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Examination Of Microsystem And Intrapersonal Variables Associated With Academic Achievement In Middle School

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EXAMINATION OF MICROSYSTEM AND INTRAPERSONAL VARIABLES ASSOCIATED WITH ACADEMIC ACHIEVEMENT IN MIDDLE SCHOOL

by

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DEDICATION

To my husband Jim,

who made my dream our dream and never

waivered in his support and belief in me.

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TABLE OF CONTENTS

Dedication……..…ii

Acknowledgments……...……...….iii

List of Tables…….....vii

Chapter 1 – Introduction…… 1

Microsystem Variables……2

Intrapersonal Variables……5

Middle School Transition……8

Limitations of Past Research ……10

Purpose of Study……10

Research Questions……11

Chapter 2 – Literature Review……...13

Overview……13

Ecological Theory……..14

Microsystem Variables……..16

Parental Involvement and Support for Learning…….....……16

Teacher Support for Learning……...…….20

Peer Support for Learning……...……...24

Intrapersonal Variables……..26

School Engagement……..26

Metacognition……29

Student Organizational Factors……...…32

Summary……35

Chapter 3 - Method……37

Participants……37

Measures……38

Demographic Form……39

Parental Involvement and Support for Learning……39

Teacher Support for Learning……40

Peer Support……41

Student Engagement……42

Metacognition……42

Student Academic Organization Behaviors……43

Academic Achievement……44

Procedures……44

Data Analysis……46

Chapter 4 – Results……48

Research Question 1A……51

Research Question 1B……52

Research Question 2……53

Research Question 3……56

Chapter 5 – Discussion ……57

Limitations and Future Directions……61

Implications for Practitioners and Educators ……62

Appendix A: Student Survey……..…64

Appendix B: Human Investigation Committee Approval ……72

Appendix C: Letter of Support ……..……73

Appendix D: Parental Supplemental Information Letter……...……74

Appendix E: Adolescent Assent Form…….....……..…76

Appendix F: Script for Oral Assent……...…78

References……..79

Abstract……...……..96

Autobiographical Statement……...…….....…97

LIST OF TABLES

Table 1: Frequency Distributions – Demographic Characteristics of the Sample.....38

Table 2: Cronbach Alpha Coefficients – Scaled Variables ….....39

Table 3: Statistical Analyses ….....46

Table 4: Descriptive Statistics ….....49

Table 5: Pearson Product Moment Correlation Matrix: All Study Variables 50

Table 6: Analyses of Variance for Achievement by Grade 51

Table 7: Hierarchical Multiple Linear Regression Analysis – Combined Role of Contextual Variables on Academic Achievement.....52

Table 8: Hierarchical Multiple Linear Regression Analysis – Combined Role of Intrapersonal Variables on Academic Achievement.....53

Table 9: Hierarchical Multiple Linear Regression Analysis – Combined Role of Contextual and Intrapersonal Variables on Academic Achievement.....55

CHAPTER 1 INTRODUCTION

Academic success in adolescence is a critical predictor of later life opportunities. Educational attainment, occupational and social success, higher income level, and better physical and mental health in adulthood are related to academic achievement and performance in middle school and high school (Arum & Hout, 1998; Day & Newburger, 2002; Muennig, 2005; Serbin, Stack, & Kingdon, 2013). The transition to middle school is accompanied by an increased risk for drop in achievement levels, more absences, and a higher high school dropout rate compared to students who do not transition into a separate middle school (Schwerdt & West, 2013). However, many middle school students in the United States begin to show behavior typical of disengagement with increasingly negative attitudes toward school, declines in self-esteem and academic self-concept (Epstein & McPartland, 1976), which substantiates a focus on middle level grades.

Research has identified general predictors of academic success in a variety of domains, including parent/family variables, school/teacher factors, peer factors, and individual student behaviors and characteristics. Understanding these potential predictors from key contexts in an adolescent's life is an important step in facilitating the academic success that has been shown to lead to better life outcomes. Contextual approaches, e.g., Bronfenbrenner's ecological theory (1979), provide an ideal lens through which to view these predictors of achievement, and include variables at the individual, microsystem, mesosystem, exosystem, and macrosystem. In the ecological perspective, the microsystem is the immediate setting of development, including family, school, and peers, while the mesosystem is the environmental layer that includes the interaction of two or more immediate settings such as the linkage of home and school. The next layer, the exosystem, is the layer of the environment that affects the setting of the individual but

does not directly contain the person. Finally, the macrosystem refers to the outer layer of the environment that includes history and culture (Bronfenbrenner, 1979; Seginer, 2002). In the current study, the focus will be on the most proximal to the developing adolescent, and emphasize the individual and microsystem levels. The microsystem is discussed first.

Microsystem Variables

Parent involvement and parent support for learning. Parent and family level variables undoubtedly contribute to adolescents' academic performance. Components of an authoritative parenting style, including monitoring of academic behavior and supporting the development of autonomy in children as they enter adolescence have been found to be robust predictors of academic achievement (Karbach, Gottshling, Spengler, Hegewald, & Spinath, 2013; Seginer, 2002; Shute, Hansen, Underwood, & Rzaaouk, 2011; Spera, 2005). Parental expectations have been shown to be associated with education expectations and attainment across SES levels (Schmitt-Wilson, 2013). For example, the level of parent academic involvement is related to fewer behavior difficulties in eighth grade and greater aspirations when students are in eleventh grade (Hill, Castellino, Lansford, Nowlin, Bates, & Pettit, 2004).

Specific types of activities included in the general area of parental involvement may be individually important in academic achievement. Particular components of parent involvement have been shown to be more influential on the academic achievement of children than others and each factor may provide an incremental contribution. Parental involvement needs change in early adolescence as students move from elementary to middle school (Karbach et al., 2013). Although teachers and administrators routinely encourage it at school, the behavior of parents providing specific help with homework completion does not consistently lead to higher levels of academic achievement. School-based parental involvement activities that have a relationship

with student achievement include visiting the school for events such as open houses and PTO meetings, volunteering at school, and communicating with school personnel about educational issues.

Parental support for learning can be seen in home-based parent involvement behavior such as discussing learning strategies with children, providing physical and organizational support for homework and studying, and communicating the value of education along with describing expectations for the future educational attainment of children were found to demonstrate the strongest association with academic achievement (Hill & Tyson, 2009). Considerable research suggests that parental support for learning shown through describing expectations about the importance of school and promoting educational aspirations for their children are important influences on student achievement (Hill et al., 2004; Hill & Tyson, 2009; Park & Holloway, 2013).

Teacher support for learning. Feelings of connectedness and belonging in relationships in school have been shown to predict levels of engagement, which is related to school motivation and success (Anderman & Anderman, 1999; Battistich, Solomon, Watson, & Schaps, 1995; Eccles & Midgley, 1989; Furrer & Skinner, 2003; Goodenow, 1993; Roeser, Midgley, & Urdan, 1996). Components of the school environment such as availability of emotional support, the opportunity to make meaningful choices about academic content and behavior, and relevant instruction positively influence school engagement (Wang & Eccles, 2013). Teacher support in the form of student perceived caring and emotional support, availability and dependability, and feedback based on clear expectations impact engagement and achievement (Stroet, Opdenakker, & Minnaert, 2013; Wang & Eccles, 2013). Teachers play many roles for students, thus the teacher-student relationship is considered powerful because of the significant interactions as

disciplinarian, grading authority, and potential attachment figure (Furrer & Skinner, 2003). The quality of teacher-student relationships has been shown to play a role in an array of outcomes for adolescents, including academic achievement (Birch & Ladd, 1997; Malecki & Demaray, 2002; Levitt, Guacci-Franco, & Levitt, 1994). The belief that teachers care about and support them predicts their expectations about achievement, engagement, effort, and performance (Goodenow, 1993; Murdock, 1999).

Case study research about academic engagement in middle school found that significant monitoring and scaffolding through the use of explicit directions with modeling, thoughtful questioning, and feedback based on student need are among the strategies that have been used by highly engaging teachers to encourage academic engagement, and support student learning in their classes (Raphael, Pressley, & Mohan, 2008).

Peer support for learning. While parents and teachers play a large role in the academic achievement of children, research has shown the salient impact of peer relationships on the school experiences of adolescents (Birch & Ladd, 1996; Wentzel, 1999). Links between perceptions of support from peers and academic goals, self-esteem, self-concept; and engagement have been reported (duBois, Felner, Brand, Adan, & Evans, 1992; Felner, Aber, Primavera, & Cauce, 1995; Harter, 1996; Murdock, 1999; Wentzel, 1998). Of significance to the present study, the transition to middle school has been shown to be smoother for students who perceive more peer support than those who are lonely and without perceived peer support in school (McDougall & Hymel, 1998). While parents have significant influence on the development of long-term educational goals, peers exert salient influence on the daily school behaviors such as time spent on homework, classroom behavior, and feelings about school. Having peers who earn good grades and desire to pursue additional education can improve an

adolescent's achievement, while having friends with lower grades who do not value school success may impede achievement (Steinberg, Dornbush, & Brown, 1992).

Intrapersonal Variables

School engagement. School engagement is widely regarded as a predictor of developing positive and appropriate peer relationships, healthy parent-child relationships, and lower rates of participation in delinquent activities (Murray, 2009; O'Farrell & Morrison, 2003; Van Ryzin et al., 2009). Students who show school disengagement are more likely to be on a path that includes ongoing behavioral problems such as delinquency and substance use throughout early and late adolescence and into early adulthood. Disengaged students are also more likely to dropout of school (Henry, Knight, & Thornberry, 2012). Components of the school environment such as availability of emotional support, the opportunity to make meaningful choices about academic content and behavior, and relevant instruction positively influence school engagement (Wang & Eccles, 2013).

Engagement in school is characterized by "active, goal-directed, flexible, constructive, persistent, focused interactions with the social and physical environments," (Furrer & Skinner, 2003, p. 149). For this study, engagement refers to the behaviors that note effort, persistence, attention, and concentration – often referred to as on-task behavior and class participation (Skinner, Kindermann, & Furrer, 2009). This conceptualization of engagement is relevant to the current study and consistent with previous research that has shown effort and participation in classroom learning activities predicts achievement and school completion (Connell, Halpern-Felsher, Clifford, Crichlow, & Usinger, 1995; Connell, Spence, & Aber, 1994; Pierson & Connell, 1992; Skinner, Wellborn, & Connell, 1990; Skinner, Zimmer-Gembeck, & Connell, 1998). Thus, engagement as defined in this study includes behavioral participation in the

classroom due to its demonstrated relationship with achievement, especially as students transition to a middle school environment with more organizational requirements and demands for independence needed for school success.

Student perceptions of school characteristics that promote school engagement are consistent with previously describe characteristics of teachers that support learning and engagement and include the presence of clear expectations with student autonomy enhanced through the provision of opportunities to make choices related to learning goals and tasks in order to make learning personally meaningful. (Gentry, Gable, & Rizza, 2002; Hafen, Allen, Mikami, Gregory, Hamre, & Pianta, 2012; Stroet et al., 2013; Wang & Eccles, 2013). Recent research using student perceptions and observations suggests creating a classroom environment where autonomy was supported and encouraged early in the class led to increased student engagement through the rest of the course in contrast to the declines in engagement typically observed in most classes (Hafen et al., 2012).

Metacognition. As highlighted above, parent, teacher, and peer microsystem variables are clearly important, but individual student characteristics play critical roles in academic achievement as well. From an attribution theory perspective, self-regulated learners tend to believe that success is a product of effort, which leads to a willingness to demonstrate effort and show persistence in academic tasks. Self-regulated learners are described as actively engaged in the process of learning (Boekaerts & Corno, 2005; Winne, 1996; Wolters, 2010). Researchers generally agree that metacognition and using metacognitive strategies are key components of self-regulated learning. Knowledge about cognition and regulation of cognition are two broad areas regularly discussed in metacognition research (Vrugt & Oort, 2008). Metacognitive knowledge includes beliefs or experiences about which features or elements influence each other

and how the interaction impacts learning activities (Flavell, 1979). Regulation of cognition refers to the essential skills of planning, monitoring, and evaluation that students utilize in problem solving to manage their learning (Veenman, Van Hout-Wolters, & Afflerbach, 2006; Vrugt & Oort, 2008; Winne, 1996).

