Lee (2014) reviewed above that focused on longitudinal data (classroom-based) suggests that this motivation-to-engagement relation may be reciprocal, with respect to the effect that changes in engagement have on changes in motivation may be just as strong and reliable as is the well-studied motivation-to-engagement effect.

Upon reviewing this literature, there is a need to explore the complexity of the relationship between academic self-efficacy and academic achievement, and whether engagement is a meditational mechanism of this relationship. Given that engagement is often viewed as a process throughout schooling, it will be interesting to investigate this construct among middle school age students. The ways in which the three domains of student engagement are linked to the relationship between self-efficacy and academic achievement of middle school age students demands further exploration.

CHAPTER 3

METHODS

Participants

The pool of participants in this study included students attending a middle school building in a rural school district in Michigan. Census Bureau data suggests a median household income in this district of $60,972 with 86.5 percent of residents having attained an educational level of high school graduate or higher (United States Census Bureau, 2010). The participants were drawn from the middle school building in the district that includes students enrolled in grades 7 and 8 only. The school district reported a fall 2013 enrollment of approximately 2,998 students, with 38.2% eligible for free or reduced lunch. According to the 2013 data from the Michigan Department of Education (Center for Educational Performance and Information, 2013), the district has the following; approximately 95.6% White, 0.4% African American, 2% Hispanic, 0.4% Asian, 1.4% multi-race and 0.1% American Indian.

A total of 390 students' parents were contacted to participate in this study. Eighteen students' parents declined their child participating in the study. Two students declined to participate the day of data collection. Participants included 354 students enrolled in 7th grade (*n*=174) or 8th grade (*n*=176). In regards to ethnicity, participants reported as 83.6% White/Caucasian, 2.8% Black or African American, 6.5% Hispanic, 4% Asian or Pacific Islander, and 2.3% American Indian or Alaskan Native. Three students declined to report their ethnicity. Among the 354 participants, 190 identified as male and 160 identified as female. Four students declined to report their gender. The mean age of participants was 13.23. Demographic information is located in Table 1.

Table 1.

Demographic Characteristics

	Frequency	Percent
Gender		
Male	190	53.3%
Female	160	45.2%
Missing	4	1.1%
Grades		
7	174	49.7%
8	176	49.7%
Missing	4	1.1%
Ethnicity		
White/Caucasian	286	83.6%
Black or African American	10	2.8%
Hispanic	23	6.5%
Asian or Pacific Islander	14	4.0%
American Indian or Alaskan Native	8	2.3%
Missing	3	0.8%

Measures

The measures used in the current study (See Appendix A) included demographic items, the *Engagement vs. Disaffection with Learning* Measure (Skinner et al., 2009), the Student Engagement Instrument (SEI; Appleton & Christenson, 2004), and the Academic Self-efficacy scale from the Patterns of Adaptive Learning Scales (PALS, Midgley et al., 2000). Additionally, previous and current student academic achievement data was obtained from the district database (North West Education Association MAPs and Curriculum-Based Measurement reading comprehension databases), as well as data from student report cards.

Demographic Items. Questions about students' demographic information were included in this study. Students answered questions that gave the researcher information about their age,

ethnicity, gender, and grade. The students responded using a forced choice method as appropriate for each item.

Student Engagement. The Engagement vs. Disaffection with Learning is designed to measure levels of academic engagement in the classroom setting (Skinner, Kindermann & Furrer 2009). This measure was utilized in this study in order to assess students' *Behavioral Engagement, Behavioral Disaffection, Emotional Engagement* and *Emotional Disaffection*, for a total of 20 items (five items per scale) to determine overall levels of student academic engagement. Items supporting the *behavioral engagement* component measured aspects of effort, attention and persistence in learning activities (i.e. "I try hard to do well in school"; "When I'm in class, I listen very carefully"), while items for *behavioral disaffection* examined lack of effort and withdrawal from learning activities (i.e. "I don't try very hard in school"; "When I'm in class, I think about other things"). The items within the component of *emotional engagement* measured levels of motivated involvement in learning activities (i.e. "Class is fun"; "When we work on something in class, I get involved"), while *emotional disaffection* items were used to assess student emotions indicating motivated withdrawal or alienation during learning activities (i.e. "When I'm in class, I feel worried"; "Class is not all that fun for me") (Skinner et al., 2009). Students responded to items using a Likert-type scale, ranging from 1=Not At All True to 4=Very True.

Behavioral engagement was assessed using 5 items that tapped students' effort, attention, and persistence while initiating and participating in learning activities. Behavioral disaffection was measured using 5 items that tap into students' lack of effort and withdrawal from learning activities. Emotional engagement was measured using 6 items that tapped emotions indicating students' motivated participation during learning activities. Emotional disaffection was measured

using 10 items that tapped emotions indicating students' motivated withdrawal or alienation during learning activities. Items were averaged according to the specific emotions (boredom, anxiety, and frustration) and then combined for a summary score.

Using this measure, Skinner et al. (2009) has assessed school engagement in grades 3-6 in both the fall and spring of a complete school year. The internal consistency reliabilities for the student report measures were found to be moderate to high at *r*= .70 or above (Behavioral Engagement α= .77, Emotional Engagement α= .76, Behavioral Disaffection α= .57, Emotional Disaffection α= .66). Internal consistency for the overall Engagement vs. Disaffection scale was found to be α= .86. Test-retest reliability between the fall and spring of *r*= .62 indicated a moderately high level of stability. When compared to other individual and environmental sources of motivation, Skinner et al. (2009) indicated that engagement was related to learning goals (*r*= .66), high levels of coercion among teachers (*r*=-.70) and mastery reactions (*r*= .60). The internal consistency reliability analyses for this study were conducted for the Engagement vs. Disaffection for Learning Scale (Behavioral and Emotional engagement; Behavioral and Emotional Disaffection). In the current sample, the following Cronbach's alphas were found: α = .48 for Behavioral Engagement, α = .82 for Emotional Engagment, α = .77 for Behvioral Disaffection, and α = .42 for Emotional Disaffection.

In order to measure cognitive engagement, the *Student Engagement Instrument* (SEI) was utilized. The Student Engagment Instrument (SEI; Appleton & Christenson, 2004) is an instrument that is designed to measure subtypes of both cognitive and affective engagement. Items measuring cognitive engagement include aspects of valuing learning and the process of learning: "Most of what is important to know you learn in school," "When I do well in school its because I work hard," "After finishing my schoolwork I check it over to see if its correct."

The SEI was developed from a review of the relevant literature. Scale construction entailed designing a detailed scale blueprint that portrayed the broad conceputalizations of cognitive and psychological engagement discussed in the literature base (Appleton et al., 2006). The SEI was initially piloted with 31 ethnically diverse eighth graders that were randomly selected from four homerooms in a schoool from a different district. The full version of the SEI contains 30 items that are intended to measure student levels of cognitive engagment (Appleton et al., 2006). The results from the exploratory and confirmatory factor analyses in the Appleton et al. (2006) validation study provide supports for both the convergent and discriminant valdity. The six factor model showed an adequate fit, and an analysis of the sixth factor yielded a value of .72. Further analyses of items comprising each SEI factor revealed little cross-loading, which suggests that each factor assesses a unique variance attributed to a cognitive or psychological engagement subtype.

The psychometric properties of the oringial SEI have been examined with middle and high school students. Studies have replicated the factor structure for all students in grades 6-12 and among those at risk for high school dropout (Lovelace, Reschly, Appleton, & Lutz., 2012; Betts, Appleton, Reschly, Christenson, & Huebner, 2010; Reschly et al., 2012). Scores from measures have been found to be generally correlated with variables such as grades, standardized testing scores, and behavioral referrals, as expected. Carter et al. (2012) examined the psychometric properties of an elementary version of the SEI (SEI-E, for grades 3-6). Their results were congruent with previous findings in that SEI correleated as expected with other indicators of engagment (attendence, behavior referrals) and demographic variables. According to Carter et al. (2012), this provides provisional confidence in the concurrent validity of the factors hypothesized to underlie elementary school engagment. In the current sample, the following Cronbach's alphas

were found : α = .91 for the SEI scale, α = .89 for Affective Engagement, and α = .81 for Cognitive Engagment.

Self-efficacy. In order to assess the extent of academic self-efficacy, the Academic Efficacy scale, which is included in the Patterns of Adaptive Learning Scales (PALS, Midgley et al., 2000), was utilized. The PALS was initially developed to measure students' academic perceptions, beliefs, and strategies and incorporates the measure of academic efficacy as one of its scales, and its scores have been found to predict outcomes such as classroom engagement and grades. The Academic Efficacy scale includes five items: "I am certain I can master the skills taught to me in this class this year," "I am certain I can figure out how to do the most difficult work in this class," "I can do almost all of the work in this class if I don't give up," "Even if the work is hard in this class, I can learn it;" and "I can do even the hardest work in this class if I try." The Academic Efficacy scale uses a five-point Likert scale (1= not true at all to 5= strongly agree).

The PALS was developed within a framework of approach and avoidance goals. Midgley et al. (1998*)* stipulated that a performance goal orientation can be conceptualized in terms of both approach and avoidance components. Ryan, Green and Midgley (1998) found acceptable internal consistency: α = .73 for 6th grade and α = .81 for 8th grade. In a sample of 6th and 8th grade students, Skaalvik (1997) found that the correlation between the two dimensions of "ego-goals" (self-defeating and self-enhancing) was .20.

Ross, Blackburn and Forbes (2005) conducted a reliability generalization study on the PALS achievement and goal orientation scales in order to assess the prediction of the different orientation scales and the adaptation of items to meet research needs. According to Ross et al. (2005), reliability generalization is a meta-analytic technique used to measure reliability coefficient variability across studies. Their study sample consisted of 30 studies (narrowed down

from 41) that utilized all three scales of the PALS. The majority of studies (n=24) were completed using middle school-age students (6^{th}-8^{th} grade). Descriptive statistics indicated that the reliability coefficients for the PALS scale were consistent across studies (M=.77, SD=.07). Analysis of the separate scales showed that the average reliability coefficients were .79 (SD=.05) for the task-goal orientation scale, .79 (SD.07) for the performance approach scale, and .81 (SD=.04) for the performance-avoidance scale (Ross, Blackburn, & Forbes, 2005). The internal consistency analysis for the Academic Efficacy Scale yielded a Cronbach's alpha value of $\alpha = .85$ in this study.

Curricular Specific Self-Efficacy Questions. In order to investigate subject specific self-efficacy and engagement, questions pertaining to English Language Arts and Math were added at the end of each survey as 'pilot-type' questions. The questions were created based on each scale, and wording was changed to reflect the curricular area of ELA or Math only, with all other language remaining the same (i.e. "When we work on something in *ELA* class, I feel good"; "I pay attention in *Math* class").

A summary of internal consistencies for all study scales is reported in Table 2.

Table 2.

Cronbach's Internal Consistency for Study Scales

	Number of Items	Cronbach's α
Academic Efficacy Scale	5	.85
Student Engagement Instrument	35	.91
Affective Engagement	20	.89
Cognitive Engagement	15	.81
Engagement vs. Disaffection for Learning	20	.85

Behavioral Engagement	5	.77
Emotional Engagement	5	.82
Behavioral Disaffection	5	.77
Emotional Disaffection	5	.42

Student grades. Student grades were obtained in English language arts (ELA) and mathematics from the 2013-2014 end of term. These grades were utilized as a measure of previous achievement. Further, student ELA and math grades were collected from June 2015 (end of term grade) to serve as a measure of current achievement. Information on student grades was retrieved from the individual student confidential files (CA-60), which were located in the respective school office space within the building. Letter grades were calculated as point values, where "A" was considered a 4.0, "B" was a 3.0, "C" was a 2.0, "D" was a 1.0, and "E" was considered a 0.0.

NWEA Assessment Data. A measure of reading (language usage and vocabulary) and math achievement was also obtained from the NWEA Measure of Academic Progress (MAP) assessment. The NWEA MAP assessment is a computer-based assessment that is administered in the fall, winter, and spring of each school year. According to publishers, the MAP assessment gives detailed information about where each student is on their unique learning path. The assessment is considered adaptive or adapted in that as students answer questions correctly, the computer-based administration continues to present questions at increasing levels of difficulty. When the student answers a question incorrectly, questions are presented at lower levels of difficulty. This continues until student performance indicators (RIT scores) are obtained. Student performance on the NWEA MAP measures from Spring 2014 were collected and utilized as the reading and math measures of previous achievement. RIT Scores on the January 2015 (winter)

NWEA MAP testing in reading and math were obtained and used as measures of current academic achievement.

Reliability coefficients for the MAP assessment were documented by the Northwest Evaluation Association (2009). Data shown in the norms study highlights that the test is adaptive, which makes traditional measures of reliability (i.e. test-retest) unsuitable. Despite this, the researchers indicate a correlation coefficient of approximately r = .82 for repeated assessments using item pools of similar structure (Northwest Evaluation Association, 2009). Correlations of repeated test administrations using considerably different item pools were virtually identical (approximately r = .83). Reports of the NWEA MAP assessment's validity highlight that it is aligned with state curriculum content standards and assessments. The most recent available and reported correlation coefficients between MAP assessment results and those of other states' accountability tests ranged from r = .57 to r = .83 (Northwest Evaluation Association, 2009).

Curriculum-Based Measure of Reading (CORE Reading MAZE). A measure of reading comprehension was obtained using a curriculum-based measure (CBM) called the CORE MAZE. Maze passages are timed measures that are designed to yield a measure of the students' ability to comprehend the text they read. They are better predictors of future reading performance than CBM oral reading fluency probes for students in grades 4 and higher (Hosp, Hosp & Howell, 2007). Students read Maze passages silently during assessment, so Maze can be administered individually, to a small group, or whole class at one time. Students that participated in this study were administered the CORE MAZE in the fall and spring of each school year. CORE MAZE scores obtained for this study were the result of individually administered probes. Passages used for Maze from the CORE reading assessments use grade level text. The first sentence of the Maze passage is left intact. In the text following the first sentence, every seventh word from the passage

is selected to be incorporated into a response item that consists of the original word plus two foils (words that would not make sense if substituted in the passage in place of the original, correct word). These three choices are randomly arranged and inserted back into the text.

During a timed Maze administration, the reader silently reads the passage; whenever he or she encounters a response item, the reader circles the word from the three choices that best restores the meaning of that segment of the passage. The reader then continues until the three minute time limit expires. Scores are obtained by counting the number of correct choices. In interpretation of the student's performance, grade-level benchmarks for correct words chosen are compared to the student's number of correct words chosen. Incorrect number of words chosen is also used in interpreting the child's understanding of the text, but not subtracted from the number correct in the comparison to a grade-level benchmark (Fuchs, Fuchs, Hamlett & Ferguson, 1992).

Data Collection Procedures

Information about all procedures implemented and measures used in this study was submitted to and approved by the Human Investigations Committee at Wayne State University before data collection (Appendix B). A letter of support was also obtained from the school district from which data was collected (Appendix C).

After the approval from the HIC was received, the parents of each student received an information sheet in the mail two weeks before the data collection began. This sheet outlined information regarding the purpose of the study, procedure, risks and benefits, as well information about confidentiality. Further, parents were provided with the contact information of the principal investigator in the case that they had questions or concerns about the study. A tear-off sheet was included to allow parents the option to refuse consent of their child's participation in this study (Appendix D).

In order to encourage student comfort and decrease the likelihood of potential interruptions during the recruitment and survey administration process, the computer lab served as the sole location for data collection for this study. Each designated teacher (of the hour of day students will be taking the survey) was informed of the procedures of the study by the researcher prior to data collection. The building principal's input regarding scheduling and time of day was included as part of the process to limit the interruptions of students' core academic instructional time. During the data collection process, the principal investigator explained the nature of the study and procedures to the students. A script was used in order to explain the purpose and directions of the study to students in an age appropriate way (see Appendix E).

The researcher requested and confirmed access and use of the computer lab in order to conduct the student surveys using Qualtrics (Qualtrics Labs, Inc., 2012), an online survey software, which was set up well in advance. The researcher created a Qualtrics account through the Wayne State University Qualtrics access online. The survey was transferred onto Qualtrics by the researcher in advance with the participants' age group in mind and included large print, shading of every other question, prompts to move on to the next page, and a message to signal the end of the survey. A generic password (the name of the school) was created so the students can gain access to the survey. After data collection was completed for the day, the survey was locked and was not be able to be accessed by anyone but the researcher until the next data collection date.

After the students completed the designated questionnaires online, they had the choice to work on a quiet computer-based activity (puzzle) as other students finished. Students who were not participating in the study due to parent or student refusal were asked to engage in a quiet, independent activity (work on a class assignment or read from a book) while the rest of the

students were in the media center completing the questionnaire on the computer. Students not participating were discretely asked to complete another activity as to not feel uncomfortable as other students completed the survey.

Students who choose to participate in the study were asked to provide assent to the principal researcher before data collection began. They were reminded that their participation in the study was entirely voluntary and they were allowed to skip any items they did not want to answer or terminate their participation in the research study at any time during the data collection. Students were told that their participation would not impact their academic performance, grades, relationship with the district staff, or interactions with this researcher in any way. Further, the students were encouraged to answer the survey items thoughtfully and honestly. Each student had the opportunity to win a small reward at the end of the research. Each student that participated was given a raffle ticket with a number on it. A drawing was held for a ten dollar gift card to a local fast food restaurant. Students were asked to fill out the demographic information on Qualtrics before moving to the items on the questionnaires. During data collection, groups of approximately 20 students entered the computer lab in 40-minute blocks with 10 minutes of transition time in between. The questionnaires took approximately 20-25 minutes to answer and were completed by all students during that time frame allotted.

In order to guarantee the participants confidentiality, all questionnaires were coded using the Qualtrics software system. The students' participation numbers were created by using sequential numbering. The codes allowed for the principal investigator to pair student responses on their survey completed on Qualtrics with their district achievement data. After the participant numbers were assigned, the tear-off sheets were stored in a locked drawer of the principal investigator's office. The electronic list that associated the students' names with their participant

numbers was kept on a locked, password-protected flash drive, which was stored in a locked file cabinet in the principal investigator's personal office. Student data that was not already entered into Qualtrics was collected and entered into a computer database.

Data Analysis Procedures

Table 3 lists the research questions and corresponding statistical analysis methods.

Table 3.

Research Questions, Hypotheses, and Statistical Analyses

Research Questions and Hypotheses	Variables	Statistical Analysis
Research Question 1: Do the three domains of Appleton's model of engagement (behavioral, cognitive, and affective) hold as a measure of overall school engagement in 7th and 8th students?		
H_1: Three domains will be confirmed.	Criterion Variable: Student Engagement Predictor Variables: Behavioral Engagement Cognitive Engagement Affective Engagement	Confirmatory Factor Analysis
Research Question 2: What is the role of previous academic achievement and student engagement in academic achievement?		
H_2: Previous academic achievement and current levels of engagement and will predict academic achievement.	Criterion Variable: Student Engagement Disaffection (Disengagement) Academic Achievement Predictor Variables: Previous Achievement	Regression
Research Question 3: What is the role of academic self-efficacy in three domains of engagement (behavioral, cognitive, or affective)?		
H_3: Academic self-efficacy will be related to behavioral engagement, cognitive engagement, and affective engagement.	Criterion Variables: Behavioral Engagement Cognitive Engagement Affective Engagement Academic Self-efficacy	Correlation

Research Question 4: Does student engagement or disengagement mediate the relationship between academic self-efficacy beliefs and academic achievement?		
H_4: Student engagement will serve as a mediator between academic self-efficacy beliefs (reading competency measure) and academic achievement	Criterion Variables: Academic Achievement Predictor Variable: Academic Self-efficacy Mediating Variable: Student Engagement Disaffection (Disengagement)	SEM

CHAPTER 4

RESULTS

This chapter reports the results of the statistical analyses that were conducted to examine the research questions of this study. The purpose of this study was to explore the impact of academic self-efficacy on achievement in school, as mediated by levels of student engagement. In regards to data analysis, inferential statistics were used to test the research questions. A criterion alpha level of .05 was used to determine statistical significance.

Preliminary Analyses

Participants' English Language Arts (ELA) and Math grades from the 2013-2014 school year (n = 350) were collected as a measure of their previous achievement. Scores on the district-wide reading and math assessments (NWEA) as well as a Curriculum-Based Measure of reading administered at the building (CORE Reading Comprehension MAZE) were also used. Table 4 provides descriptive information. The students' current achievement was also obtained using their end of the term grade for 2014-15 school year, as well as scores on the district-wide reading and math assessments given in the Winter of 2015 (NWEA) and a Curriculum-Based Measure of reading comprehension administered in the Spring of 2015 (CORE MAZE). Table 4 outlines descriptive information for the current achievement data. Descriptive statistics for other study variables including academic-self-efficacy and student engagement are also included in Table 4. Pearson correlations for the study variables are provided in Table 5.

Table 4.

Descriptive Statistics for Study Variables

	N	Minimum	Maximum	Mean	SD
NWEA Read Pr.	350	163	244	215.74	13.67
NWEA Math Pr.	350	175	252	223.24	14.50
CORE MAZE Pr.	350	4	43	24.37	8.92
ELA Grade Pr.	350	0	4	2.97	1.02
Math Gr Pr.	350	0	4	2.82	1.18
NWEA Read Curr.	350	172	254	219.39	12.73
NWEA Math Curr.	350	154	265	226.59	16.20
CORE MAZE Curr.	350	6	44	25.76	9.25
ELA Grade Curr.	350	0	4	3.05	1.03
Math Grade Curr.	350	0	4	2.97	1.16
Academic SE	350	5	20	15.65	3.12
SEI	330	43	131	104	13.58
AE	341	26	75	56.15	8.69
CE	344	16	55	45.09	5.76
Eng vs. Diss	344	35	75	48.42	5.02
AE	350	5	20	12.85	3.14
BE	350	6	20	14.73	2.77
AD	348	7	19	10.99	2.18
BD	346	5	19	9.81	3.07

Notes. Pr.=previous; Curr.= current; SE= self-efficacy; SEI= student engagement instrument; AE= affective engagement; CE=cognitive engagement; Engage vs.Diss=engagement vs. disaffection with learning scale; BE= behavioral engagement; AD= affective disengagement; BD= behavioral disengagement.