Students can effectively regulate their cognition only if their knowledge about cognition is based on an accurate understanding of the interaction of the factors and variables and they show effort to utilize effective metacognitive strategies. Developmental considerations suggest that middle school students may face increasing metacognitive demands in school while possessing less sophisticated cognitive knowledge and lower skill development than needed to successfully meet the mounting requirements (Veenman et al, 2006; Veenman & Spans, 2005; Veenman, Wilhelm, & Beishuizen, 2004). Current research supports the notion that increased executive control is an area of significant development from late childhood through adolescence. Developmental growth and improvements in the areas of capacity, speed, and inhibition all relate to enhanced information processing (Kuhn, 2006).

Student organizational factors. Student academic/organizational factors are a part of metacognition and behavioral engagement in school; however, not all measures assessing metacognition and school engagement include the specific detailed behaviors that are known in practice (e.g., middle school settings) to be critical to success, and thus an extra look at these variables is important. Interest in influences of achievement beyond cognitive ability has increased over recent years (Wigfield & Eccles, 2002; Richardson, Abraham, & Bond, 2012). These factors and behaviors are likely more flexible and open to intervention and experience in different settings (Karabenick, 2003). Middle school requires organizational skills in order to manage multiple daily assignments, plan for assessments, complete long-term projects, and

regulate time management. Skills in handling learning activities and demands have previously been shown to be as predictive of academic achievement and progress as cognitive ability (Blair, 2002).

Specific behaviors and skills such as use of a planner to manage time by breaking down projects into smaller segments and monitoring timelines, study skills, organizational skills, and effective note-taking have been identified as academic and organizational behaviors that may be key in academic success (Boller, 2008; Paulsen & Sayeski, 2013). Though they are presented as student-level behaviors, influences from contexts near the student impact their uses and effect. Parents may monitor planner use and organization and use the planner as a home and school communication tool. They also play key roles in identifying space for homework completion and monitor progress online and discuss study strategies and study skills. In school, teachers can encourage or require planner use for organization and communication with families. They may also monitor student organization systems, teach and provide guided practice for study skills and important academic skills such as instruction in structured note-taking and timely, frequent feedback about work completed in class and at home.

Middle School Transition

This tension between the demands of school and developmental readiness are especially magnified during the transition to the secondary education environment (middle and high school), as it marks the early adolescent period that is a time of rapid and intense biological, social, and cognitive developmental changes in the adolescent. Simultaneously, the environment brings notable increases in organizational and planning demands that are often in direct conflict with the developmental readiness of the students (Wigfield & Eccles, 2002; Boller, 2008; Kim, Schwartz, Cappella, & Seidman, 2014). In contrast to the narrow, constrained way that many

middle classrooms are arranged that may not meet the developmental needs of adolescents, classrooms and schools that foster engagement have been found to predict the academic achievement and the social development of students (Deci, 2009; Olsen & Sexton, 2008). Thus, the role and relative influence of factors at the microsystem and personal levels, including school-based elements such as teacher support for learning through perceived caring, and feedback based on clear expectations should be examined. The function of relevant parent behaviors that support learning in early adolescent children as well as parental involvement in education at home and at school shown through visiting school, communicating with teachers and school personnel about educational issues, discussing learning strategies at home, and communicating expectations for future educational attainment are family microsystem variables whose impact should also be investigated. At the personal level, the effect of self-regulated learning strategies such as the development of metacognition and the presence school engagement behaviors should be explored as well if we are to build a model that will best predict academic success in the middle school environment, beyond the microsystem level variables described earlier. These results may provide insight into targets and methods of supporting students and improve the current understanding of what significantly impacts the success and failure of students as they transition to early adolescence.

Although research has consistently identified variables related to parental involvement, school engagement, and metacognitive strategies as having an impact on academic achievement, the lack of discussion of specific organizational skills and academic behaviors within the identified constructs leaves open the possibility that more discrete skills and behaviors provide meaningful contributions to academic achievement. At the middle school level when organizational skills are still developing and the drive for independence is growing, it is

reasonable to consider if these proximal, specific behaviors significantly influence achievement. In view of the role of self-regulation and metacognition as overarching constructs at the individual contextual level, consideration of whether consistent use of the identified organizational and academic behaviors compensate for weaknesses in metacognitive skills merits attention.

Limits of Prior Research

Substantial research about global areas of influence on academic achievement, including parental involvement, teacher support, school engagement, student self-regulation and metacognition shows these variables impact academic achievement. However, the existing literature does not consider their combined effect on achievement or whether these general constructs are too broad to offer an explanation for academic achievement in middle school students in order to provide practical guidance for research about how and when to intervene with middle school students. There is a lack of research that explores the concrete, observable organizational and academic behaviors in students, and the support of these behaviors by teachers and parents in order to isolate and describe their unique contribution to academic achievement.

Purpose of Study

The goal of the current study is to identify the most specific attitudes, values, and behaviors in the areas of classroom-based factors, parental involvement, and individual student metacognitive skills and practices that have the greatest influence on/relationship with academic achievement for middle school students. Based on literature reviewed and limitations in the research, the purpose of the current study is to examine the specific variables/behaviors and

combinations of variables that contribute most to explaining the variance in middle school academic achievement. The specific research questions are:

Research Question 1A: How much individual and combined explanation of variance in achievement is accounted for by the parent, teacher, and peer contextual variables? Does each factor contribute unique variance beyond the others and if so, which factors contribute most toward explaining the variance in middle school academic achievement?

Research Question 1B:

How much individual and combined explanation of variance in achievement is accounted for by the intrapersonal variables (school engagement, metacognition, organizational/academic factors)? Is one factor more strongly predictive of achievement than the other?

Research Question 2:

Controlling for intrapersonal variables, how much variance in achievement is explained above and beyond by the contextual variables?

Research Question 3:

Do the intrapersonal variables (student engagement, metacognition, organizational/academic factors) moderate the associations between contextual factors (parent, teacher, peer) and academic achievement?

Based on previous research and specific research questions presented in this study, it is expected that each factor – parental involvement, teacher support for learning, peer support for learning, student behavioral engagement in school, and metacognition - contributes separately to explaining the variance in middle school achievement. It is further expected that students that are more skilled in organizational/academic behaviors will show higher levels of academic

achievement even in the presence of weak metacognitive/self-regulation skills and lower levels of support from parent, teacher, and peer contexts.

This study is important because when considered collectively, not all variables are likely to be significant contributors to academic achievement. Identifying specific academic skills and behaviors is important in order to guide decisions about where to intervene to support parents, teachers, schools, and students to encourage academic achievement in middle school. The results of the current study are important due to the contribution to research that identifies optimal and accessible targets for future implementation of scaffolded supports, intervention, and parent or family education. The results may provide insight into modifications in the middle school arrangement, instructional practices, and climate that are more likely to support students in their transition from childhood and elementary school to early adolescence and the increased demands of school.

CHAPTER 2 LITERATURE REVIEW

Overview

Early adolescence ushers changes in many areas, including biological and cognitive development, transformations in family relationships and social interactions, and increased educational demands. These developmental changes occur at a time of school transition, when students typically move from elementary to middle school and prepare for high school. Research examining factors that influence academic achievement in early adolescence identifies variables in a variety of contexts that interact to predict academic success. Environmental variables in the school, peer, and family contexts, as well as personal characteristics of cognitive ability, memory, and motivation have all been shown to relate to academic achievement along with other cognitive and non-cognitive variables (Karbach, et al., 2013).

Children are at risk for a decline in academic performance that accompanies the transition from elementary to middle school with changes in motivation and attitude toward school (Rockoff & Lockwood, 2010; Eccles et al., 1984; Serbin, Stack, Kingdon, 2013). The decline in performance is observed across subject areas, notably English and math, and is often sustained from the time of the transition – fifth or sixth grade – through the end of middle school at eighth grade. Research suggests students who began with lower levels of initial achievement before the transition show greater declines (Rockoff & Lockwood, 2010). Similar patterns of achievement decline have been found to exist in varied settings, from small towns and rural areas to urban areas where greater effects are evident (Schwerdt & West, 2013). How adolescents meet the challenges of this developmental transition can impact long-term school trajectories, with some students experiencing declines in achievement, attendance, self-esteem, and increased behavior problems that may continue through their school careers (Rockoff & Lockwood, 2010; Schwerdt

& West, 2013). However, not all students experience declines in achievement. There is notable variability in responses to the transition among children, which makes examining specific variables that predict and contribute to the decline or act as protective and supportive factors to prevent decline a meaningful pursuit. Parent, peer, and school supports impact development and the school transition in early adolescence (Grolnick, Kurowski, Dunlap, & Hevey, 2000).

Ecological theory/framework. General predictors of academic achievement are present in a variety of interrelated domains, making it important to consider how development occurs within the multiple, nested contexts described in ecological theory (Bronfenbrenner, 1979; Bronfenbrenner & Ceci, 1994; Lerner, 1996). Development within the levels interacts reciprocally with each other in an interconnected system that includes change and continuity (Bronfenbrenner,1979; 2005; Ford & Lerner, 1992; Hill et al., 2004). Thus, similar family environments can have varying levels of influence depending on the unique characteristics of each child (Cho & Campbell, 2011).

Academic achievement as part of adolescent development has been examined in an ecological framework where adolescents gain some experiences directly and experience other distal process in the environment indirectly with proximal processes providing stronger influence (McNair & Johnson, 2009). Research about academic achievement has included the examination of relationships among factors identified in this study – home, school, and social contexts - with intrapersonal characteristics and behaviors such as metacognition, behavioral engagement, and organization skills.

The use of ecological models has been recommended by researchers to understand the roles of various settings in the outcome of academic achievement in middle school adolescents. Bronfenbrenner's ecological framework describes multiple concentric subsystems surrounding

the individual: micro-, meso-, exo-, and macrosystems. The nested, contextual factors also have a reciprocal relationship within each ecological factor and between each factor (Bronfenbrenner, 1979). The microsystem is the immediate setting of development and contains individual experiences that may include relevant environments such as home and school, activities, and relationships. The mesosystem is the subsystem that links microsystems and includes the interrelationships among two or more settings such as home and school. Communications among settings, such as between parents and teachers, and the attitudes or knowledge about each other in the interaction are key features of the mesosystem with outcomes of the communication directly affecting the student. The exosystem holds contexts in which the child may or may not actively participate, but they can affect or be affected by the context. Contexts including parents' workplaces, siblings' classrooms, and the teacher break room may all be included in the exosystem. Finally, the macrosystem contains the broader contextual variables such as cultural and social customs that serve to guide and regulate the other systems (Bronfenbrenner 1977, 1979, 2005; Seginer, 2002).

In Bronfenbrenner's work, development and growth mainly occur in the microsystem and the quality of social, emotional, and cognitive development are dependent upon the quality of the relationships between the child and an important adult (Seginer, 2002). Thus, parents and teachers and the associated settings at the microsystem level have influence in many aspects of development in the young adolescent. Research suggests facets of parental involvement such as maternal involvement, cognitive involvement, and personal involvement serve to protect against learning and behavior problems in the transition to middle school (Seginer, 2006).

Microsystem Variables

Parental involvement and parent support for learning. Definitions and conceptualizations of parental involvement vary widely and encompass a range of behavioral and cognitive activities thought to support school success. However it is defined, parental involvement has been linked with measures of student achievement and other markers of educational success, including retention and dropout rates, graduation rates, and choice of classes. Importantly, parental involvement has also been associated with the psychological processes and personal characteristics in students that support academic achievement (Hoover-Dempsey et al., 2005). Park and Holloway (2013) suggest definitions of parental involvement typically include "parents' interactions with children and schools that are intended to promote academic achievement" (p. 106). From this general definition, six categories of parental involvement identified by Epstein (1987) have been defined and are widely used as the framework for research in this area, which has largely focused on involvement with children of elementary school age. The categories – parenting, communicating with the school, volunteering at school, supporting children's decision-making, assisting learning at home, and working in the community to improve schools – are often presented in research as two dimensions of parental involvement: home-based participation and school-based participation (Park & Holloway, 2013). Home-based parental involvement activities and behaviors include parents communicating with the child about school, offering help with homework, taking children to museums and libraries that support academic success, and establishing a learning environment in the home with access to books, news, and educational toys.

Hill and Tyson (2009) describe academic socialization as a related facet of home-based parental involvement that grows in relevance with children as they transition to early

adolescence and middle school. This transition necessitates changes in parental involvement activities in response to students' developmental needs and the changing demands of school. Parental involvement activities considered in academic socialization include discussing expectations about grades, encouraging goals and aspirations related to education, and providing support for planning for the future. Parents also communicate with their student about effective learning strategies in this domain.