Table 5.

Pearson Correlations – Study Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.NRP												
2.NMP	.68**											
3.NRC	.79**	.68**										
4.NMC	.66**	.68**	.70**									
5.COR.P	.62**	.57**	.70**	.55**								
6.COR.C	.62**	.54**	.70**	.52**	.87**							
7.ELAPr	.61**	.58**	.63**	.60**	.51**	.51**		.				
8.MathPr	.57**	.65**	.60**	.70**	.51**	.47**	.77**					
9.ELACr.	.59**	.59**	.63**	.61**	.55**	.51**	.73**	.72**				
10.MathC	.58**	.63**	.60**	.70**	.51**	.48**	.68**	.76**	.70**			
11.ASE	.30**	.37**	.32**	.36**	.29**	.27**	.24**	.29**	.33**	.27**		
12.SEI	.01	.06	.00	.08	.04	.02	.03	.05	.08	.03	.32*	

Notes. NRP=NWEA Reading previous; NMP=NWEA Math previous; NRC= NWEA Reading current; NMC=NWEA Math current; COR.P=CORE MAZE previous; COR.C= CORE MAZE current; ELAPr= English Language Arts grade previous (2013-

14); MathPr= Math grad previous (2013-14); ELACr.= English Language Arts grade current (2014-15); MathC= Math grade current (2014-15); ASE= Academic Self-efficacy scale; SEI= Student Engagement Instrument.
*p < .05, **p<.05

Research Questions

Research Question 1: Do the three domains of Appleton's model of engagement (behavioral, cognitive, and affective) hold as a measure of overall school engagement in 7th and 8th students? Hypothesis 1: The three domains will be confirmed.

Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were conducted in order to explore the above research question. The correlation matrix was subjected to a principal components analysis. The Bartlett's test of sphericity (Bartlett, 1950), which is a test of the hypothesis that the correlation matrix is an identity matrix, was found to be significant (χ^2= 7422.01, df. = 1176, p<.01).The KMO measure was .89. This indicates that the correlations in the data set were appropriate for factor analysis. When Kaiser-Guttman's "eigenvalues greater than one" criterion (Kaiser, 1960) was applied, a 7-factor structure emerged. The solutions were rotated using oblique rotation (Bryant & Yarnold, 1995). The 7-factor solution accounted for 43.25% of the total variance and provided the best interpretable factor structure. The items with factor loadings lower than .40 or cross-loadings on other factors with over .40 factor loadings were removed in the sorted pattern matrix. A factor with less than a .40 ordinal coefficient α was eliminated. Using a lower cut-off (.4-.6 coefficient) for sample populations on which the items have not been previously validated has been supported (Gorsuch, 1983). As a result, a total of 8 items were omitted and the 7-factor structure with 32 items was identified through the EFA. Following this process, the factors and their items were reviewed. The contents of grouped items within each factor were carefully examined for content consistence. The 32 items in seven factors of the EFA is presented in Table 6.

Table 6.

Exploratory factor analysis

Name of factor	Item	F1	F2	F3	F4	F5	F6	F7
1.AE-TSR	Q3SEI My teachers are there for me when I need them.	.65						
	Q5 SEI Adults at school listen to the students	.67						
	Q10SEI The school rules are fair	.47						
	Q13SEI Teachers at my school are interested in me as a person	.60						
	Q16SEI My teachers are open and honest with me	.61						
	Q21SEI Adults at my school treat students fairly	.73						
	Q22SEI I enjoy talking to teachers here	.61						
2. BE	Q6EVD In class, I work as hard as I can		.48					
	Q7 EVD When I'm in class, I participate in class discussions		.44					
	Q8 EVD I pay attention in class		.48					
	Q9 EVD When I'm in class, I listen very carefully		.52					
	Q10EVD When we work on something in class, I get involved		.43					
3. CE-FG	Q8 SEI My education will create many future opportunities for me.			.47				
	Q11 SEI Going to school after high school is important			.62				
	Q17 SEI I plan to continue my education following high school			.68				
	Q19 SEI School is important for achievement my future goals			.72				
4. AE-PSL	Q4 SEI Other students here like me the way I am				.72			
	Q6 SEI Other students at school care about me				.75			
	Q7 SEI Students at my school are there for me				.75			
	Q14 SEI Students here respect what I have to say				.65			
	Q23 SEI I enjoy talking to the students here				.62			
	Q24 SEI I have some friends at school				.50			
5. BD	Q15EVD In class, I do just enough to get by					.43		
	Q18 EVD When I'm in class, I think of other things					.60		
	Q19 EVD When I'm in class, I just act like I'm working					.49		
	Q20 EVD When I'm in class, my mind wanders					.69		
6. AE-FSL	Q1SEI My family/guardian(s) are there for me when I need them						.54	
	Q12 SEI When something good happens at school, My family/guardian(s) want to know about it						.50	
	Q20 SEI When I have problems at school, my family/guardian(s) are willing to help me						.58	
	Q29 SEI When I'm in class, my mind wanders						.46	
7. CE-ERL	Q18 SEI I'll learn, but only if the teacher gives me a reward							.70
	Q32 SEI I'll learn, but only if my family gives me a reward							.70
	Sum of Squared Loadings	13.07	3.11	2.41	1.97	1.38	1.21	1.01
	% of Variance	24.21	5.76	4.46	3.66	2.56	2.24	2.03
	Cumulative %	24.2	29.9	34.4	38.1	40.6	42.9	44.9

Notes. SEI= Student Engagement Instrument, EVD=Engagement versus Disaffection with Learning Scale
AE-TSR=Affective engagement, teacher-student relationships; BE=Behavioral engagement; CE-FG=Cognitive engagement, future goals for learning; AE-PSL=affective engagement, peer support for learning; BD=behavioral disengagement; AE-FSL= Affective engagement, family support for learning; CE-ERL= Cognitive engagement, external rewards for learning.

Internal consistency reliability analysis found the following Cronbach's alpha values: Factor 1 (Affective Engagement, Teacher-student relationships) α=.85; Factor 2 (Behavioral Engagement) α=.77; Factor 3 (Cognitive Engagement, future goals and aspirations) α=.73; Factor 4 (Affective Engagement, Peer support for learning) α=.86; Factor 5 (Behavioral Disaffection)

α=.77; Factor 6 (Affective Engagement, Family support for learning) α=.78; and Factor 7 (Cognitive Engagement, External rewards for learning) α=.79. Cronbach's alpha values for all factors are presented in Table 7.

Table 7.

Cronbach's Internal Consistency for 7 Factors

	Number of Items	Cronbach's α
Affective Engagement		
Teacher Student Relations	7	.85
Peer Support for Learning	6	.76
Family Support for Learning	4	.78
Behavioral Engagement	4	.77
Behavioral Disengagement	4	.78
Cognitive Engagement		
Future Goals	4	.73
External Rewards for Learning	2	.79

Confirmatory Factor Analyses were performed in order to examine the four factors identified from the EFA. Hair et al. (2010) stated that with CFA, unidimentionality of each factor must be confirmed as this regulates sustainability as to whether variables are acceptable for each factor or not. Further, CFA relies on several statistical tests to determine the adequacy of model fit to the data. The following four models were evaluated: (1) Affective and Behavioral Engagement; (2) Affective and behavioral disaffection/disengagement; (3) Affective and Cognitive Engagement; and (4) Affective, behavioral and cognitive engagement (research question 1). The results found that all four models had poor fit with the data. This suggests that

the items did not converge into each domain. The normed chi-square values were not less than 3.0 and associated *P* values were lower than .05. Further, the Goodness of Fit Index (GFI), Incremental Fit Index (IFI) and Comparative Fit Index (CFI) were less than .90 and all values of the Root Mean Square Error of Approximation (RMSEA) were higher than .06. The fit indices and results of the CFA of all four models are presented in Table 8. IBM SPSS Analysis of Moment Structures (AMOS) Graphics program (version 22) allows for a visual representation of observed and latent variables within a path model to be created and tested. Arbuckle (2013) states that with AMOS, a researcher can quickly specify, view and modify the model graphically using simple drawing tools. Graphically specifying the model can assist in clarifying the model when assessing the fit. Given the benefits of testing the model using visually representing variables and pathways, AMOS was used to evaluate the EBCA model as well. Similar results were gleaned from this analysis and the model showed poor fit with the data in this study (see Table 9).

Table 8.

Four Models tested using Confirmatory Factor Analysis

	χ^2 (df)	CFI	TLI	SRMR	RMSEA
EBA	177.91* (34)	.89	.85	.06	.11
DBA	313.21* (34)	.69	.60	.19	.16
ECA	2314.8* (559)	.63	.60	.10	.09
EBCA	972.88* (272)	.77	.75	.08	.08

Notes. EBA= Engagement-Behavioral and Affective; DBA= Disengagement-Behavioral and Affective; EBA= Engagement – Cognitive and Affective; EBCA=Engagement-Behavioral, Cognitive and Affective.
*$p < .05$

Table 9.

CFA using IBM SPSS AMOS Graphics (Model EBCA tested)

	χ^2 (df)	CFI	TLI	SRMR	RMSEA
EBCA	10091.9* (450)	.86	.84	.08	.07

Note. EBCA= Engagement-Behavioral, Cognitive and Affective.
*$p < .05$

Research Question 2: What is the role of previous academic achievement and student engagement in academic achievement? Hypothesis 2: Previous academic achievement and the current levels of engagement will predict academic achievement. Hierarchical regression analyses were run to predict current reading and math achievement scores (NWEA). Based on a wealth of data on the significant relationships between previous and current achievement, previous reading and math scores were entered in the first step and seven engagement scores were entered next.

As expected, previous NWEA reading was a significant predictor of current NWEA reading ($\beta = .80$, $p < .001$), accounting for 63% of variance ($p < .001$). The seven engagement scores explained additional 1% of variance ($p < .05$). Only Factor 1 (affective engagement, teacher-student relations) and Factor 7 (cognitive engagement, external rewards for learning) were significant: $\beta = -.10$, $p < .05$ for Factor 1 and $\beta = -.07$, $p < .05$ for Factor 7. NWEA math was a significant predictor of current NWEA math ($\beta = .86$, $p < .001$), accounting for 75% of variance ($p < .001$). The seven engagement scores did not explain additional variance. Further, none of the factors were found to be significant. These results are summarized in Table 10.

Table 10.

Predicting current achievement from engagement

	Step 1	Step 2
NWEA Reading	R^2=.63, F(1/348)=596.41***	ΔR^2=.01*
Previous NWEA Reading	.80***	.76***
Engagement Factor 1		-.10*
Engagement Factor 2		.01
Engagement Factor 3		.06
Engagement Factor 4		.03
Engagement Factor 5		.05
Engagement Factor 6		.00
Engagement Factor 7		-.07*
NWEA Math	R^2=.75, F(1/348)=1018.38***	ΔR^2=.00, ns
Previous NWEA Math	.86***	.85***
Engagement Factor 1		-.03
Engagement Factor 2		.02
Engagement Factor 3		.02
Engagement Factor 4		.00
Engagement Factor 5		.07
Engagement Factor 6		.00
Engagement Factor 7		.01

$^{*}p < .05$, $^{***}p < .001$

Additional hierarchical regression analyses were conducted with CORE scores and grades as dependent variables, but a similar pattern of results were found.

Research Question 3: What are the relations among academic self-efficacy and three domains of engagement (behavioral, cognitive, or affective)? Hypothesis 3: Academic self-efficacy will be related to behavioral engagement, cognitive engagement, and affective engagement.

Correlational analyses indicated that academic self-efficacy was correlated with Factor 1 (affective engagement, teacher-student relations, r= .24, p <.05), with Factor 2 (behavioral engagement, r= .44, p <.05), with Factor 3 (affective engagement, future goals, r= -.31, p <.05),

with Factor 4 (affective engagement, peer support for learning, r= .20, p <.05), with Factor 5 (behavioral disengagement, r= .32, p <.05), with Factor 6 (affective engagement, family support for learning, r= .21, p <.05) and with Factor 7 (cognitive engagement, r=-.31, p <.05). Correlation between academic self-efficacy and Factor 1 (affective engagement, teacher-student relationships) was r=.24, p <.05; between academic self-efficacy and Factor 2 (behavioral engagement) was r=.44, p< .05; with Factor 3 (cognitive engagement, future goals for learning) r=.31, p< .05; with Factor 4 (affective engagement, peer support for leaning) r=.20, p <.05; with Factor 5 (behavioral disengagement) r=.32, p <.05; with factor 6 (affective engagement, family support for learning) r=.21, p <.05; and lastly correlation with academic self-efficacy and Factor 7 (cognitive engagement, external rewards for learning) was r=-.*31*, p <.05.

The strongest correlation was found between behavioral disengagement and behavioral engagement scores (r=.52, p < .05). The correlation between peer support for learning (AE-PSL, subdomain of affective engagement) with external rewards for learning (CE-ERL, subdomain of cognitive engagement) was the only non-significant correlation (r=-.11, p<.05). The strongest positive correlation was found with academic self-efficacy and behavioral engagement (r=.44, p <.05). A significant negative correlation was found between academic self-efficacy and external rewards for learning (CE-ERL; subdomain of cognitive engagement): r=-.31, p< .05. Other noteworthy significant positive correlations revealed include the correlation between peer support for learning (AE-PSL, subdomain of affective engagement) and family support for learning (AE-FSL, subdomain of affective engagement; r=.40, p<.05) and the correlation between family support for learning and teacher student relationships (AE-TSR, subdomain of affective engagement) was also significant (r=.41, p<.05). Correlations of academic-self-efficacy and the 7 factors are presented in Table 11.

Table 11.

Academic Self-Efficacy Correlations with 7 Factors

	1.	2.	3.	4.	5.	6.	7.	8.
1.ASE								
2.F1 AE-TSR	.24**							
3.F2 BE	.44**	.40**						
4.F3 AE-FG	.31**	.37**	.24**					
5.F4 AE-PSL	.20**	.33**	.27**	.23**				
6.F5 BD	.32**	.42**	.52**	.36**	.27**			
7.F6 AE-FSL	.21**	.41**	.22**	.39**	.40**	.29**		
8.F7 CE-ERL	-.31**	-.16*	-.30**	-.16*	-.28**	-.34**	-.14*	

Notes. ASE=Academic self-efficacy; F=Factor; AE-TSR=Affective engagement, teacher-student relationships; BE=Behavioral engagement; CE-FG=Cognitive engagement, future goals for learning; AE-PSL=affective engagement, peer support for learning; BD=behavioral disengagement; AE-FSL= Affective engagement, family support for learning; CE-ERL= Cognitive engagement, external rewards for learning.
*$p < .05$, **$p<.05$

Research Question 4: Does student engagement or disengagement mediate the relationship between academic self-efficacy beliefs and academic achievement? Hypothesis 4: Student engagement will serve as a mediator between academic self-efficacy beliefs (reading competency measure) and academic achievement.

This research question was explored using Structural Equation Modeling (SEM). As stated by Qureshi and Kang (2015), SEM is often applied in numerous research fields and is typically employed for studying relationships between latent variables (constructs) and observed variables that constitute a model. Further, SEM models combine path models and confirmatory factor models (see above). Two measurement models were created representing the proposed interactions between latent variables and student achievement for the areas of reading and math using the 7 factors identified in EFA. The proposed models are depicted in Figure 2 (reading) and Figure 3 (math). The models comprised 2 latent factors: Self-efficacy and Student Engagement.

The observed variables include academic achievement. The observed variable of students' NWEA district scores for reading and math, GPA for ELA and math, and CORE Curriculum-based Measure of reading comprehension. Sample size (N=354) was adequate for this analysis. IBM SPSS AMOS Maximum Likelihood imputation was used to explore the model. Normality testing was also done and indicated non-normal distribution of the data (Mardia's Coefficient = 23.31). This should be considered when interpreting the results.

Figure 2.

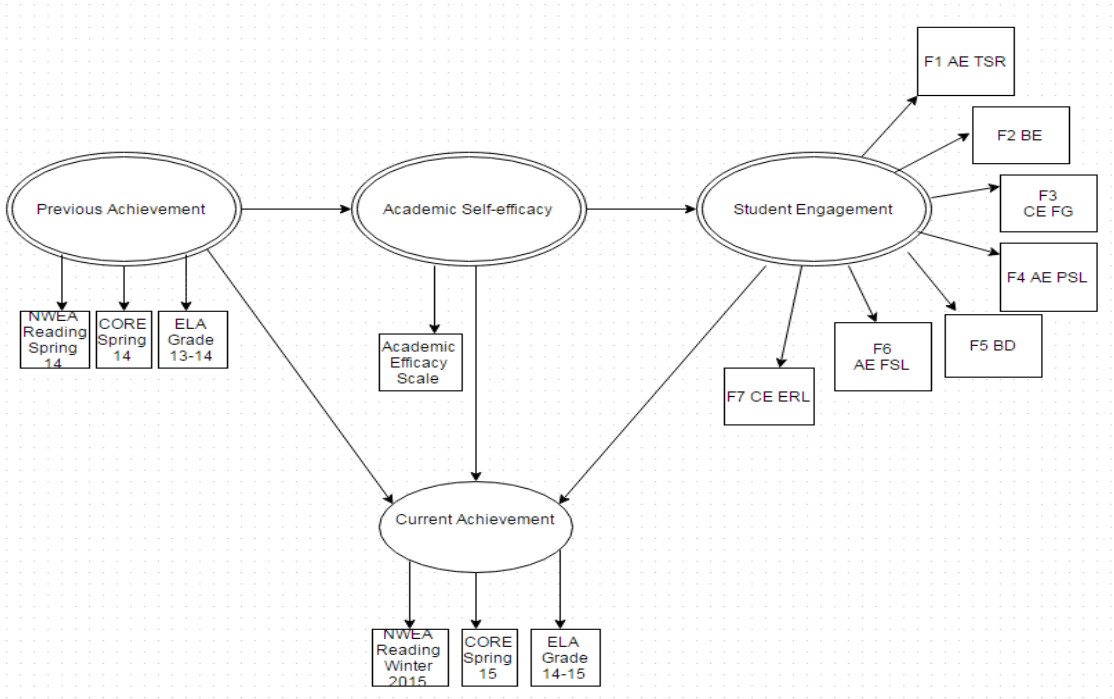


Figure 2. Proposed model for testing the role of previous academic achievement and student engagement or disengagement in academic achievement in the area of reading/language arts. F= factor; AE = affective engagement; BE= behavioral engagement, CE= cognitive engagement; BD= behavioral disaffection; TSR=teacher-student relations; FG=future goals; PSL=peer support for learning; FSL=family support for learning; ERL= external rewards for learning.

Figure 3.

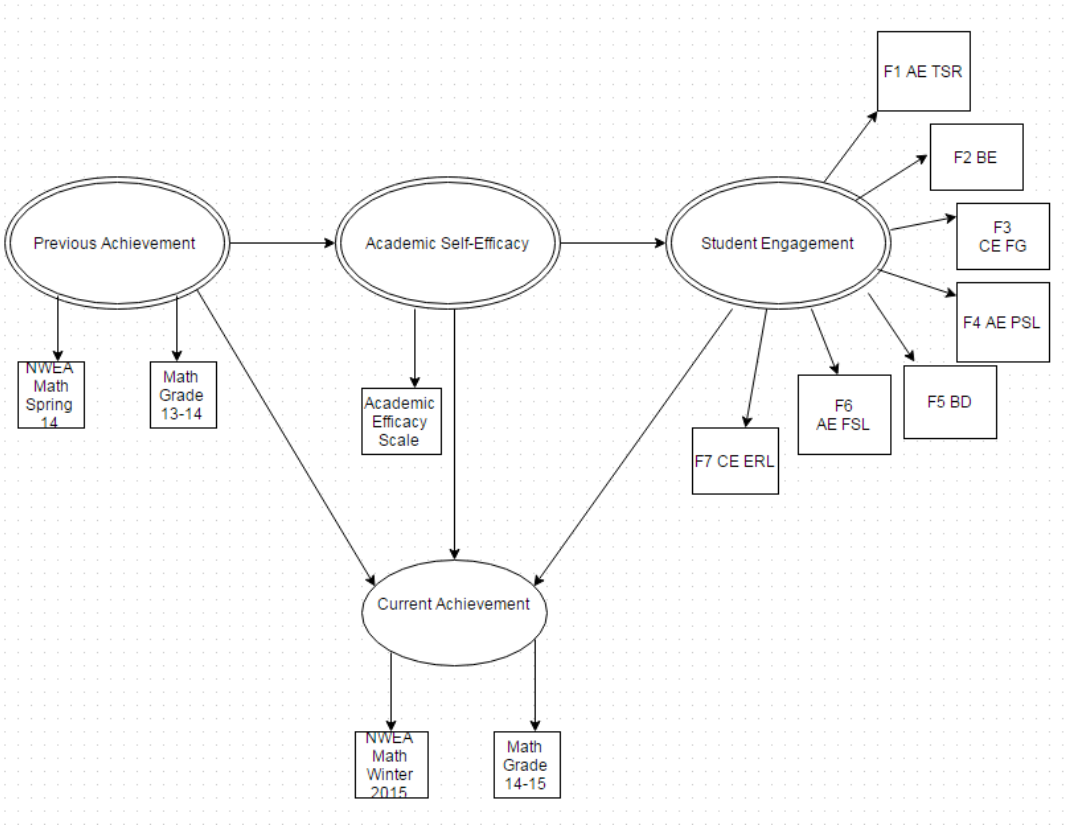


Figure3. Proposed model for testing the role of previous academic achievement and student engagement or disengagement in academic achievement in the area of math. F= factor; AE = affective engagement; BE= behavioral engagement, CE= cognitive engagement; BD= behavioral disaffection; TSR=teacher-student relations; FG=future goals; PSL=peer support for learning; FSL=family support for learning; ERL= external rewards for learning.