Thoroughly exploring the relationship between parental involvement and student academic achievement in middle school requires consideration of the range of variables that comprise the overall construct of parental involvement in order to clarify which factors show greater correlations with academic achievement and the contexts of their influence. It is necessary to consider parental involvement as multi-dimensional with attention to individual factors. Different components of the construct have varying effects on academic outcomes and adolescent development; thus, focusing on a single area or broad measure of overall parental involvement likely provides an inadequate picture. Research has shown different dimensions of parental involvement impact several areas related to student academic achievement such as motivation, academic self-efficacy, and the relationship with school (Anderson & Minke, 2007; Fan et al., 2012).

Additionally, developmental stages and needs are vital to consider because behaviors and attitudes that were helpful in elementary school may prove to be less effective or may even have negative impacts on achievement over time. For example, in elementary school, attending parent-teacher conferences, PTO meetings, and checking homework were each positively related to academic achievement. They have been shown to have negative relationships with achievement as students move through middle school and high school (Domina, 2005).

Homework involvement is the most common type of parental involvement; however, it is only one facet of the multidimensional construct and is itself comprised of a variety of components ranging from environmental conditions to guidance and supporting autonomy (Gonida & Cortine, 2014). While it is an effective support for younger students, when considered separately, providing homework help has not been consistently found to be effective for adolescents. Homework help from parents has been found to correlate negatively with academic achievement in many studies of secondary students and is the only type of parental involvement that cannot be consistently associated with positive academic achievement (Hill & Tyson, 2009). When explaining these results, researchers suggest parental involvement in homework completion may not be universally helpful, but it can benefit achievement for certain students in some situations depending upon the type of involvement, student grade level, student ability level, and subject matter of the homework (Gonida & Cortina, 2014). For example, research indicates that parental involvement in the form of providing homework help often increases with middle school students who are struggling in school and the parental help implemented in these situations is often deemed by the student to be controlling and intrusive (Dumont, Trautwein, Nagy, & Nagengast, 2014). This increase in control and direct involvement occurs at the same time the developmental trajectory of adolescence is moving toward a desire for more autonomy and independence with the parent-child relationship becoming increasingly bidirectional and less hierarchical (Park & Holloway, 2013).

Parental involvement and support needs change as students move from elementary to middle school with the changes coinciding with transformations in the parent-child relationship as adolescents express an increased desire for autonomy. The needs transition from direct involvement in the classroom to activities such as volunteering at school and attendance at

school functions to indirect participation in school. Indirect parental involvement supports the development of problem-solving and decision-making skills that are important for academic socialization and school success (Seginer, 2006). Research supports academic socialization involvement activities as effective forms of parental involvement as they provide opportunities for adolescents to develop autonomy while growing in a supportive environment. Analysis of the limited available research on parental involvement in middle school students suggests the most consistent and significant relationship with achievement is found when parental involvement focuses on parental expectations for their child's academic achievement (Wilder, 2013).

Parental involvement in academic activities has been shown to influence student achievement in middle school and high school, although its function and expression may vary depending upon factors such as ethnicity/race and socio-economic status (SES). Mixed results have been reported in the limited prior research that is related to the relationships among parental involvement, achievement, and race/ethnicity with some results showing positive relationships and some showing no or weak relationships. (Hill & Tyson, 2009). Some of the available research proposes that group differences appear when considering specific components of parental involvement as opposed to studying it as a single dimensional construct. For example, in the area of parent-child communication, Asian American parents have been shown to be less likely than parents in other ethnic groups to communicate with their children about educational topics. They tend to have the lowest frequency of contact with schools and the highest expectations for academic success. Alternatively, African American parents talk with their children more frequently about educational topics. They also have more frequent contact with schools and participate in school activities more often Asian American parents (Fan, Williams, & Wolters, 2012).

Race/ethnicity and SES may each have unique effects on parental involvement activities and ultimately on student achievement. Their influence may be confounded in studies, which could be a factor in some of the inconsistent results. In general, families with higher incomes see themselves as partners with teachers in their child's education. They feel like they have a right to be involved in the school. They tend to advocate for their child to be put in more challenging classes and actively manage their child's school performance. In contrast, low-income parents face barriers to involvement such as limited financial resources and lack of access to social support. Ultimately, it seems that race/ethnicity and SES may differentially influence the path from parental involvement to school success. African-American parents have generally been found to show greater involvement in home-based activities. White families have been found to be more involved in the school and classroom, which may lead to greater social competence and improved school performance (Hill et al., 2004; Park & Holloway, 2013). While there is a clear need for additional longitudinal research across middle and high school aged students to gain a better understanding of the influence of variables in the macrosystem, available evidence supports consideration of parental involvement as a multidimensional construct within an ecological theory framework when examining it as a potential predictor of achievement for early adolescent children.

Teacher support for learning. Teacher-student interactions are important for all students and are associated with student motivation and school engagement. Engagement is consistently shown to relate to school motivation and is a solid predictor of academic achievement (Anderman & Anderman, 1999; Battistich et al., 1995; Eccles & Midgely, 1989; Furrer & Skinner, 2003; Goodenow, 1993; Roeser et al., 1996; Skinner et al., 1998). Research has illustrated positive relationships among school belonging – feeling accepted, respected,

included, and supported - teacher support for learning, and academic achievement; however, students report feeling less emotional support from teachers and fewer chances for meaningful contact between students and teachers with the transition to middle school (Gutman & Midgely, 2000). The importance of positive interactions between students and teachers is heightened during the transition from elementary to secondary education when engagement and achievement often decline (Hafen et al., 2012; Rockoff & Lockwood, 2010; Schwerdt & West, 2013). Research from an ecological perspective highlights schools and classrooms as part of an interconnected contextual system of development in early adolescence where their role is to provide supportive social settings along with families and neighborhoods (Kim et al., 2014). Within the system, teachers occupy a central role in the school experiences of adolescents and they are key in fostering the students' connections to school, which impacts their social and academic functioning.

Teacher support is a factor in an array of student outcomes, including academic achievement. Teachers offer support in two key, interrelated areas. First, teachers deliver emotional support where they show caring by being available to and spending time with students, and by being dependable. Next, teachers support learning by providing relevant instruction and structure that includes learning activities with clear feedback that fosters autonomy. Autonomy-supportive instruction offers opportunities to make meaningful choices in content and behavior (Stroet et al., 2013; Wang & Eccles, 2013). Mounting evidence asserts that teacher practices can improve student engagement and achievement. Student self-perceptions of academic competence, self-efficacy, and control in learning activities strongly predict effort and persistence as well as student emotional reactions to success and failure that impact future academic behaviors. Classrooms with higher levels of emotional support promote positive self-

perceptions and increased engagement in students, which leads to improved academic achievement (Bandura, 1997; Dweck, 1999; Elliot & Dweck, 2005; Skinner et al., 2008). Student engagement, effort, and academic performance are predicted by student beliefs about teacher caring (Goodenow, 1993; Murdock, 1999). When middle school students perceive their teachers as warm, their interest in school and engagement increases. Subsequently, their engaged academic behaviors lead to increased positive feedback and support from teachers, which, in turn leads teachers to use more practices that maintain engagement in academic tasks that support achievement (Connell & Wellborn, 1991; Davis, 2006; Raphael et al., 2008).

Characteristics of teachers impact students' feelings about school. When teachers give social and emotional support, they show caring by engaging in respectful interactions, offering effective praise with an understanding of a middle school student's desire for equity and fairness, and communicating expectations for achievement that consider the skills of individual students. These caring behaviors help satisfy the emotional needs of students, which increases school attachment and leads to improved social and achievement outcomes (Hallinan, 2008). Students struggling with engagement at school are more likely to experience withdrawal of emotional support by teachers, which reinforces a negative feedback loop leading to less emotional support and more controlling practices by teachers (Skinner et al., 2008).

The need for relatedness is an important developmental consideration for middle school students. The need for relatedness or belonging encompasses a student's need to feel connected to others or to belong. The need is met through frequent, pleasant personal contact and the perception of an interpersonal connection that is stable, ongoing, and marked by concern for other's feelings (Baumeister & Leary, 1995). Students in middle school get their interpersonal relatedness and belonging needs met through interactions in a variety of contexts, including in

their families and with peers; however, social support from teacher-student relationships has been shown to clearly impact student emotions, motivation, and achievement (Ahmed, Minnaert, van der Wert, & Kuyper, 2010). Teachers show support that helps meet students' need for relatedness through involvement with students and interactions that show caring and understanding of the needs and abilities of students. Research suggests that teachers who are available to students and willing to spend time with them and those who show dependability and availability build relationships with students that help meet students' needs for interpersonal relatedness and belonging (Belmont, Skinner, Wellborn, & Connell, 1992; Stroet et al., 2013). Evidence clearly asserts that the quality of teacher-student connections, especially supportive, caring relationships, predict student engagement and achievement (Birch & Ladd, 1997; Goodenow, 1993; Murdock, 1999; Murray & Greenberg, 2000). Teachers demonstrate support for students through use of instructional practices that support autonomy by offering students opportunities to make meaningful choices, providing a predictable, responsive classroom structure, and delivering responsive feedback (Guthrie & Davis, 2003; Reeve, Jang, Carrell, Jeon, & Barch, 2004; Skinner et al., 1998).

Matching learning tasks to the values and interests of students has been found to foster greater effort and commitment to academic tasks than work that is perceived as irrelevant, uninteresting or assigned with completion as the only purpose (Raphael et al., 2008). Autonomy supportive teaching recognizes the growing need in adolescents to act with attention to their needs and values and according to their own will; thus, students who exercise autonomy choose to participate in learning willingly, even if the action is at the request of the teacher (Stroet et al., 2013). Teachers who support autonomy in students offer choices that are relevant and related to student interests and preferences. Students are also allowed to choose tasks they perceive as

important and hold at least some interest for them. Teachers that support autonomy are respectful and non-controlling in language and interactions (Assor, Kaplan, & Roth, 2002; Belmont et al., 1992; Reeve et al., 2004). Student perceptions of autonomy in the classroom have been shown to predict engagement in academic tasks (Hafen et al., 2012). Lack of opportunity to exercise autonomy within the classroom has been identified as an important factor related to the reported declines in engagement and achievement in middle school students where having chances to exercise autonomy are a key developmental need. Research further supports that academic success and engagement are enhanced in caring classroom environments that support structured autonomy where students can use their skills and knowledge (Allen, Hauser, Bell, & O'Connor, 1994; Hafen et al., 2012; Smith, Ito, Gruenewald, & Yeh, 2010).

Teachers that provide responsive structure have been shown to enhance students' feelings of competence and autonomy by helping them feel they are effectively managing social interactions in school while simultaneously growing in their capacity for academic and social success (Stroet et al., 2013). Providing informational feedback that is constructive strengthens feelings of competence, which helps students feel they gain more control over academic outcomes at school (Jang, Reeve, & Deci, 2010; Skinner & Belmont, 1993). Feedback that provides information about student progress develops feelings of competence in students; while evaluative feedback that increases the pressure to perform well undermines autonomy of students due to its perception as controlling (Deci & Ryan, 1985).

Peer support for learning. As adolescents develop from childhood to early adolescence, they become less dependent on parents and their need for collaborative relationships grows. During this time, they look increasingly to peers to meet their needs for emotional support (Berndt, 2004; Way & Greene, 2006). School transitions are a major developmental challenge of

adolescence. The transition to middle school is smoother with better social, emotional, and academic adjustment present for those who have greater perceived peer support and satisfying peer relationships than lonely students (Fenzel & Blyth, 1986; McDougall & Hymel, 1998). Some students are at more risk for adverse outcomes and decreased performance. For these students and others, having developed academic skills, appropriate social skills, and supportive peer relationships may improve outcomes and foster success after the transition from childhood to early adolescence (Graber, Brooks-Gunn, & Warren, 2006; Masten, Cutuli, Herbers, & Reed, 2009). Support from parents is valuable to students throughout their school careers; however, as they reach adolescence, peer-related support takes a more significant role that influences a variety of outcomes. Student perception of peer social and emotional support has been linked to self-concept, academic goals, and engagement at school (DuBois et al., 1992; Felner, Aber, Primavera, & Cauce, 1985; Murdock, 1999; Wentzel, 1998).

Students chosen as friends by adolescents tend to share similar beliefs and attitudes about school, academic achievement, and their future educational goals (Wentzel & Caldwell, 1997). The academic performance by peers and the level of peer support from peers influences outcomes positively or negatively with achievement enhanced by having friends who earn higher grades and have long-term goals for their future education. Having friends who get poor grades and talk negatively about academic success have been shown to impede achievement (Mounts & Steinberg, 1995; Steinberg, 1996). The quality of middle school peer relationships has been found to significantly relate to social and academic school adjustment. Students who are well-liked and popular with their peers tend to perform better academically and show more socially competent behavior than students who are highly disliked by their peers (DeRosier, Kupersmidt & Patterson, 1994; Wentzel, 2003).

Peer support continues to impact performance and school success throughout secondary school careers, including influencing the probability of completing high school. Adolescents who are more engaged in school are likely to have friends who are also engaged in school and who value academic success. Research indicates that association with peers who encourage and model academic achievement forms a reinforcing relationship that reduces the likelihood of dropping out of school. Similarly, associating with peers who value school and have higher aspirations when they are in middle school has been shown to have ongoing influence through high school with peer support related to student reported academic values and beliefs about their own academic competence (Ream & Rumberger, 2008). Studies have shown clearly that parental involvement and support has a prominent role in the long-term educational goals and achievement of students; however, peers provide the most salient influences on the daily school behaviors of adolescents through their influence on school enjoyment, classroom behavior, and time spent on homework (Steinberg et al., 1992). From an ecological perspective, peers are an increasingly critical context of development for children as they transition to and develop in adolescence.

Intrapersonal Variables

School engagement. School engagement and related constructs have been identified as factors that are associated with a range of educational and social outcomes for middle school students. Studies include school engagement as a construct in a diverse body of literature related to school dropout, school bonding, risk and resilience, and motivation in predicting outcomes for students (O'Farrell & Morrison, 2003). Engagement in school predicts grades, achievement test scores, and student learning in the short-term. Over the long-term, high levels of engagement in school have been shown to relate to school attendance, increased probability of graduating from

high school, and resilience in students (Connell et al., 2004; Skinner et al., 1998, 2008). Studies also suggest engagement may serve as a protective factor for students with greater engagement in school related to lower levels of delinquency, risky sexual behavior, and illegal drug and alcohol use in adolescence. Research indicates school engagement can support academic achievement and helps students avoid the risks of adolescence (O'Farrell & Morrison, 2003; Skinner et al., 2008). In contrast, disengagement from school has been identified as a critical factor in students who drop out of high school. Disengagement from school in eighth grade has been shown to be a key risk factor associated with high school drop out, with increased delinquent behavior and high levels of substance use present both before and after dropping out of school in disengaged students from middle adolescence through young adulthood (Henry et al., 2012).

Researchers and educators are interested in the construct of engagement because it is an area that is potentially malleable and influential in determining academic achievement, and thus may be a promising target for intervention (Skinner et al., 2009). Engagement is generally considered to be a multidimensional construct comprised of behavioral, emotional, and cognitive components. Behavioral engagement includes attending to and participating in learning activities, following school rules, and regular school attendance. Use of meta-cognitive strategies and self-regulated learning behaviors are considered activities related to cognitive engagement. Affective attitudes and feelings of belonging and connection with school are related to emotional engagement (Fredericks, Blumenfeld, & Paris, 2004; Furrer & Skinner, 2003; Wang & Eccles, 2012). For this study, activities related to behavioral engagement such as effort, persistence, attention, and concentration are the focus. These behaviors are often referred to as on-task behavior and class participation and they are relevant to the current study due to their relationship with achievement and school completion that has been shown through previous

research (Connell et al., 1994, 1995; Skinner et al., 1990, 1998). Specifically, Wang and Eccles (2011) found increased participation in school and use of self-regulated learning strategies were positively related to grades and plans for future education, which was consistent with the understanding that regular attendance and participation in classes, and using strategies to monitor understanding of material make it more likely for a student to achieve academic success. Thus, behavioral engagement in school as shown through behavioral participation in the learning activities in the classroom is relevant for this study, especially when considered from ecological and developmental perspectives in students who transition to middle school when increased demands for organization and independence are required for academic success.

Studies have demonstrated engagement in school is related to the development of positive and appropriate peer relationships that promote involvement in class activities, development of prosocial behavior, and academic achievement (Van Ryzin et al., 2009; Wentzel, Barry, & Caldwell, 2004). O'Farrell and Morrison (2003) examined factors related to school bonding and engagement and found that students bonded to school through peer relationships, not pre-existing personal emphasis on academic success. These results support the notion that peer relationships are increasingly important in supporting engagement and achievement as students transition to middle school and they increase their reliance on peers over adults.

Relationships with adults also impact engagement as shown in adolescents who receive support from parents are more likely to actively participate in school, not get in trouble at school, and have better grades in school (Furrer & Skinner, 2003; Wang, Dishion, Stormshak, & Willett, 2011; Wang & Eccles, 2013). Research findings suggest parent-child relationships may be the basis for working models of relationships with adults that are generalized to other contexts such as school and teacher-student relationships. As such supportive parental relationships can help

students feel internally competent and autonomous and able to generalize those positive feelings to school and other settings and provide a foundation for students to explore, develop healthy behavior patterns, and adapt to the school environment (Murray, 2009). Relationships with parents and teachers have been found to uniquely contribute to school engagement; however, teacher support has been found to be a stronger predictor than parental support (Garcia-Reid, Reid, & Peterson, 2005).

Studies support the role of teacher student relationships in engagement through a reciprocal relationship where student perceptions of autonomy and support from teachers lead to increased engagement behaviors which then prompts more opportunities for autonomy and support from teachers (Skinner & Belmont, 1993; Van Ryzin et al., 2009). Van Ryzin et al., (2009) report teacher and peer support and connection to school independently and positively impact engagement in learning. Cumulative contributions of adult support are believed to be greater than the contribution of either teachers or parents separately. Supportive relationships with parents and teachers have been found to moderate the risks to school engagement in at-risk students (Ryan, Stiller, & Lynch, 1994; Woolley & Bowen, 2007). Evidence that supports the link between engagement and academic achievement suggests considering peer, teacher, and parent support related to increasing engagement merits attention from developmental and ecological perspectives that recognize the changing demands and need for support for students in early adolescence where declines in engagement are common (Hafen et al., 2012).

Metacognition. Relationships and support in a variety of microsystem contexts – parent, teacher, and peers - clearly influence school engagement and academic achievement for students; however, individual characteristics, skills, and behaviors of students play critical roles in academic success in school. When considered from an attribution theory perspective, students

who believe effort and persistence in academic tasks lead to success tend to be motivated to maintain effort even when faced with challenges or failure (Weiner, 1985). Models of self-regulated learning assert that students who adopt a focused role in their learning are more effective. Self-regulated learning is viewed as a skill that can be developed through instruction and experience to improve how students engage with tasks (Schunk, 2001; Winne, 1995; Wolters, 2014).

Among the major conceptualizations of self-regulation in research, the models share some basic beliefs related to self-regulated learning and classroom performance. Researchers accept that self-regulated learning includes metacognitive strategies where students are actively engaged in learning and they manage their learning and motivation by adapting thoughts, feelings, and actions to achieve goals. Theorists also indicate contextual, developmental, and individual differences in students can impede or support self-regulated learning activities, student effort and persistence, and individual student goals. (Boekaerts & Corno, 2005; Pintrich & De Groot, 1990; Winne, 1996; Wolters, 2010).

Research in self-regulated learning differs in perspectives, language and terminology; however, all models consider metacognition and the use of metacognitive strategies as important components of self-regulated learning. Definitions and models of metacognition are generally comprised of two distinct but interrelated elements – knowledge about cognition and regulation of cognition (Flavell, 1979; Veenman et al., 2006; Vrugt & Oort, 2008). Metacognitive knowledge refers to the beliefs or knowledge about persons, tasks, and strategies and how their interactions impact learning activities (Flavell, 1979). Cross and Paris (1988) characterize three types of metacognitive knowledge. Declarative knowledge is the awareness of the factors that impact cognition. Procedural knowledge includes an understanding of metacognitive skills and

how to apply them in learning activities. Finally, conditional knowledge refers to recognizing the conditions when specific metacognitive strategies are needed and effective.

Regulation of cognition refers to the procedural knowledge about regulating learning and the skills and strategies of planning, monitoring, and evaluation that students employ to manage and control their learning. Planning includes choosing helpful strategies and assigning resources to use the strategies in learning. Students monitor understanding and comprehension during learning. Evaluation occurs when students consider outcomes and the efficiency of learning, and make plans for future learning. The skills appear to be interrelated and contain a mechanism for feedback based on performance and the outcome of the learning activities (Veenman & Spans, 2005; Veenman et al., 2006). Research by Vrugt and Oort (2008) reports students that demonstrate knowledge about cognition and regulation of cognition show increased use of metacognitive strategies and resource management that positively impacted grades on tests.

Accurate understanding of individual learning processes is required for effective use of metacognitive knowledge. Misattributions related to personal characteristics such as effort, task qualities, and strategy use limit the effective use of metacognitive strategies (Veenman et al., 2006). From a developmental standpoint, middle school students are faced with increased metacognitive demands in more challenging and complex learning activities while constrained by less developed skills and less sophisticated cognitive knowledge that is still developing. Metacognitive awareness likely appears in childhood with the development of metacognitive skills accelerating starting at ages ten to twelve years old. Research indicates the development of metacognitive skills occur at least partly independently of intellectual ability (Veenman et al., 2005). Metacognitive skill use has been found to uniquely explain a larger portion of the

variance in some learning tasks than intellectual ability alone or the shared variance between metacognitive skills and intellectual ability (Veenman & Verheij, 2007).

Metacognitive skills appear to develop independent of the domain or subject area of learning and are described as a "general, person-related characteristic across age groups" (Veenman et al., 2004, p.103) at least in novice learners during the early acquisition of knowledge. School and home environments can support the development of metacognitive skills for middle school students (Dembo & Eaton, 2000; Grolnick et al., 2000). Metacognitive skill development occurs in conjunction with brain development and improved processing that happens through advances in speed, capacity, and inhibition. Studies of brain development indicates improvements in effectively processing information continues in students of ages ten through twenty years old, with growth in self-regulatory processes such as inhibition especially important to adolescent functioning (Kuhn, 2006).

Student organizational factors. Consideration of specific student level organizational and academic behavior factors are relevant in this study because these variables may not be included in many measures that assess other student characteristics such as metacognition and school behavioral engagement. Student organizational skills, active engagement in school, and the use of metacognitive skills and strategies previously described may be more malleable and open to benefit from instruction and experience than other contextual variables (Karabenick, 2003). Additionally, attention to potentially alterable factors that influence achievement beyond cognitive ability has increased due to the recognition that assessments and predictions of academic performance are more accurate if they include a variety of factors such as motivation, conscientiousness, and use of self-regulated learning strategies. These student characteristics and

behaviors are found to be associated with academic performance when the effects of intellectual ability are accounted for in studies (Richardson et al., 2012).

The transition to middle school requires an abrupt adjustment for students to shift from having one classroom and one main teacher to managing departmentalized classes taught by several teachers. This change often leads to less personal and positive teacher student relationships and lack of integration of information across subjects. Middle school students interact with several teachers a day without opportunity to build relationships and are unable to easily access help when needed (Wigfield & Eccles, 2002). Success in middle school requires students to independently manage multiple assignments, plan for and complete projects over time, prepare for assessments, and self-regulate their time and behavior with less guidance readily available from teachers, perhaps due to an underlying assumption by some teachers that students arrive at middle school already equipped with the necessary organizational and academic skills and habits (Boller, 2008; Hampshire, Butera, & Bellini, 2011). Skills in managing a variety of demands and activities in learning, including organizational and self-management skills are related to academic achievement (Coutts, 2004). Homework assignments are a common learning task assigned in middle school. Homework completion is more closely related to achievement in middle school and high school than it was in elementary school (Cooper & Valentine, 2001). Homework can be a tool to help students develop organizational and self-management skills and practice monitoring their progress and achievement in school (Hampshire et al., 2011).

A variety of other specific skills and behaviors have been identified as student level academic and organizational behaviors that can contribute to academic success. Strong organizational skills are needed for middle school students to manage demands on their time in a

range of contexts – home, school, and social areas. Students need a system for organizing their materials to remind them to write down assignments, keep track of papers, manage long-term assignments, and ensure they bring required materials to class daily (Paulsen & Sayeski, 2013). Studies show taking notes and reviewing them at a later time aids learning. Many students in middle school struggle to take effective notes and they may benefit from having a framework that directs their attention to what should be written down. As with instruction and practice with metacognitive skills, providing support for effective note-taking appears to be more important for students functioning at lower academic levels (Kobayashi, 2006).