Fit estimates did not support the hypothesized model of reading outcomes. A significant chi-square (χ^2=14, p<.001) suggests that the model did not fit the data well. Other fit indices show this poor fit: RMSEA = .27 and CFI = .00. The hypothesized model for mathematics achievement also showed a poor fit (χ^2=12, p <.001; RMSEA=.272; CFI=0.00). The SEM results for both models are presented in Table 12. According to Yong and Pearce (2013), using unweighted least squares (ULS) method for SEM may also yield reasonable estimates under less restrictive assumptions. This method can be applied to normal or non-normal situations, or to covariance or

correlation matrices. The caveat of ULS is that the statistical qualities of the estimates seem to be unknown. Unweighted Least Squares was imputed in AMOS and the model remained unidentified. Further, each model was re-tested using all 5 items of the Academic Self-efficacy scale as separate variables, as presented in Figure 4 and Figure 5. Fit estimates still did not support the hypothesized model.

Table 12.

SEM Proposed Model Testing

	χ^2	CFI	RMR	RMSEA
Reading	14* (91)	0.00	21.83	.27
Math	12* (66)	0.00	23.24	.27

*$p < .001$

Figure 4.

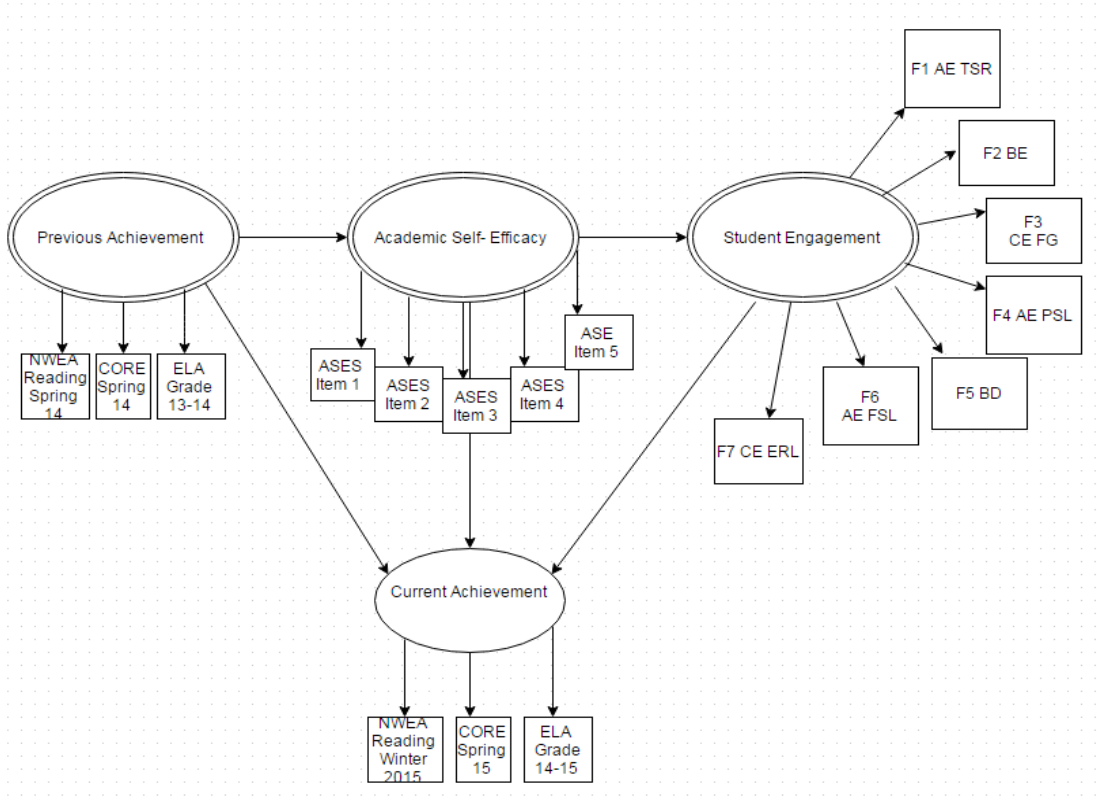


Figure 4. Proposed model testing the role of previous academic achievement and student engagement or disengagement in academic achievement in the area of reading/language arts with academic self-efficacy scale items as separate variables. F= factor; AE = affective engagement; BE= behavioral engagement, CE= cognitive engagement; BD= behavioral disaffection; TSR=teacher-student relations; FG=future goals; PSL=peer support for learning; FSL=family support for learning; ERL= external rewards for learning.

Figure 5.

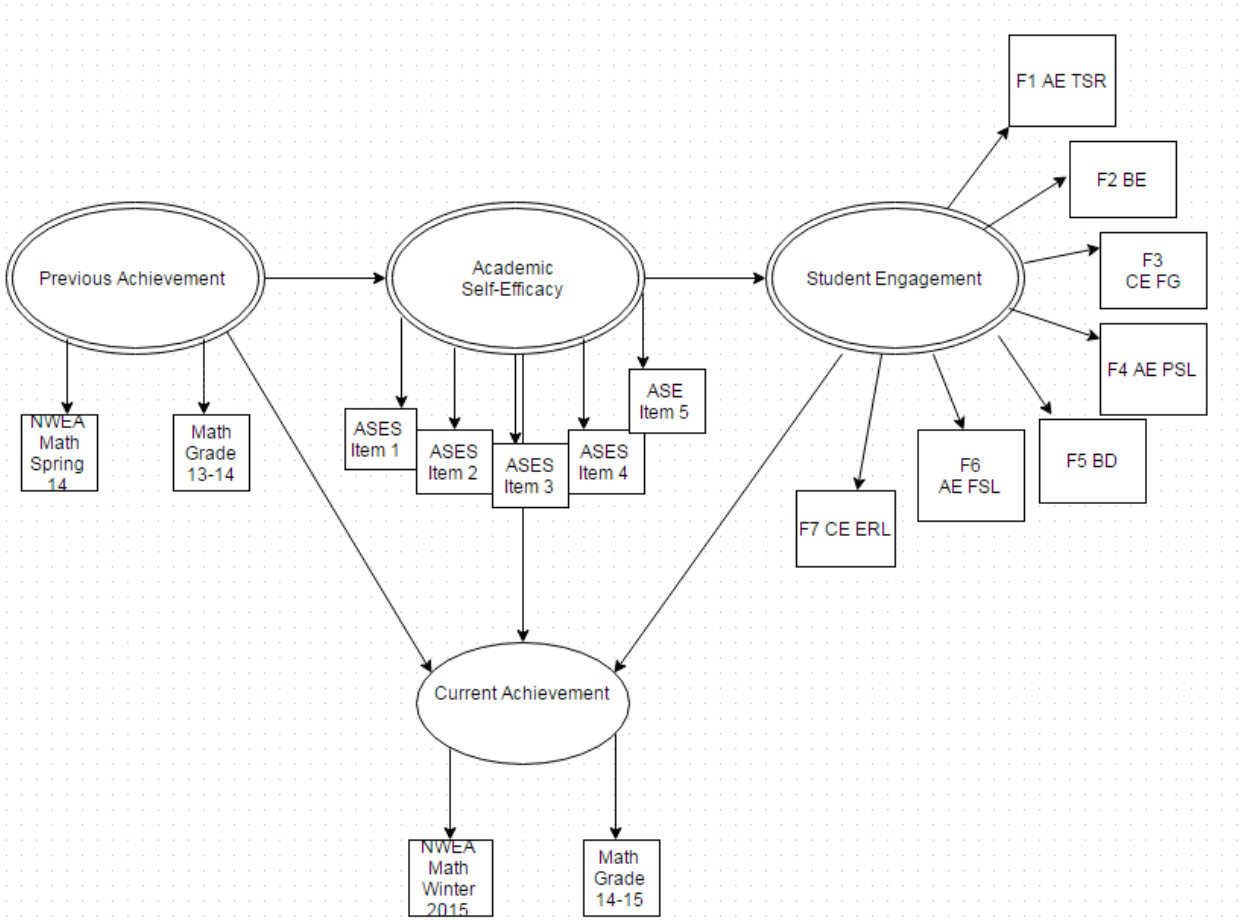


Figure 5. Proposed model testing the role of previous academic achievement and student engagement or disengagement in academic achievement in the area of math with academic self-efficacy scale items as separate variables. F= factor. AE = affective engagement; BE= behavioral engagement, CE= cognitive engagement; BD= behavioral disaffection; TSR=teacher-student relations; FG=future goals; PSL=peer support for learning; FSL=family support for learning; ERL= external rewards for learning.

Based on the poor fits of the two models (Figures 2 and 3), hierarchical multiple linear regressions were used to further examine relations among engagement, self-efficacy and academic achievement. Previous achievement was found to be significantly positively correlated with current achievement (β=.88, p<.05) and academic self-efficacy (β=.33, p<.05). Further, academic self-efficacy was found have a significant positive correlation with student engagement (β=.41, p <.05), and current achievement (β=.38, p <.05). Student engagement was not found to have a significant relationship with current achievement. Further, previous achievement did not have a significant relationship with student engagement. Results of the path analysis are depicted in Table 13.

Table 13.

Hierarchical linear regression for path analysis

		β	F	R^2
Previous Achievement	Current Achievement	.88*	597.12	.78
	Academic Self-efficacy	.33*	43.10	.11
	Student Engagement	.09	2.77	.01
Academic Self-efficacy	Student Engagement	.41*	66.96	.17
	Current Achievement	.38*	57.99	.14
Student Engagement	Current Achievement	.19	2.84	.01

*p < .05

Subject Specific Self-Efficacy and Engagement

In order to investigate subject specific self-efficacy and engagement, questions pertaining to English Language Arts and Math were added at the end of each survey as 'pilot-type' questions. The questions were created based on each scale, and wording was changed to reflect the curricular area of ELA or math only, with all other language remaining the same (i.e. "When we work on something in *ELA* class, I feel good"; "I pay attention in *Math* class"). Descriptive statistics for ELA and Math scale items are presented in Table 14. Cronbach's alpha values were the following:

α=.86 for ELA scale; α=.90 for math scale items. Correlations with ELA and math scales and study variables are summarized in Table 15. Students' responses to ELA specific questions were found to have a significant positive correlation with academic Self-efficacy (r=.56, p <.05) and Student Engagement (r=.58, p <.05). Math-specific items were more strongly correlated with academic self-efficacy (r=.55, p <.05). However, a significant positive correlation was also revealed between math items and student engagement (r=.44, p <.05). ELA and math items were significantly correlated (r=.41, p <.05). NWEA Reading scores (2015, current achievement) were significantly positively correlated with NWEA Math scores (2015, current achievement) and both previous and current CORE reading comprehension measures (r=.70, p <.05). Students' current math grade (2015) and current ELA grades (2015) were found to have a significant positive correlation (r=.70, p <.05). ELA and math grades were found to be more strongly correlated the previous year (ELA grade 2014-math grade 2014, r=.77, p <.05). Given that these subject-specific questions have not been validated in any other samples or research and that the pattern of correlation coefficients between subject specific self-efficacy and study variables paralleled to the relations between general academic self-efficacy and study variables, no further analyses of these items were conducted.

Table 14.

Curricular-Specific Self-Efficacy: Descriptive Statistics and Cronbach's alphas

	N	Minimum	Maximum	Mean	SD	Cronbach's α
ELA	350	8.00	32.00	22.21	5.07	.86
Math	350	8.00	32.00	22.58	6.51	.90

Note. ELA=English Language Arts.

Table 15.

Correlations for Curricular-Specific Questions and Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.ELA														
2.Math	.24**													
3.NWRS14	.32**	.19*												
4.NWMS14	.26**	.38**	.68**											
5. NWR15	.29**	.29**	.79**	.68**										
6. NWM15	.26**	.42**	.66**	.86**	.70**									
7.CORE14	.32**	.25**	.62**	.57**	.71**	.55**								
8.CORE15	.29**	.23**	.63**	.54**	.70**	.52**	.87**							
9.LAGr14	.21**	.27**	.61**	.58**	.63**	.60**	.51**	.52**						
10.MaGr14	.20**	.29**	.57**	.65**	.61**	.70**	.52**	.47**	.77**					
11.LAGr15	.29**	.28**	.59**	.59**	.64**	.62**	.55**	.52**	.74**	.72**				
12.MaGr15	.23**	.31**	.58**	.63**	.61**	.70**	.52**	.48**	.67**	.76**	.70**			
13.ASE	.56**	.55**	.30**	.37**	.34**	.36**	.30*	.27**	.24**	.29**	.33**	.27**		
14.SE	.43**	.42**	.12	.15	.18*	.18*	.17*	.12	.15	.17	.20**	.14	.43**	

Notes. ELA=English Language Arts questions; Math = Math questions; NWRS14=NWEA Reading spring 2014; NWMS14=NWEA Math spring 2014; NWR15=NWEA Reading 2015; NWM15=NWEA Math 2015; CORE14= CORE curriculum-based reading comprehension MAZE 2014; CORE15= curriculum-based reading comprehension MAZE 2015; LAGr14= English Language Arts grade 2014; MaGr14 = Math grade 2014: LAgr15: English Language Arts grade 2015; MathGr15= Math grade 2015; ASE= Academic self-efficacy; SE=Student engagement.

*$p < .05$, **$p<.01$

CHAPTER 5

DISCUSSION

The purpose of the current study was to explore the relationships among academic achievement, academic self-efficacy beliefs and student engagement among middle school age students. This was examined in order to obtain a better understanding of students' engagement in the classroom and how competency beliefs and engagement in school impact middle school students' learning, or academic achievement. This section provides a narrative description of the results of the analyses that were conducted to investigate each of the research questions included in this study.

The first research question involved examining whether the three domains of Appleton's model of engagement (behavioral, cognitive, and affective) held as a measure of overall school engagement in 7th and 8th students. Two instruments were utilized for measuring levels of student engagement: *The Student Engagement Instrument* (SEI; Appleton & Christenson, 2004), and the *Engagement vs. Disaffection with Learning* Measure (Skinner et al., 2009). The results of the Exploratory Factor Analysis (EFA) revealed 7 factors consistent with each of the three domains of engagement. All 7 factors were found to have acceptable levels of internal consistency reliability. However, when the measurement model that included affective, behavioral and cognitive engagement was tested, it showed poor fit with the data. The finding provided no support for the model of engagement (behavioral, cognitive, and affective) proposed by Appleton and Christenson (2004) in the current sample of middle school students. This is inconsistent with the previous findings by Appleton and colleagues (2006). Given that their sample and the sample of this study included the same age group, the inconsistent finding is difficult to interpret. It is possible that the model tested, which was developed based on Appleton's model of engagement, does not capture the nature of engagement in this sample. Given that the model was not confirmed

in this sample, future validation studies should focus on middle school students and whether the model developed based on Appleton's theory can be applied with this age group. The current research reflects the need for future studies to validate Appleton's theory of student engagement among younger students. Although student engagement is undeniably important, engagement has been an elusive construct to define. A framework that incorporates other potential contributing factors of engagement might better reflect the domains of engagement included in Appleton's model. Factors such as teacher characteristics, instructional factors, school building culture, school history/attendance history, individual personality characteristics (i.e. introversion/extroversion) or cognitive functions (i.e. attention, memory) may need to be added to broad measures of student engagement in order to fully capture the construct.

It is plausible that given that student engagement was self-report, social desirability might have influenced how participants answered. For example, item analysis of the SEI revealed that over half (68%) of the students responded 'disagree' to the question "When I'm in class, my mind wanders." This response rate is unusual for the sample age range, suggesting a possibility that students might have felt the need to respond in a way that presented them in a more positive light. It is also possible that items did not converge with the data because the measures utilized did not successfully assess students' engagement in this demographic. Previous validation studies were conducted with an ethnically diverse sample of participants (Appleton & Christenson, 2004; Appleton et al., 2006).

Research question two examined the role of previous academic achievement and student engagement or disengagement in academic achievement. Previous achievement scores (NWEA, specifically) for reading and math were found to predict current reading math scores. A significant amount of the variance was explained by previous scores from the prior school year for reading

and for math. This is supported by a significant body of existing research on academic achievement. Numerous researchers have documented the significant link between students' previous levels of academic achievement in one subject and later achievement in that same area. Specifically, Reynolds (1991) previous math and science achievement was found to predict subsequent 8th grade knowledge of those subject areas. Further, Aubrey, Dahl and Godfrey (2006) found that students' math skills were significant predictors of future math achievement. Previous reading achievement, as measured by standardized achievement tests have also been found to be a significant predictor of future scores on the same standardized achievement test as well as other measures of reading skills (Booth, Boyle & Kenny, 2010).

Teacher-student relationships, a subdomain of affective engagement, explained an additional 1% of the variance for the current NWEA reading score. Other subdomains of engagement did not explain additional variance for reading. None of the engagement scores were found to be significant for math. Although previous achievement was a significant predictor of current achievement scores (NWEA) in the current study, the 7 factors of student engagement did not add predictive power to this relationship. This is inconsistent with previous research on student engagement and its theorized impact on academic achievement. The current study results suggest that prior academic achievement, especially on standardized measures like the NWEA measure of academic progress, is a much more significant predictor of later scores in reading in math on the same measure than student engagement in this sample of middle school students. Future studies focusing on the construct of engagement may need to look at other potential contributing factors that contribute to the impact of academic achievement in middle school students, as engagement was not significant in predicting district scores in reading and math in this sample. It is also plausible that the construct needs to be redefined with developmental

considerations for early adolescents in order to better understand the role that school engagement may play in terms of influencing academic learning. The significance of previous achievement on these measures suggests that school professionals can better understand student growth by considering past performances on achievement measures and a clearer conceptualization of student engagement in middle school age students is needed.

Research question three was concerned with the role of academic self-efficacy in three domains of engagement (behavioral, cognitive, or affective). Significant associations were revealed between students' academic self-efficacy beliefs and measures of student engagement in the current sample. The significant association was also confirmed in path analysis. This finding is consistent with previous research examining the relationship between academic competency beliefs and student engagement in the classroom. Social-Cognitive Theory implies that self-efficacy helps students' develop a greater willingness to put forth effort needed to complete a task which leads to more involvement and participation in the tasks required (i.e. engagement, broadly). The findings in this study support previous research that found a significant link between academic self-efficacy or students' beliefs about their ability to successfully complete academic tasks and their overall level of engagement in the classroom (Bandura, 1997; Linnenbrink & Pintrich, 2010). With respect to middle school students, previous research has supported that students with higher levels of academic self-efficacy are likely to succeed and are better equipped for academic and occupational challenges later in life (Hoigaard et al., 2014).

The strongest relationship revealed was between academic self-efficacy and behavioral engagement. This supports previous research that has found that self-efficacy is thought to be positively related to engagement, mainly because it results in more willingness to put forth effort

and expend energy on task completion or assignments (Walker, Greene, & Mansell, 2006). Ouweneel et al. (2013) has stated that efficacious students tend to regulate their motivation by setting goals for themselves, and are then more likely to have higher levels of engagement. Interestingly, a significant negative correlation was found between academic self-efficacy and cognitive engagement subdomain external rewards for learning. This suggests that students with higher levels of academic self-efficacy are not motivated by external rewards from teachers or parents for engaging in their learning. Previous research on college-age students has implicated that students who feel more competent about their skills in academics feel motivated more so by achievements than external reinforcers (Komarraju & Nadler, 2013). The results in the current study appear to support this in a younger sample of students.

Research question four explored the mediating role of student engagement in the relationship between academic self-efficacy beliefs and academic achievement. Despite the significant relations among academic self-efficacy, engagement, and achievement, the hypothesized model testing did not find student engagement to be a mediator of the relationship between academic self-efficacy beliefs and academic achievement. No support for the mediating role of student engagement may be due to the findings that the measurement model of engagement did not hold and that different measures of engagement, as measured with seven factors in the study, did not add additional predictive power beyond previous academic achievement. However, pathway testing revealed significant relationships between academic self-efficacy and levels of current academic achievement. This is consistent with numerous prior research studies and existing literature that reports that self-efficacy has been found to be related to school performance, academic achievement, student engagement, and persistence (Bandura, 1997; Pajares & Miller, 1994; Pajares, 1996). According to Bandura (1997), students' self-efficacy

beliefs are related to school achievement and are influential to learning in academic settings. Although considered a separate construct from confidence and esteem, self-efficacy beliefs will likely effect a students' self-confidence in their capabilities to perform a task at a particular level of competence (Bandura, 1997). Student's perceptions of their competency in academic subjects likely impacts their performance in the classroom in that particular domain and overall.

Student engagement measures were not found to be significantly associated with measures of academic achievement. This is not consistent with previous research on student engagement and academic achievement. For example, Archambault et al. (2009), Skinner (2009), and Appleton et al. (2006; 2008) have documented various research supported links between domains of engagement and students' academic achievement. Many factors could be contributing to this incompatible finding, including the numerous variables that may be impacting student engagement that are not accounted for in the current research. These include out of school factors, demographic characteristics, online surveying issues with younger students, and timing of survey administration.

One of the major findings in the current study was that previous academic achievement was found to be a significant predictor of students' academic achievement a year later, specifically on the district NWEA measure of reading and math. This not only supports a plethora of previous research that has found that students' prior academic achievement is a critical indicator of later academic functioning in reading and math, but is essential information for understanding student growth and factors contributing to student achievement. Another critical finding in the current research was the significant relationship between academic self-efficacy and levels of previous and current academic achievement. This is consistent with numerous prior research studies that self-efficacy has been found to be related to school performance, academic achievement, student

engagement, and persistence. The current study supports that students' self-efficacy beliefs are related to their academic achievement and are an important variable in regards to their learning. This information is important in terms of understanding how critical students' academic competency beliefs are to their learning and academic functioning.