Regular use of a planner by students can support the development of time management and organizational skills. Students use a planner to break down projects into smaller segments and to monitor timelines for due dates and assessments. Planners can also be used as a tool to aid in home-school communication. Planner use has been shown to aid and support in goal-setting, self-monitoring behavior, and monitoring and evaluating progress toward goals (Chan, Graham-Day, Ressa, Peters, & Konrad, 2014; Kern, Ringdahl, & Hilt, 2001). Along with using a planner as a tool for evaluating progress and adjusting behavior, teacher-supported use can help students self-recruit feedback and appropriately respond to feedback to improve performance before proceeding on required tasks (Alber & Heward, 2000; Chan et al., 2014).

Attention to the interconnected environments in which adolescents develop is important to include in a discussion of student-level behaviors. Influences from contexts surrounding students clearly impact the implementation and effective use of strategies as well as the development of organizational and metacognitive skills. Parents can model and support self-regulation and organizational skills and habits by monitoring student use of their planners. Parents and children can engage in conversations about study skills and using appropriate

strategies related to their current assignments, projects, and test preparation as a component of the academic socialization domain in parental involvement (Hill & Tyson, 2009). Home-school communication and monitoring of student progress can be aided through use of a planner where parents and teachers ask questions, request information, and provide feedback.

Teachers and schools are in the position to teach and provide opportunities to practice study skills and note-taking skills in conjunction with the delivery of subject area information (Kobayashi, 2006). Teachers can also help students develop organizational skills by modeling the use of an organization system that is designed to support learning in their specific class that considers the type of assignment, materials, project planning, notes, and provides a venue for timely and appropriate feedback about student progress (Boller, 2008; Hampshire et al., 2011; Paulsen & Sayeski, 2013). This study will consider if teachers and parents support adolescent development by monitoring organizational and self-regulatory supports by acknowledging the desire for students in early adolescence to experience greater autonomy and have opportunities for complex thinking and learning activities while they continue to develop skills and strategies that support academic success in school.

Summary

Academic achievement in middle school is influenced by a variety of contextual variables, including support for learning from parents, teachers, and peers. Intrapersonal variables also play a role in achievement with behavioral engagement in school, metacognition, and specific organizational/academic behaviors considered in the current study. The purpose of the study is to examine the individual and combined impact of the contextual and intrapersonal variables on achievement. The study will also explore if the concrete, observable

organizational/academic behaviors offer unique contributions to achievement in middle school or moderate the associations between contextual factors and achievement.

CHAPTER 3 METHOD

Participants

Participants in the study included 200 students in 6th through 8th grade attending a suburban school district in Michigan. The sample included all students in the school. Census Bureau data indicates that citizens of the city where the school is located report a median household income of $40,140 with 86.5 percent of residents having attained an educational level of high school graduate or higher (United States Census Bureau, 2010). The school district reported a Fall 2014 enrollment of 1,334 students, with 70.8% classified as economically disadvantaged. According to the data for 2014 from the Michigan Department of Education (Center for Educational Performance and Information, 2014), the district reports the following ethnic demographic information: approximately 60.79% White, 35.08% African American, 1.5% Hispanic/Latino, 1.42% Asian, and 1.12% multi-race. All students in the school who were not in the class for cognitively impaired students were asked to participate. A total of 9 parents responded either by returning the Parental School Information Sheets or contacting the principal investigator directly by phone or email specifying that they did not give permission for their child to participate in the study. See Table 1 for a summary of the demographic characteristics of the participating students.

Table 1

Frequency Distributions – Demographic Characteristics of the Sample

Demographic Characteristics (n = 200)	Number	Percent
Gender		
Male	110	55.0
Female	90	44.4
Ethnicity		
African American/Black	56	28.0
Asian/Pacific Islander	2	1.0
Caucasian	69	34.5
Hispanic	2	1.0
Middle Eastern	22	11.0
Other (primarily multi-racial)	36	18.0
Grade	60	30.0
6th	62	31.0
7th	78	39.0
8th		
Self-reported grades		
Mostly As	18	9.0
Mostly As and Bs	56	28.0
Mostly Bs	12	6.0
Mostly Bs and Cs	65	32.5
Mostly Cs	13	6.5
Mostly Cs and Ds	23	11.5
Mostly Ds	1	.5
Mostly Ds and Es	9	4.5
Mostly Es	3	1.5

Measures

The participants completed a demographic survey developed for the study as well as self-report measures of the following constructs: parent support for learning, teacher support for learning, peer support for learning, behavioral engagement in school, metacognition, organization/academic practices, and academic achievement measured by report card grades. The

Cronbach's alpha internal consistency reliability coefficients for each measure are reported in Table 2 below. Copies of all measures are included in Appendix A.

Table 2

Cronbach Alpha Coefficients – Scaled Variables

Scale and Subscales	α Coefficient
Parental Support for Learning Scale – PSLS	
Parental Management of the Learning Environment	.87
Supportive Parental Involvement	.75
Child and Adolescent Social Support Scale (CASSS)	
Teacher Support	.91
Peer Support	.93
Behavioral Engagement versus Disengagement in School	.83
Motivated Strategies for Learning Questionnaire (MSLQ)	
Cognitive and Metacognitive Strategies: Metacognitive Self-Regulation	.75
Student Academic and Organizational Behaviors	.94

Demographic Form. The participants will complete a demographic questionnaire developed for this study. The questionnaire will contain items pertaining to age, gender, ethnic or racial background, and academic achievement information in the form of student reported grades in academic subjects of English/Language Arts, math, science, social studies.

Parental involvement and support for learning. Two subscales of the Parental Support for Learning Scale – PSLS (formerly called The Family School Questionnaire – FSQ, Midgett, 2000) were administered to measure parental support for learning. The PSLS is a questionnaire that assesses children's perceptions of parent educational involvement at home about parent behaviors that are focused on helping them succeed in school. Two dimensions of

parental involvement are targeted -- parental involvement behaviors and the emotional tone of parental involvement. The original scale has two forms, one concerning interactions with their fathers (PSLS-F) and one concerning their interactions with their mothers (PSLS-M), each with items that assess a child's perceptions of their mothers' and fathers' behaviors that are primarily focused on helping them succeed in school. For this study, the students responded to items about one of their parents that is most often involved in their school experiences. Students responded to items from two subscales: 1) Parental Management of the Learning Environment (e.g., "My parent makes me do homework at a certain time."), and 2) Supportive Parental Involvement (e.g., "My parent tries to make me feel confident in my schoolwork."). Students respond using a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Moderate to high Cronbach's alpha reliability coefficients were found for each factor (Supportive Parental Involvement .65 for PSLS-M, .83 for PSLS-F; Parental Management of Learning Environment .82 for PSLS-M and .89 for PSLS-F). Reliability information for the original Family School Questionnaire (Midgett, 2000) indicates split-half reliability for the child responding about the mother was .83. The child responding for the father found a split-half alpha of .81 with an alpha of .84 for the full parent form. The Cronbach's alpha internal consistency reliability coefficients for this sample were .87 for parental management of learning environment subscale and .75 for the supportive parental involvement subscale.

Teacher support for learning. The Teacher Support subscale of the Child and Adolescent Social Support Scale (CASSS; Malecki, Demaray, & Elliott, 2000) were administered to measure the support students perceive they receive from teachers. The CASSS is appropriate for use with students in grades 3-12. On the Teacher Support subscale, students respond to 12 statements such as, "My teacher explains things I don't understand," and "My

teacher nicely tells me when I make mistakes." Students respond by rating each item on frequency and importance. Frequency ratings are on a 6-point Likert-type scale ranging from 1 (never) to 6 (always). Importance ratings are on a 3-point Likert-type scale ranging from 1 (not important) to 3 (very important). Frequency ratings are added for each subscale. The importance ratings are primarily used for clinical interpretation of responses and were not included in data analysis for this study.

Malecki and Demaray (2002) evaluated the reliability and validity of the CASSS using data from a sample of 1,100 students in grades 3-12. The internal consistency reliability coefficient was .95 for the total scale and .92 for the teacher scale. Test-retest analysis showed test-retest reliabilities on a middle school sample after 8 weeks of .70 for the total scale and .60 to .76 for the subscales. The CASSS has been show to be correlated with constructs of self-concept, social skills, and behavioral functioning. The Cronbach's alpha was .91 for the current sample.

Peer support for learning. The Classmate Support subscale of the Child and Adolescent Social Support Scale (CASSS; Malecki, Demaray, & Elliott, 2000) was administered to measure the support students perceive the receive from peers in school. The subscale has 12-items such as, "My classmates like most of my ideas and opinions," and "My classmates notice when I have worked hard." Responses are rated on frequency and importance as described above about teacher support. The same response options apply. Students respond by rating each item on frequency and importance. Frequency ratings are on a 6-point Likert-type scale ranging from 1 (never) to 6 (always). Importance ratings are on a 3-point Likert-type scale ranging from 1 (not important) to 3 (very important). The Cronbach's alpha was .93 for the current sample.

Student Engagement. Students responded to 10 items written by Marchand and Skinner (2007) measuring their behavioral engagement versus disengagement in school. Students reported on their own behavioral participation and withdrawal from classroom learning activities. The 5-items in the behavioral engagement component tap effort, attention, and persistence in learning activities (e.g., "I pay attention in class, I try hard to do well in school"), while behavioral disaffection was assessed on 5-items that tapped lack of effort and withdrawal from learning activities (e.g., "I don't try very hard at school, In class, I do just enough to get by"). Students responded using a Likert-type scale ranging from 1 (Not At All True) to 4 (Very True). Items are averaged to create a behavioral engagement score. Internal consistency reliability was reported to be .76 in fall and .84 in the spring. In a 2009 study, internal consistency reliabilities were found to be .77 for behavioral engagement and .57 for behavioral disaffection (Skinner et al., 2009). Correlations showed covariations with other personal and social facilitators of motivation such as capacity beliefs (.52 - .66), sense of relatedness (.40-.53), and goal orientations (.40-.61). For the current study, Cronbach's alpha was .83 for the scale.

Metacognition. The Cognitive and Metacognitive Strategies: Metacognitive Self-Regulation subscale of the Motivated Strategies for Learning Questionnaire (MSLQ) was administered (Pintrich, Smith, Garcia, & McKeachie, 1991) to assess metacognitive skills and practices. Although the MSLQ was designed for college students to be used in specific courses, researchers have used the measure with younger students at the elementary and secondary levels as well with comparable reliabilities for learning strategies scales (Pintrich & DeGroot, 1990; Taylor, 2012). Researchers have also used the MSLQ across classes and content areas to measure the overall tendency to use learning strategies (Wolters, 2003). The Metacognitive Self-

Regulation subscale contains 12 items for the students to respond to on a seven-point Likert scale, ranging from 1 (not at all true of me) to 7 (very true of me).

The subscale has been found to have a moderate to high internal consistency level of .79. With regard to predictive validity, the subscale has shown correlations with course grade in the expected direction with students who rely on deeper processing strategies (elaboration, critical thinking, metacognitive self-regulation, organization) more likely to earn higher grades. The Metacognitive Self-Regulation subscale core reportedly correlates .30 with final grade. Garcia & Pintrich (1995) report multivariate analyses support the predictive utility of the MSLQ across classes and content areas. In the current sample, the Cronbach's alpha was .75.

Student academic organizational behaviors. Several additional items not included in the above measures were developed for the purposes of this study, were administered specifically to assess explicit organizational behaviors that middle school students are learning to implement consistently. These included: I write in my planner in all of my classes, I look at my planner so I know when to study for a test, I use my planner to break down large projects into smaller sections instead of working on the whole project at the last minute, I have a notebook/folder system for each class to help keep my materials and assignments organized. The student was also asked questions about their perceptions of parent support for academic organizational behaviors (e.g., "My parent checks my planner to make sure I write down assignments, My parent checks my planner to make sure I write due dates for projects, My parent uses the planner to communication with my teachers by writing notes and/or asking questions"). Student perceptions of teacher support for student academic organizational behaviors was included (e.g., "My teachers require me to write assignments, tests, projects in my planner, My teachers require me to have my parent sign my planner, My teachers require me to organize my folder/notebook in a

specific way for their class, My teachers use my planner to communicate with my parent/guardian, My teachers use the parent connect online system to record grades, missing assignments, and provide feedback on my progress"). Response options were 0 = never, 1 = one day per week, 2 = two days per week, 3 = three days per week, 4 = four days per week, 5 = five days per week. The Cronbach's alpha was .94 for the current sample.

Academic achievement. Academic achievement was measured using self-reported grades. Students were asked to report their overall grades by answering the question, "What grades do you most often receive?" with the following possible responses: Mostly A's; Mostly A's and B's; Mostly B's; Mostly B's and C's; Mostly C's; Mostly C's and D's; Mostly D's and E's; Mostly E's. Responses were coded 1 (Mostly A's) through 9 (Mostly E's) and then reverse coded for statistical analysis, so that a higher grades score corresponded with better grades. Students were asked to report their grades in each core class (English/Language Arts, math, science, social studies) by answering the question, "What were your most recent grades in each of the following classes?" with the following response options for students to circle: A, B, C, D, E. An option for participants to write in their recent grades in each class was presented with the direction "OR, Write in what were your most recent grades in each of the following classes" with blanks for each class. Responses were coded 1 (A) through 5 (E). Responses were reverse coded for statistical analysis with higher grades noted by higher code.

Procedures

Upon approval from the HIC and at least two weeks before commencement of data collection, the parents of each student were sent a Parental Supplemental Information Letter with "Decline to Participate" Option information sheet in the mail. The sheet contained information about the purpose of the study, data collection procedures, risk and benefits, and information

about confidentiality of participant information. Telephone and email contact information for the principal investigator were provided as well for parents who may have had questions about the study. Parents were able to refuse to allow their child to participate by returning the information sheet to the principal investigator or by contacting the principal investigator via telephone or email. Copies of all measures used in the study were available in the principal's office for parents to review. Participation in the study was voluntary.

The principal investigator, in consultation with the building principal, scheduled the data collection during Enrichment class periods in order to minimize interruption of academic instructional time and to support student comfort during the recruitment and survey administration process. Each student in the school attended one period of Enrichment each day. On the day of administration, the principal investigator explained the study and process to the students during each class period using a script with an age appropriate explanation. The principal investigator explained that participation was completely voluntary even if their parents previously granted permission for participation. Participants were instructed not to write their names on the questionnaires so all information would remain anonymous and teachers would not have access to completed questionnaires. Students were reminded that their participation would not impact their grades or relationships with school personnel in any way. Participants were informed that they could refuse to answer any specific question and they could discontinue participation at any time.

Students whose parents provided permission and who also gave their assent were asked to complete a packet of questionnaires and demographic information form (Appendix A) during the designated class period. Completion of the questionnaires took approximately 30-40 minutes and was completed during one class period. Students who did not participate in the study were

asked to work quietly on an appropriate activity of their choice (finish a class assignment, read a book, etc.). After distributing packets, the investigator read aloud directions for completing the demographic form and questionnaires and answered any questions from participating students. Participants were spread out and seated two students per table and encouraged to keep their answers private to support independent and honest responding. Upon completion of the questionnaires, each student put their packet into a plain envelope to ensure anonymity and confidentiality of responses. Students were then be offered a choice of snack (candy bar, granola bar, chips, cookies,).

Data Analysis

The questionnaire data was entered by the principal investigator into an SPSS data spreadsheet. The data was analyzed using IBM SPSS Statistics Version 23. The following table (Table 3) describes the analyses that were conducted for the research questions.

Table 3

Statistical Analyses

Preliminary Analyses	--Correlations among all variables --ANOVA tests of gender/grade differences for all variables	
Research Hypotheses	Variables	Statistical Analysis
Research Question 1A: How much individual and combined explanation of variance in achievement is accounted for by the parent, teacher, and peer contextual variables? Does each factor contribute unique variance beyond the others and if so, which factors contribute most toward explaining the variance in middle school academic achievement?		
H_{1A}: The identified factors will significantly explain the variance in academic achievement with each variable contributing approximately the same amount toward explaining the variance in middle school academic achievement.	<u>Criterion Variable</u> Academic achievement <u>Predictor Variables</u> • Parent support for learning • Teacher support for learning • Peer support for learning	Multiple linear regression analysis

Research Question 1B: How much individual and combined explanation of variance in achievement is accounted for by the intrapersonal variables (school engagement, metacognition, and organizational/academic factors)? Is one factor more strongly predictive of achievement than the other?		
H_{1B}: The identified variables will significantly explain the variance in the academic achievement with metacognition contributing more toward explaining the variance in middle school academic achievement.	Criterion Variable Academic achievement Predictor Variables • School engagement behavior • Metacognition • Organizational/academic factors	Multiple linear regression analysis
Research Question 2: Controlling for intrapersonal variables, how much variance in achievement is explained above and beyond by the contextual variables		
H_2: Parent, teacher, and peer contextual variables will explain additional variance in achievement beyond that explained by intrapersonal variables (school engagement behaviors, metacognition, organizational/academic factors).	Criterion Variable Academic achievement Predictor Variables *Step 1:* • Metacognitive strategies • School engagement • Organizational/academic factors *Step 2:* • Parent support for learning • Teacher support for learning • Peer support for learning	Hierarchical multiple linear regression analysis
Research Question 3: Do the intrapersonal variables (school engagement, metacognition, and organizational/academic factors) moderate the associations between contextual factors (parent, teacher, peer) and academic achievement?		
H_3: Metacognition, school engagement behaviors, and organizational/academic factors will moderate the associations between the contextual factors (parent, teacher peer) and academic achievement.	Criterion Variable Academic achievement Predictor Variables • Parent support for learning • Teacher support for learning • Peer support for learning Moderating Variables • School engagement • Metacognitive strategies • Organizational/academic factors	Multiple linear regression analysis

CHAPTER 4 RESULTS

This chapter presents results of the data analyses that were used to address each of the research questions of this study. The purpose of the study was to examine a variety of contextual and intrapersonal variables for the degree of their association with academic achievement in middle school students. The contextual variables were parent support for learning, teacher support for learning, and peer support for learning. The intrapersonal variables were metacognition, behavioral engagement, and student organizational behaviors. The goal was to examine the combined and unique contributions of each variable and the role of the intrapersonal variables as potential moderators. Inferential statistical analyses were used to test the research questions, with a criterion alpha level of .05 used to determine statistical significance. Means and standard deviations are included in Table 4. A correlation matrix for all variables is in Table 4.

Table 4

Descriptive Statistics

	Number	Mean	SD	Range	
				Minimum	Maximum
Academic Achievement	200	6.33	1.89	1.00	9.00
Eng. Lang Arts Grade	198	3.47	1.38	1.00	5.00
Math Grade	199	3.17	1.40	1.00	5.00
Science Grade	199	2.99	1.47	1.00	5.00
Social Studies Grade	199	4.65	1.27	1.00	5.00
Parent Support for Learning	184	3.23	.62	1.88	6.00
Teacher Support for Learning	190	4.28	.99	1.67	6.00
Peer Support for Learning	191	3.56	1.15	1.08	6.00
Metacognition	186	4.19	.96	1.67	7.00
Engagement	184	2.04	.58	1.30	4.00
Student Organization	180	1.18	1.06	.00	5.00

Table 5

Pearson Product-Moment Correlation Matrix: All Study Variables

	Variables										
	1	2	3	4	5	6	7	8	9	10	11
Achievement	---										
ELA Grade	.56**	---									
Math Grade	.60**	.27**	---								
Science Grade	.55**	.24**	.57**	---							
Social Studies Grade	.58**	.44**	.39**	.38**	---						
Parent Support	.14	.20**	.09	.04	.21**	---					
Teacher Support	.14*	.11	.11	.03	.14	.28**	---				
Peer Support	-.01	-.00	.04	-.04	.05	.17*	.34**	---			
Engagement	.34**	.34**	.20**	.16*	.31**	.35**	.22**	-.05	---		
Metacognition	.20**	.18*	.09	.12	.21**	.44**	.25**	.16*	.46**	---	
Organization	.15*	.16*	.08	.09	.19**	.38**	.24**	.14	.17*	.40**	---

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

Several preliminary analyses were conducted. One-way Analyses of Variance (ANOVA) were run to examine whether any of the variables measured differed by gender or grade. There were no differences by gender, but there was a small but statistically significant difference by grade for academic achievement [F (2, 197) = 3.981, $p < .05$]. The difference in achievement by grade was found in each individual academic subject area as well. Because there was a significant difference found between grade levels for achievement, grade was controlled for by including it as a predictor in all subsequent analyses.

Table 6

Analyses of Variance for Achievement by Grade

	Sum of Squares	df	Mean Square	F
Between Groups	27.58	2	13.79	3.98*
Within Groups	682.30	197	12.72	
Total	709.88	199		

*$p < .05$

Research Question 1A: How much individual and combined explanation of variance in achievement is accounted for by the parent, teacher, and peer contextual variables? Does each factor contribute unique variance beyond the others and if so, which factors contribute most toward explaining the variance in middle school academic achievement?

Hierarchical multiple linear regression analysis was used to determine if the contextual factors of parent support, teacher support, and peer support explained a significant portion of the variance in academic achievement and which were most strongly contributing. After grade was entered on step 1, the contextual variables of parent support for learning, teacher support for learning, and peer support for learning were entered as predictor variables at step 2, with overall academic achievement as the criterion variable. Results of this analysis indicated that the contextual variables did not significantly explain variance in academic achievement in this sample [$R^2 = .04, F(4, 167) = 1.72, p = .15$]. See Table 7.

Table 7

Hierarchical Multiple Linear Regression Analysis

Combined role of contextual variables in academic achievement

Predictor	B	SE B	β	t	p
Constant	2.82	1.60		1.76	.080
Grade	.25	.18	.11	1.40	.162
Parent Support	.39	.24	.13	1.64	.103
Teacher Support	.19	.16	.10	1.22	.225
Peer Support	-.96	.13	-.06	-.73	.465

Note. $R^2 = .040$, ($F = 1.72$, df = 4, 167, p = .148)

However, when each subject area was analyzed as individual criterion variables in four separate analyses, parent support was significantly associated with E/LA grades ($\beta = .17$, t = 2.09, $p < .05$).

Research Question 1B: How much individual and combined explanation of variance in achievement is accounted for by the intrapersonal variables (school engagement, metacognition, and organizational/academic factors)? Is one factor more strongly predictive of achievement than the others?

Hierarchical multiple linear regression analysis was used to determine if the intrapersonal factors of school engagement, metacognition, and organizational/academic factors explained a significant portion of the variance in academic achievement. Results of this analysis indicated that the intrapersonal variables explained 15.1% of the variance in academic achievement in this sample ($R^2 = .15$, F (4, 157) = 6.962, $p < .001$). Engagement behavior contributed significantly

to the model (β = .32, p < .001). None of the other intrapersonal factors were significant contributors to the model. See Table 8.

Table 8

Hierarchical Multiple Regression Analysis

Combined role of intrapersonal variables in academic achievement

Predictor	B	SE B	β	t	p
Constant	.79	1.48		.53	.595
Grade	.26	.17	.12	1.56	.122
Metacognition	.09	.17	.05	.54	.590
Engagement Behavior	1.06	.27	.32	3.94	.000
Organization	.20	.15	.11	1.31	.191

Note. R^2 = .151, (F = 6.96, df = 4, 157, p < .001)

When each subject area was analyzed separately, engagement was found to be significantly associated with academic achievement in ELA (β = . .34, t = 4.16, p < .001), math (β = .21, t = 2.49, p <.05), and social studies (β = .28, t = 3.36, p < .001).

Research Question 2: Controlling for intrapersonal variables, how much variance in achievement is explained above and beyond by the contextual variables?

Hierarchical multiple linear regression analysis was used to test whether the contextual factors significantly predicted academic achievement above and beyond that explained by the intrapersonal variables. Since significant grade level differences were found for academic achievement, grade was again entered as a predictor in step one of the analysis. The intrapersonal variables of engagement, metacognition, and organization/academic behavior were entered as predictors in the next step, while contextual variables of parent support, teacher support, and peer

support were entered for the third step. The analysis revealed that the overall model was significant, as the combination of the contextual and intrapersonal variables accounted for 17.0% of the variance for academic achievement (R^2 = .170, $F(7, 137)$ = 4.02, p <.001). The model was significant at the second step, with the intrapersonal variables of metacognition, engagement behavior, and organization accounting for16.8% of the variance in academic achievement (R^2 = .168, p < .000), above and beyond the small amount accounted for by grade. Then at the third step of the analysis, the contextual variables did not significantly explain additional variance in academic achievement (ΔR^2 = . 002, $F(7, 137)$ = 4.02, p = .96). Engagement was the only individual variable that significantly contributed to the model (β = .40, t = 4.287, p < .001) at any step of the analysis. See Table 9.