Importantly, this study found a significant relationship between academic self-efficacy and behavioral engagement. This supports previous research that has linked the construct of students' self-efficacy and their levels of active participation in the classroom. Further, this finding suggests that students with higher levels of self-efficacy regarding their academics are more likely to put forth effort in their work, attend classes, and actively engage in class discussion and class work. The current work further reflects the need to consider students' beliefs about their ability to be successful at an academic task and the critical link between their academic self-efficacy beliefs and academic achievement as well as their levels of engagement in the classroom.

Limitations of the Study and Directions for Future Research

The current study was designed to explore the complex relationship between academic self-efficacy, student engagement, and academic achievement in a sample of middle school students, examining the validity of the Appleton's model of engagement. As future researchers and educational professionals review this information, limitations of the current study need to be considered. Given that this study's sample included early adolescent, middle-school age students, results cannot be generalized to other age groups. This is due to the unique variability among contexts and environmental factors at this age, as well as developmental considerations specific to this age group.

Given that only approximately half of the middle school students in this study's sample district were proficient on the reading MEAP given in 2013-14 school year, the students may have

had difficulty reading and understanding language on measures given during data collection. This may have impacted the validity of student responses on the surveys and is important to consider when reviewing the results of this research.

The current study focused on the impact of self-efficacy and student engagement on academic achievement. However, it is critical to consider that there are numerous other research-based factors that influence students' academic achievement and school performances as well as feelings of competency and levels of engagement. Ethnicity, socio-economic status, and gender are just a few that have been found to impact student achievement. As discussed by Lacour and Tissington (2011), low SES or poverty has been found to have a significant impact on students' academic performances, test scores, and overall school functioning. These factors that impact achievement have also been found to affect student engagement at school. Variables such as parent education level and parental emphasis on the value of education have been found to be linked to student engagement and achievement as well (Archambault et al., 2009; Lacour and Tissington, 2011). The transactional and complex influences of SES, home and family factors, ethnicity, and gender on achievement, engagement and self-efficacy among students should be considered when interpreting the results of this research.

This study provides some directions for future explorations of the construct of student engagement. Given that academic self-efficacy was found to be more strongly linked with study variables, this construct may show more promise in understanding achievement and engagement in younger students in future research. The construct of engagement is likely more complex for middle school students than can be measured in the surveys included in this research. Further, it is possible that the instruments utilized were not appropriate or valid in this particular sample. Future researchers may consider development of an instrument that is more appropriate for early

adolescents. This may include changing language or lowered/adjusted reading level. Also, other aspects of student engagement such as teacher personality and instructional methods, individual child characteristics and family or home factors need to be incorporated into future research to better understand this broad and complicated construct in younger students.

Analysis of subject-specific items in this study showed promising relations between how students feel about their competency or engagement in a particular subject and their actual performance or level of achievement in that domain. This could be considered in future research or development of measures of student engagement and academic self-efficacy. For example, instead of broadly measuring student engagement in school and academic achievement, building a model that explores whether engagement in one specific class is more strongly related to the students' performance in that subject might find more significant results.

Implications for school professionals, educators and clinicians

New and important bodies of research have continually implicated student engagement and academic self-efficacy as influential factors when it comes to student achievement and school performance. The importance of understanding, improving and increasing student engagement and student feelings of competency in order to support academic growth needs to be enacted actively in instruction and school culture. Taking the literature and applying it to the classroom by adjusting instructional strategies and making modifications to the school environment requires school professionals such as school psychologists, teachers, principals and administrators to understand the construct and what factors contribute to it. Collaborating to enact these changes in the school and within instruction requires knowledge of the construct of both engagement and efficacy in students. Once this is understood in a particular demographic, practitioners and school professionals can support the implementation of instructional practices that increase student

engagement and self-efficacy. Domains of engagement that include affective components require teachers to take responsibility for emotional aspects of students' learning as well. Professionals such as school psychologists play an important role in educating parents and other school staff about the need to support students' engagement and beliefs about their own academic competency as well as feelings about school. They can also support teachers and school staff with implementing various changes in order improve these important aspects of student learning.

APPENDIX A

Academic Efficacy Scale:

These statements are about your thoughts about your school work and how you do and feel in class/at school. Please click on the number that is true most of the time for each one:

Not True at All **Somewhat True** **Very True**

	1	2	3	4
1. I'm certain I can master the skills taught in class this year.	❍	❍	❍	❍
2. I'm certain I can figure out how to do most difficult class work.	❍	❍	❍	❍
3. I can do almost all of the work in class if I don't give up.	❍	❍	❍	❍
4. Even if the work is hard, I can learn it.	❍	❍	❍	❍
5. I can do even the hardest work in this class if I try.	❍	❍	❍	❍

Engagement vs. Disaffection with Learning Scale:

These statements are about thoughts of school and how you do and feel in class/at school. Please click on the number that is true most of the time for each one:

	Not True at All	Somewhat True	Mostly True	Very True
	1	2	3	4
1. When I'm in class, I feel good.	❍	❍	❍	❍
2. Class is fun	❍	❍	❍	❍
3. When we work on something in class, I feel interested.	❍	❍	❍	❍
4. I enjoy learning new things in class.	❍	❍	❍	❍
5. I try hard to do well in school.	❍	❍	❍	❍
6. In class, I work as hard as I can.	❍	❍	❍	❍
7. When I'm in class, I participate in class discussions.	❍	❍	❍	❍
8. I pay attention in class.	❍	❍	❍	❍
9. When I'm in class, I listen very carefully.	❍	❍	❍	❍
10. When we work on something in class, I get involved.	❍	❍	❍	❍

	Not True at All	Somewhat True	Mostly True	Very True
	1	2	3	4
11. When we work on something in class, I feel interested.	❍	❍	❍	❍
12. When I'm in class, I feel good.	❍	❍	❍	❍
13. I enjoy learning new things in school.	❍	❍	❍	❍
14. When we work on something in class, I feel discouraged.	❍	❍	❍	❍
15. In class, I do enough just to get by.	❍	❍	❍	❍
16. When I am in class, I feel bad.	❍	❍	❍	❍
17. When I'm in class, I feel worried.	❍	❍	❍	❍
18. When I'm in class I think of other things.	❍	❍	❍	❍
19. When I'm in class, I just act like I'm working.	❍	❍	❍	❍
20. When I'm in class, my mind wanders.	❍	❍	❍	❍

Student Engagement Instrument:

	Strongly Agree 1	Agree 2	Disagree 3	Strongly Disagree 4
1. My family/guardian(s) are there for me when I need them.	❍	❍	❍	❍
2. After finishing my schoolwork, I check it over to see it it's correct.	❍	❍	❍	❍
3. My teachers are there for me when I need them.	❍	❍	❍	❍
4. Other students here like me the way I am.	❍	❍	❍	❍
5. Adults at school listen to the students.	❍	❍	❍	❍
6. Other students at school care about me.	❍	❍	❍	❍
7. Students at my school are there for me when I need them.	❍	❍	❍	❍
8. My education will create many future opportunities for me.	❍	❍	❍	❍
9. Most of what is important to know you learn in school.	❍	❍	❍	❍
10. The school rules are fair.	❍	❍	❍	❍
11. Going to school after high school is important.	❍	❍	❍	❍
	❍	❍	❍	❍

	Strongly Agree 1	Agree 2	Disagree 3	Strongly Disagree 4
12. When something good happens at school, my family/(guardian(s) want to know about it.	❍	❍	❍	❍
13. Most teachers at my school are interested in me as a person, not just as a student.	❍	❍	❍	❍
	Strongly Agree 1	**Agree 2**	**Disagree 3**	**Strongly Disagree 4**
14. Students here respect what I have to say.	❍	❍	❍	❍
15. When I do school work I check to see whether I understand what I'm doing.	❍	❍	❍	❍
16. Overall, my teachers are open and honest with me.	❍	❍	❍	❍
17. I plan to continue my education following high school.	❍	❍	❍	❍
18. I'll learn but only if the teacher gives me a reward.	❍	❍	❍	❍
19. School is important for achieving my future goals.	❍	❍	❍	❍

20. When I have problems at school my family/(guardian(s) are willing to help me.	❍	❍	❍	❍
	Strongly Agree ❍ 1	**Agree ❍ 2**	**Disagree ❍ 3**	**Strongly Disagree ❍ 4**
21. Overall, adults at my school treat students fairly.	❍	❍	❍	❍
22. I enjoy talking to teachers here.	❍	❍	❍	❍
23. I enjoy talking to the students here.	❍	❍	❍	❍
24. I have some friends at school.	❍	❍	❍	❍
25. When I do well in school its' because I work hard.	❍	❍	❍	❍
26. The tests in my classes do a good job of measuring what I'm able to do.	❍	❍	❍	❍
	Strongly Agree 1	**Agree 2**	**Disagree 3**	**Strongly Disagree 4**
27. I feel safe at school.	❍	❍	❍	❍
28. I feel like I have a say about what happens to me at school.	❍	❍	❍	❍
29. My family/(guardian(s) want me to keep trying when things are tough at school.	❍	❍	❍	❍

30. I am hopeful about my future.	❍	❍	❍	❍
31. At my school, teachers care about students.	❍	❍	❍	❍
32. I'll learn, but only if my family/(guardian(s) give me a reward.	❍	❍	❍	❍
	Strongly Agree ❍ **1**	**Agree** ❍ **2**	**Disagree** ❍ **3**	**Strongly Disagree** ❍ **4**
33. Learning is fun because I get better at something.	❍	❍	❍	❍
34. What I'm learning in my classes will be important in my future.	❍	❍	❍	❍
35. The grades in my classes do a good job of measuring what I am able to do.	❍	❍	❍	❍

APPENDIX B

WAYNE STATE UNIVERSITY

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NOTICE OF EXPEDITED APPROVAL

To: Mary Brennan
College of Education

From: Dr. Deborah Ellis or designee N. Nahan / PB.
for Chairperson, Behavioral Institutional Review Board (B3)

Date: April 01, 2015

RE: IRB #: 032515B3E

Protocol Title: Exploring a Complex Model of Student Engagement in Middle School: Academic Self-Efficacy Beliefs and Achievement

Funding Source:

Protocol #: 1503013833

Expiration Date: March 31, 2016

Risk Level / Category: 45 CFR 46.404 - Research not involving greater than minimal risk

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The above-referenced protocol and items listed below (if applicable) were **APPROVED** following *Expedited Review* Category (#5 #7)* by the Chairperson/designee *for* the Wayne State University Institutional Review Board (B3) for the period of 04/01/2015 through 03/31/2016. This approval does not replace any departmental or other approvals that may be required.

- Revised Protocol Summary Form (received in the IRB Office 3/26/2015)
- Protocol (received in the IRB Office 3/4/2015)
- A waiver of informed consent and written documentation of informed consent (for parental consent) has been granted according to 45 CFR 46 116(d). This waiver satisfies: 1) risk is no more than minimal, 2) the waiver does not adversely affect the rights and welfare of research participants, 3) the research could not be practicably carried out without the waiver, and 4) participants will be provided with additional pertinent information before participation.
- Parent Supplemental Information Letter with Decline to Participate (dated 3/25/2015)
- Behavioral Documentation of Adolescent Assent Form (dated 3/24/2015)
- Data Collection Tools: Student Demographic Form and Student Survey, Engagement vs. Disaffection with Learning Scale, Student Engagement Instrument, Academic Efficacy Scale, and Sudoku.

- Federal regulations require that all research be reviewed at least annually. You *may* receive a *"Continuation Renewal Reminder"* approximately two months prior to the expiration date; however, it is the Principal Investigator's responsibility to obtain review and continued approval ***before*** the expiration date. Data collected during a period of lapsed approval is unapproved research and can never be reported or published as research data.
- All changes or amendments to the above-referenced protocol require review and approval by the IRB **BEFORE** implementation.
- Adverse Reactions/Unexpected Events (AR/UE) must be submitted on the appropriate form within the timeframe specified in the IRB Administration Office Policy (http://www.irb.wayne.edu//policies-human-research.php).

NOTE:

1. Upon notification of an impending regulatory site visit, hold notification, and/or external audit the IRB Administration Office must be contacted immediately.
2. Forms should be downloaded from the IRB website at **each** use.

*Based on the Expedited Review List, revised November 1998

APPENDIX C

Brandon School District

Brandon Middle School
609 S. Ortonville Rd., Ortonville, Michigan 48462
Phone (248) 627-1830, FAX (248) 627-7201

Dear Ms. Brennan,

I am writing this letter of support for the project you described as your dissertation study on the impact of academic self-efficacy and student engagement on academic achievement. With continuing concerns about students becoming increasingly and chronically disengaged in school before entering 9th grade, we are aware that understanding the dynamics of school engagement in middle-school is critical to enhancing our ability to support students' participation throughout their education.

We understand that the project involves student surveys and the use of district achievement data. We also realize that you will obtain approval from the Human Subjects Committee at your university prior to any data collection, and that you will follow all of our district's requirements for conducting research in the schools.

Sincerely,

Tina Chambers
Principal

APPENDIX D

Parent Supplemental Information Letter with "Decline to Participate" Option Template
Title of Study: *School Engagement and Academic Self-efficacy among Middle School Students*
Researcher's Name: *Mary Brennan, M.A.*

Purpose:
You are being asked to allow your child to be in a research study at their school that is being conducted by Mary Brennan, a doctoral student from Wayne State University to examine how students' beliefs about how competent they feel academically and their engagement in the classroom impacts his/her academics. Your child has been selected because he or she is enrolled in a 7th or 8th grade classroom.

Study Procedures:
If you decide to allow your child to take part in the study, your child will be asked to fill out a 15 minute survey about their interest and level of participation at school. They will also be asked about their perception of how well they can do academically. Students will have the option to discontinue their participation in the study at any time.

Once the survey is completed, no other information will be needed from your child. His or her semester grades and North West Evaluation Association (NWEA) Measures of Academic Progress (MAPs) scores will be provided by the district. Copies of the survey are available for you to review in the main office. They may also be requested by contacting Ms. Brennan at the contact listed below.

Benefits:
There may be no direct benefits for your child; however, information from this study may benefit other people now or in the future.

Risks:
There are no known risks at this time to your child for participation in this study.
There may also be risks involved from taking part in this study that are not known to researchers at this time.

Costs
There are no costs to you or your child to participate in this study.

Compensation: You or your child will not be paid for taking part in this study.

Confidentiality:
All information collected about your child during the course of this study will be kept confidential to the extent permitted by law.

- Your child will be identified in the research records by a code name or number. Information that identifies your child personally will not be released without your written permission. However, the Institutional Review Board (IRB) at Wayne State University or federal agencies with appropriate regulatory oversight (Office for Human Research Protections [OHRP], Office of Civil Rights [OCR], etc.), may review your child's records.

Voluntary Participation /Withdrawal:
Your child's participation in this study is voluntary. You are free to withdraw your child at any time. Your decision about enrolling your child in the study will not change any present or future relationships with Wayne State University or its affiliates, your child's school, your child's teacher, your child's grades or other services you or your child are entitled to receive.

Questions:
If you have any questions about this study now or in the future, you may contact Mary Brennan at the following phone number (248) 496-8848. If you have questions or concerns about your rights as a research participant, the Chair of the Institutional Review Board can be contacted at (313) 577-1628. If you are unable to contact the research staff, or if you want to talk to someone other than the research staff, you may also call (313) 577-1628 to ask questions or voice concerns or complaints.

Participation:
If you do not contact the principal investigator (PI) within a 2-week period, to state that you do not give permission for your child to be enrolled in the research trial, your child will be enrolled into the research. You may contact the PI by email (marybbrennan@wayne.edu), phone (248-496-8848) or by returning the tear off sheet below to the PI, principal, or your child's teacher.

If you do not wish to have your child participant in the study, you may fill out the form and return it to your child's teacher.

I do not allow my child _____to participate in this research study.

Name

_____

Printed Name of Parent

_____ _____

Signature of Parent Date

APPENDIX E

Oral Script/Recruitment Script

[Behavioral]Documentation of Adolescent Assent Form
(ages 13-17)

Title: Exploring a Complex Model of Engagement in Middle School

Study Investigator: Mary Brennan

Good Morning/Afternoon, my name is Mary Brennan and I am a doctoral student at Wayne State University.

Today I am here to talk to you about a research project that I am working on. I am going to be collecting some information about your experiences in the classroom and your thoughts about how you perform academically. I am looking to see if these are related to how you do in school.

Why am I here?

This is a research study. Only people who choose to take part are included in research studies. You are being asked to take part in this study because you are enrolled in the 7th or 8th grade here at Brandon Middle School. Please take time to make your decision. Talk to your family about it and be sure to ask questions about anything you don't understand.

Why are they doing this study?

This study is being done to find out about how middle school students' experiences in the classroom and your thoughts about how you perform academically. I am looking to see if these are related to how you do in school. The information will help school staff to better understand how to help students like you be sucessful in school.

What will happen to me?

One morning during seminar, your teacher will ask you to go to the computer lab. I will be in there that morning. During that time, you will be asked to complete a survey on the computer. The survey has questions that will ask about your thoughts about yourself as a student and your beliefs and about being a student. It will also have some questions about your feelings about how well you do in school and how you participate in the classroom.

How long will I be in the study?

You will be in the study for 15 to 20 minutes during one seminar hour.

Will the study help me?

You will not benefit from being in this study; however information from this study may help other people in the future to better understand how to help students like you be sucessful in school.

Will anything bad happen to me?

It is possible that you will feel uncomfortable when answering questions about how you feel about school. There are no other risks that are involved with you being part of this study.

Do my parents or guardians know about this? (If applicable)

This study information has been given to your parents/guardian. You can talk this over with them before you decide.

What about confidentiality?

Every reasonable effort will be made to keep your records (medical or other) and/or your information confidential, however we do have to let some people look at your study records.

We will keep your records private unless we are required by law to share any information. The law says we have to tell someone if you might hurt yourself or someone else. The study doctor can use the study results as long as you cannot be identified.

What if I have any questions?

For questions about the study please call Mary Brennan at 248-496-8848. If you have questions or concerns about your rights as a research participant, the Chair of the Institutional Review Board can be contacted at (313) 577-1628.

Do I have to be in the study?

You don't have to be in this study if you don't want to or you can stop being in the study at any time. Please discuss your decision with your parents and researcher. No one will be angry if you decide to stop being in the study.

Please remember this is not a test and it will not be graded. It does not have an impact on your grades or school work whatsoever. Please do not put your name or anything else that may let others know who you are anywhere but the line on page 1. Raise your hand if you need my help at any time, or if you are finished.

If you are not participating, you may begin working on the puzzle I handed out. If you like, you may read silently instead.

It is very important that you do not discuss the survey or your answers with other students or staff. If you have any questions, please tell an adult at school.

Thank you for your time!

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ABSTRACT

EXPLORING A COMPLEX MODEL OF STUDENT ENGAGEMENT IN MIDDLE SCHOOL: ACADEMIC SELF-EFFICACY BELIEFS AND ACHIEVEMENT

by

MARY BRENNAN

December 2015

Advisor: Dr. Jina Yoon

Major: Educational Psychology

Degree: Doctor of Philosophy

A significant body of research and literature supports that student engagement in school is critical to academic outcomes. Research also finds that students' beliefs about their ability to be successful at academic tasks will significantly influence their achievement also. The aim of this study is to explore the impact of academic self-efficacy on achievement in school, as mediated by levels of student engagement. The sample size was approximately 400 students enrolled in the 7^{th} and 8^{th} grade at one middle school building. In order to assess the extent of academic self-efficacy, the Academic Efficacy scale was utilized. In order to measure cognitive, behavioral and affective engagement, the Student Engagement Instrument (SEI) and The Engagement vs. Disaffection with Learning questionnaire were administered. Levels of previous and current student achievement were collected from the CORE reading Curriculum-Based Measures, English Language Arts and Math grades (converted to GPA) as well as NWEA Measures of Academic Progress. Results of the study did not support the hypothesized model. However, academic-self efficacy was found to be related to student engagement and previous and current achievement. Further, previous achievement was a significant predictor of current achievement.

AUTOBIOGRAPHICAL STATEMENT

Mary Brennan

EDUCATION

Ph.D.	Wayne State University Educational Psychology	Dec. 2015
M.A.	Wayne State University School and Community Psychology	May 2010
B.A.	Rollins College Psychology Major; Dance Minor	2007

SCHOLARLY HONORS

Dean's List - Rollins College 2005-2007

CURRENT PROFESSIONAL MEMBERSHIPS **Member Since**

Michigan Association of School Psychologists 2008
National Association of School Psychologists 2008
American Psychological Association 2008

SCHOOL AND CLINICAL PSYCHOLOGY EXPERIENCE

2013-Aug.2015 Clinical Intern. Samaritan Counseling Center, Farmington Hills, MI. Providing a wide range of clinical and therapeutic services and supports to individual clients, couples, and families, including assessment and parent guidance, on an outpatient basis. Supervisor: Dr. Karen Schurgin, L.P.

2013-Present Part-time Faculty. Wayne State University, Detroit MI. Instructor for EDP 7610, Child and Adolescent Psychopathology Course for Masters-level graduate students in the Educational Psychology department. Supervisor: Dr. Jina Yoon.

2013-Present School Psychologist. Brandon School District, Ortonville MI. Currently providing a wide range of support services for at-risk students and special education attending Brandon School District.

2012 School Psychologist. Pontiac Academy for Excellence, Pontiac, MI. (Total Education Solutions). Provided a wide range of testing, assessment, and consultation in a K-12 charter school.

LICENSURE AND CERTIFICATION

Michigan: Temporary Limited License to Practice Psychology, June 2015
Michigan: School Psychologist Full Certificate, June 2013