Table 9

Hierarchical Multiple Regression Analysis

Combined role of contextual and intrapersonal factors on academic achievement

Predictor	B	SE B	β	t	*p*	R^2
Step 1:						.001
Grade	.08	.18	.04	.45	.653	
Step 2:						.168
Grade	.24	.17	.11	1.37	.173	
Metacognition	.03	.18	.01	.15	.878	
Engagement	1.27	.29	.39	4.37	.000	
Organization	.08	.17	.04	.49	.623	
Step 3:						.170
Grade	.22	.18	.10	1.25	.213	
Metacognition	.03	.18	.02	.16	.876	
Engagement	1.30	.30	.40	4.29	.000	
Organization	.08	.17	.04	.45	.651	
Parent Support	-.06	.26	-.02	-.23	.82	
Teacher Support	-.003	.16	-.002	-.02	.984	
Peer Support	.07	.14	.04	.53	.601	

Note. $R^2 = .170$, ($F = 4.02$, df = 7, 137, p <.001).

When the four subject areas were examined separately, engagement contributed significantly to grades in E/LA ($\beta = .39$, t = 4.24, p < .001), math ($\beta = .23$, t = 2.45, p <.05), and social studies ($\beta = .28$, t = 2.99, p < .01).

Research Question 3: Do the intrapersonal variables (school engagement, metacognition, and organizational/academic factors) moderate the associations between contextual factors (parent, teacher, and peer support) and academic achievement.

Hierarchical linear regression analysis was used to analyze the potential moderation effect of each of the intrapersonal variables (engagement, metacognition, organization) with the contextual factors (parent support, teacher support, peer support) and achievement. Moderation was assessed for all combinations of the intrapersonal variables and contextual variables by creating a product term between each intrapersonal factor and each contextual factor. The intrapersonal variables were examined individually. In the first step of the regression analysis, the contextual variable was entered along with grade and the intrapersonal variable of interest. In the second step, the interaction term was entered. Results indicated that metacognition was found to be a significant moderator between peer support and academic achievement $\Delta R^2 = .037$, $F(1,175)$, $p < .01$ Metacognition was not a significant moderator for the relationship between academic achievement and parent support $\Delta R^2 = .00$, $F(1, 167) = 1.93$, $p = .940$, or teacher support $\Delta R^2 = .01$, $F(1, 174) = 3.13$, $p = .176$.

Engagement was not found to be a significant moderator of the relationship between academic achievement and parent support $\Delta R^2 = .002$, $F(1, 166) = 7.61$, $p = .520$, teacher support $\Delta R^2 = .01$, $F(1, 172) = 7.14$, $p = .155$, or peer support $\Delta R^2 = .001$, $F(1, 175) = 6.08$, $p = .717$. Similar results were found for the intrapersonal variable of organization, which did not significantly moderate in the relationship between academic achievement and parent support $\Delta R^2 = .002$, $F(1, 160) = 2.09$, $p = .556$, teacher support $\Delta R^2 = .00$, $F(1, 168) = 1.69$, $p = .963$, or peer support $\Delta R^2 = .01$, $F(1, 169) = 2.38$, $p = .188$.

CHAPTER 5 DISCUSSION

Academic achievement in middle school and high school is a key predictor of later life opportunities (Arum & Hout, 1998; Day & Newburger, 2002; Muennig, 2005; Serbin, Stack, & Kingdon, 2013). Factors in a variety of contexts that influence academic achievement have been the focus of research and discussion. Much of the research has focused on examining variables in isolation without attention to context or their combined associations with achievement. Little prior research has explored the concrete, observable organizational and academic practices of students and their contribution to achievement. These factors are of interest in a middle school from a developmental perspective as the transition from elementary school is accompanied by physical and cognitive changes in the student and changing roles of others close to the student in family, school, and social contexts (Wigfield & Eccles, 2002).

The specific purpose of the current study was to examine the unique and combined contributions of behavioral engagement, metacognition, organization/academic practices, parental support, teacher support, and peer support to academic achievement in middle school within a contextual framework (Bronfenbrenner, 1979, 2005). Intrapersonal variables and contextual variables that have been shown to be related to the school environment and the home environment were strategically selected in order to represent the complexity of the interwoven relationships among various influences on achievement, especially since much of the prior research has centered on the contributions of the variables in isolation and not on the dynamic interactions present in learning and development (Sameroff, 2000). This study explored whether student organizational/academic practices often present in middle schools, such as supported use of planners, offered unique contributions to middle school achievement. Additionally, it was also examined whether the intrapersonal variables of engagement, metacognition, student

organization/academic practices moderated the relationship between each contextual factor (parent support, teacher support, peer support) and achievement. It was expected that both the contextual variables (parental support, teacher support, and peer support) and the intrapersonal variables (engagement, metacognition, organizational/academic practices) would explain a significant amount of variance in academic achievement but that the contextual would explain more than the intrapersonal. Also, it was expected that metacognition would be the most significant contributor of the intrapersonal variables. In addition, intrapersonal variables were expected to moderate relationships between contextual variables and academic achievement. In general, the results of the study were mixed with only some of the hypotheses supported. The intrapersonal variables explained significant variance in achievement; however, engagement was the only significant contributor, not metacognition as hypothesized. The contextual variables did not explain additional variance beyond the intrapersonal variables. With regard to the hypothesized moderating role of the intrapersonal variables, metacognition was found to moderate the relationship between peer support and achievement. Engagement and organizational/academic practices were not found to serve as moderators between contextual variables and achievement.

A noteworthy finding across these results is the significant contribution of engagement to student achievement above the other variables studied. Behavioral engagement was found to significantly explain variance in academic achievement, which is consistent with previous research that showed students who are more engaged in school through participating in class, paying attention, working hard, and listening carefully in class have higher academic achievement than their less engaged peers with engagement being a key component of success in school (e.g., Connell et al., 1995; Connell et al., 2004; Fredricks et al., 2004; Van Acker &

Wheby, 2000). Some prior research indicated that supportive peer and teacher relationships increase engagement, which is then associated with higher levels of achievement (e.g., Ryan & Patrick, 2001; Van Ryzin et al., 2009). Results of the current study showed that engagement was associated with academic achievement even without the perception of support from other contexts (parents, teachers, peers) in this sample.

Although not found to be significant predictors of achievement in the current study, many prior studies have shown that a variety of contextual variables, including those examined in the present study, are associated with student achievement. Research has shown that the positive contribution of parental involvement and support is present across grade levels with supporting a student's developing autonomy becoming increasingly important as children enter adolescence (e.g., Gutman & Midgely, 2000; Wilder, 2014). Teacher and student interactions have been shown to be increasingly important at times of school transition with perceptions of teacher support contributing to engagement, motivation, effort, and academic performance (e.g., Eccles, et al., 1993; Goodenow, 1993; Murdock, 1999; Stroet, et al., 2013). Prior research has shown that peer relationships become more important at the time of school transitions. Academic and social adjustment is improved for middle school students who perceive their peer relationships as supportive and satisfying (e.g., Berndt, 2004; Fenzel & Blyth, 1986; McDougall & Hymell, 1998; Way & Greene, 2006).

In summary, the purpose of the current study was to understand the specific and combined contributions of the selected intrapersonal and contextual variables that explained the most variance in middle school achievement. Engagement was found to be the only variable that explained significant variance in achievement among those examined, which met a goal of the study by showing engagement to be the most significant contributor to achievement among the

studied variables. However, the proposed contribution of the other variables, either separately or in combination, did not contribute as expected in this sample of middle school students. Although they did not provide unique contributions to literature, the results highlight the importance of student engagement in academic achievement.

There are several reasons why some of the factors examined may not have been found to be significant predictors of academic achievement for the students in the study. Middle school students have several different teachers and some of the participants asked how they should describe teacher support in general if they felt differently about each of their teachers. The items on the survey about parental support related to factors of parental management of the learning environment and supportive parental involvement, which have been shown to influence achievement in previous research; however, the questions on the survey may not have tapped an aspect of parental involvement and support that the students in the sample perceived as supportive and related to their achievement. With regard to metacognition, a possible reason for the lack of significant results may be considered from a developmental perspective. Students in middle school may find it easier to answer questions about overt behaviors related to their participation and effort in class than higher level questions about specific skills and strategies related to their thinking and learning. Finally, the lack of influence of organizational/academic behaviors on achievement could be related to the limited use of those practices by the students in the sample. Although every student was given a planner and encouraged by teachers to use them, a large number of the respondents endorsed writing in their planners "never." This lack of use restricted the opportunities for parents and teachers to check due dates, monitor progress, and communicate between home and school.

Limitations and Future Directions

Several limitations of this study should be noted. The use of self-report measures for the data provided information only from the students' perspective, which is indeed their reality, but obtaining data from multiple informants might provide a more comprehensive view of the constructs of interest (Wang and Eccles, 2012). Participants in this study were from a lower socioeconomic area, which has been found to be related to lower levels of parental involvement and academic achievement (Hill et al., 2004; Park & Holloway, 2013). Given that some of the results of the study are inconsistent with prior research and expectations, future research using a larger, more socioeconomically diverse sample is needed.

Another limitation of the current study relates to the conceptualization of school engagement and the relationship between its dimensions (cognitive engagement and behavioral engagement) and the construct of metacognition. It is possible that the construct of metacognition as measured in this study could be considered as part of the cognitive engagement dimension of school engagement, so that the study could have been measuring two aspects of engagement – behavioral and cognitive - and found behavioral engagement explains more variance in achievement in this sample. This result suggests future research could examine the relationship between metacognition and cognitive engagement. Are they separate and related constructs? Is metacognition domain-specific and does engagement function differently based on subject area? These questions are consistent with those presented by other researchers interested in whether, and to what degree, behavioral engagement is specific to subject area (Wang & Eccles, 2011). Exploring the impact of specific organizational/academic behaviors in a sample where certain activities, such as writing in a planner, are required and not just encouraged or

voluntary may provide information about the usefulness and impact of this variable. Given the lack of clarity in research from a developmental perspective on school engagement, research on the developmental trends in engagement is needed to clarify the developmental needs of early adolescents in this area and identify how to provide relevant opportunities to support growth in school.

Summary and Implications for Practitioners

While not all hypotheses were confirmed in this study, one of the main findings was that engagement in school clearly has a prominent role in student achievement. Understanding the full role of school engagement in academic achievement can help practitioners, including teachers, administrators, school psychologists, social workers, and other members of the school community, to create learning environments that enhance engagement and are sensitive to the behavioral, cognitive, and emotional needs of middle school students. Therefore, increasing engagement has been receiving greater attention by teachers and administrators due to the recognition of its influence on achievement and the belief that it is malleable and can be responsive to intervention (Fredricks et al., 2004). Behavioral engagement, shown through participation, paying attention, working hard, and other "on task" behaviors has been shown to lead to better grades and students feeling more emotionally connected to school. Recognizing the multifaceted nature of students' school experiences during this developmental stage is essential and increasing engagement in school has been shown to enhance both academic and social development. (Wang & Eccles, 2011). In the ongoing quest to maximize our impact on student learning, especially during the critical developmental transitions occurring in early adolescence, it is important to understand the variety of variables and contexts that influence academic achievement in middle school in order to be prepared to intervene and support students in the

most meaningful ways. Results of the current study and previous research suggest fostering environments and practices that increase student engagement may be a worthwhile area for practitioners to consider in their work to support student achievement.

As schools continue to focus on increasing engagement to improve academic achievement, attention to other factors should not be ignored. Even though engagement was found to be the only significant predictor in this study, for example, other studies have identified relationships and support from parents, teachers, and peers to be important for academic achievement. Schools and teachers should continue to consider fostering development of these relationships through working with parents to help them implement effective support at home (Hill & Tyson, 2009). In addition, research has shown that teachers can help students improve engagement and achievement through developing supportive relationships and positive interactions (Anderman & Anderman, 1999; Battistich et al., 1995; Eccles & Midgely, 1989; Furrer & Skinner, 2003; Goodenow, 1993; Roeser et al., 1996; Skinner et al., 1998). Finally, research suggests it may benefit educators to examine ways to support student development of organizational/academic practices and metacognitive skills that help them scaffold their skills and become more independent in planning and organizing (Roebers, Cimeli, Rothlisberger, & Neuenschwander, 2012). Educators may know that engagement is important but not be as aware that it needs active facilitation. Learning does not take place in isolation and it is important to use instructional practices and make organizational decisions that impact learning and achievement with that in mind.

APPENDIX A

Educational Research Survey
June 2016

Part I - Background

1) Gender/Sex: _____ Male _____ Female

2) School Grade: _____ 6th Grade _____ 7th Grade _____ 8th Grade

3) Age: _____

4) What is your primary racial or ethnic background?

_____ Hispanic/Latino
_____ African American/Black
_____ Caucasian/White
_____ Middle Eastern
_____ Native American (Indian)
_____ Asian
_____ Indian,Pakistani, Afghani, or other Indian subcontinent origin
_____ Multi-racial (list): _____
_____ Other: _____

5) What grades to you most often receive? Circle the response that most accurately describes your grades overall

a. Mostly As
b. Mostly As and Bs
c. Mostly Bs
d. Mostly Bs and Cs
e. Mostly Cs
f. Mostly Cs and Ds
g. Mostly Ds
h. Mostly Ds and Es
i. Mostly Es

6) What were your most recent grades in each of the following classes (circle):

English/Language Arts:	A	B	C	D	E
Math:	A	B	C	D	E
Science:	A	B	C	D	E
Social Studies:	A	B	C	D	E

OR

7) Write in what were your most recent grades in each of the following classes:

English/Language Arts: _____
Math: _____
Science: _____
Social Studies: _____

Part II - Family

These statements are about how your family handles homework, grades, and other school activities.

Do you disagree or agree with these statements?	1 Strongly Disagree	2 Disagree	3 Not Sure	4 Agree	5 Strongly Agree
1) My parent often tells me to spend some time reading.	○	○	○	○	○
2) My parent loves to learn new things.	○	○	○	○	○
3) My parent tells me stories about when he/she was in school.	○	○	○	○	○
4) My parent encourages me to read before I go to sleep.	○	○	○	○	○
5) My parent often brings home educational activities for our family.	○	○	○	○	○
6) My parent suggests things I might like to read.	○	○	○	○	○
7) My parent takes me to special places, like museums and fairs, where we can learn things.	○	○	○	○	○
8) My parent decides how much TV I can watch on school days.	○	○	○	○	○
9) When I do my homework, my parent does not allow other things to interfere with it.	○	○	○	○	○
10) My parent makes me read.	○	○	○	○	○
11) My parent tries to make me feel confident in my schoolwork.	○	○	○	○	○
12) My parent and I like to read together sometime.	○	○	○	○	○
13) My parent likes me to come to her/him for help with homework.	○	○	○	○	○

	1 Strongly Disagree	2 Disagree	3 Not Sure	4 Agree	5 Strongly Agree
14) My parent does not encourage me to read books.	○	○	○	○	○
15) My parent tries to make me feel smart in my schoolwork.	○	○	○	○	○
16) My parent sets rules about the kinds of T.V. shows I can watch.	○	○	○	○	○
17) My parent makes me do my homework at a certain time.	○	○	○	○	○
18) My parent provides different kinds of things to read, like magazines, stories, and non-fiction.	○	○	○	○	○
19) My parent talks to me about things I read.	○	○	○	○	○
20) My parent is very strict when it comes to schoolwork.	○	○	○	○	○
21) My parent does not feel I am doing my best in school.	○	○	○	○	○
22) I do much better in school because of my parent's help.	○	○	○	○	○
23) My parent encourages me to use my ideas in school activities.	○	○	○	○	○
24) My parent expects a lot from me in school.	○	○	○	○	○
25) My parent is still pleased, even when I do not make top of the class.	○	○	○	○	○
26) My parent tries to make me feel guilty when I do poorly in school.	○	○	○	○	○
27) If my grades are not good enough, my parent will restrict my free time.	○	○	○	○	○

Answer the following questions about yourself using the same scale:

	1 Strongly Disagree	2 Disagree	3 Not Sure	4 Agree	5 Strongly Agree
28) I have a good place to do homework at my house.	○	○	○	○	○
29) We have lot of helpful books at home that I can use for homework.	○	○	○	○	○

Part III - Teachers and Classmates/Peers

Please respond to sentences about some form of support or help that you might get from a teacher, a classmate/peer, or a close friend. Read each sentence carefully. There are no right or wrong answers. For each sentence you are asked to provide two responses. First, rate how often you receive the support described and then rate how important the support is to you.

	1	2	3	4	5	6	7	8	9
	How Often?						How Important?		
My Teacher(s)...	Never	Almost Never	Some of the Time	Most of the Time	Almost Always	Always	Not Important	Imporant	Very Important
	(Check one)						(Check one)		
1) My Teacher(s) cares about me.	○	○	○	○	○	○	○	○	○
2) My Teacher(s) treats me fairly.	○	○	○	○	○	○	○	○	○
3) My Teacher(s) makes it ok to ask questions.	○	○	○	○	○	○	○	○	○
4) My Teacher(s) explains things I don't understand.	○	○	○	○	○	○	○	○	○
5) My Teacher(s) shows me how to do things.	○	○	○	○	○	○	○	○	○
6) My Teacher(s) helps me solve problems by giving me information.	○	○	○	○	○	○	○	○	○
7) My Teacher(s) tells me I did a good job when I've done something well.	○	○	○	○	○	○	○	○	○
8) My Teacher(s) nicely tells me when I make mistakes.	○	○	○	○	○	○	○	○	○
9) My Teacher(s) tells me how well I do on tasks.	○	○	○	○	○	○	○	○	○
10) My Teacher(s) makes sure I have what I need for school.	○	○	○	○	○	○	○	○	○
11) My Teacher(s) takes time to help me learn to do something well.	○	○	○	○	○	○	○	○	○
12) My Teacher(s) spends time with me when I need help.	○	○	○	○	○	○	○	○	○

	1	2	3	4	5	6	7	8	9
	How Often?						How Important?		
My Classmates/Peers…	Never	Almost Never	Some of the Time	Most of the Time	Almost Always	Always	Not Important	Imporant	Very Important
	(Check one)						(Check one)		
1) My Classmates/Peers treat me nicely.	○	○	○	○	○	○	○	○	○
2) My Classmates/Peers like most of my ideas and opinions.	○	○	○	○	○	○	○	○	○
3) My Classmates/Peers pay attention to me.	○	○	○	○	○	○	○	○	○
4) My Classmates/Peers give me ideas when I don't know what to do.	○	○	○	○	○	○	○	○	○
5) My Classmates/Peers give me information so I can learn new things.	○	○	○	○	○	○	○	○	○
6) My Classmates/Peers give me good advice.	○	○	○	○	○	○	○	○	○
7) My Classmates/Peers tell me I did a good job when I've done something well.	○	○	○	○	○	○	○	○	○
8) My Classmates/Peers nicely tell me when I make mistakes.	○	○	○	○	○	○	○	○	○
9) My Classmates/Peers notice when I have worked hard.	○	○	○	○	○	○	○	○	○
10) My Classmates/Peers ask me to join activities.	○	○	○	○	○	○	○	○	○
11) My Classmates/Peers spend time doing things with me.	○	○	○	○	○	○	○	○	○
12) My Classmates/Peers help me with projects in class.	○	○	○	○	○	○	○	○	○

Part IV - Learning Strategies and Study Skills

The next questions ask about learning strategies and study skills. Use the following scale to answer the questions about how you study. If you think the statement is very true of you, circle 7; if a statement is not at all true of you, circle 1. If the statement is more or less true of you, find the number between 1 and 7 that best describes you.

	(Circle One)							
1) During class time I often miss important points because I'm thinking of other things.	Not at all True	1	2	3	4	5	6	7 Very True
2) When reading for my classes, I make up questions to focus my reading.	Not at all True	1	2	3	4	5	6	7 Very True
3) When I become confused about something I'm reading for class, I go back and try to figure it out.	Not at all True	1	2	3	4	5	6	7 Very True

	Not at	(Circle One)						Very
4) If readings in class are difficult to understand, I change the way I read the material.	all True	1	2	3	4	5	6	7 True
5) Before I study new material thoroughly, I often skim it to see how it is organized.	Not at all True	1	2	3	4	5	6	7 Very True
6) I ask myself questions to make sure I understand the material I have been studying in my classes.	Not at all True	1	2	3	4	5	6	7 Very True
7) I try to change the way I study in order to fit the class requirements and the instructor's teaching style.	Not at all True	1	2	3	4	5	6	7 Very True
8) I often find that I have been reading for a class but I don't know what it was all about.	Not at all True	1	2	3	4	5	6	7 Very True
9) I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over.	Not at all True	1	2	3	4	5	6	7 Very True
10) When studying for a class, I try to determine which concepts I don't understand well.	Not at all True	1	2	3	4	5	6	7 Very True
11) When I study, I set goals for myself in order to direct by activities during study time.	Not at all True	1	2	3	4	5	6	7 Very True
12) If I get confused taking notes in class, I make sure I sort it out afterwards.	Not at all True	1	2	3	4	5	6	7 Very True

Part V - Engagement

	1 Not at all True	2 A Little True	3 Mostly True	4 Very True
1) I try hard to do well in school.	○	○	○	○
2) In class, I work as hard as I can.	○	○	○	○
3) When I'm in class, I participate in class discussions	○	○	○	○
4) I pay attention in class.	○	○	○	○
5) When I'm in class, I listen very carefully.	○	○	○	○
6) When I'm in class, I just act like I'm working.	○	○	○	○
7) I don't try very hard at school.	○	○	○	○
8) In class, I do just enough to get by.	○	○	○	○
9) When I'm in class, I think about other things.	○	○	○	○
10) When I'm in class, my mind wanders.	○	○	○	○

Part VI - Student Academic/Organizational Items

	Never	1 Day per Week	2 Days per Week	3 Days per Week	4 Days per Week	5 Days per Week
	(Check One)					
1) I write in my planner in all of my classes.	⓪	①	②	③	④	⑤
2) I write in my planner in my English class.	⓪	①	②	③	④	⑤
3) I write in my planner in my math class.	⓪	①	②	③	④	⑤
4) I write in my planner in my social studies class.	⓪	①	②	③	④	⑤
5) I write in my planner in my science class.	⓪	①	②	③	④	⑤
6) I write in my planner in my elective class(es).	⓪	①	②	③	④	⑤
7) I write important due dates for projects and tests in my planner as soon as they are announced by my teachers.	⓪	①	②	③	④	⑤
8) I look at my planner to make sure I have correct assignment completed.	⓪	①	②	③	④	⑤
9) I look at my planner so I know when to study for a test.	⓪	①	②	③	④	⑤
10) I use my planner to break down projects into smaller sections instead of doing the whole project at the last minute.	⓪	①	②	③	④	⑤
11) I have a notebook or folder system for each class to keep track of assignments.	⓪	①	②	③	④	⑤
12) My parent checks my planner to make sure I write down assignments.	⓪	①	②	③	④	⑤
13) My parent checks my planner to make sure I write down tests and quizzes.	⓪	①	②	③	④	⑤
14) My parent checks my planner to make sure I write down due dates for projects.	⓪	①	②	③	④	⑤
15) My parent uses the planner to communicate with my teachers by writing notes and/or asking questions.	⓪	①	②	③	④	⑤
16) My parent signs my planner.	⓪	①	②	③	④	⑤
17) My parent checks *Parent Connect* online to monitor my progress at school.	⓪	①	②	③	④	⑤

18) My teachers remind me to write assignments, tests, projects in my planner.	⓪	①	②	③	④	⑤
19) My teachers require me to write assignments, tests, projects in my planner.	⓪	①	②	③	④	⑤
	Never	1 Day per Week	2 Days per Week	3 Days per Week	4 Days per Week	5 Days per Week
	(Check One)					
20) My teachers use the planner to communicate with my parent/guardian.	⓪	①	②	③	④	⑤
21) My teachers require me to ask my parent to sign my planner.	⓪	①	②	③	④	⑤
22) My teachers require me to have a folder or notebook for each class.	⓪	①	②	③	④	⑤
23) My teachers require me to organize my folder/notebook a specific way for their class.	⓪	①	②	③	④	⑤
24) My teachers check my folders/notebook to make sure it is organized for their class.	⓪	①	②	③	④	⑤
25) My teachers use the *Parent Connect* online system to record grades, missing assignments, and provide feedback on my progress.	⓪	①	②	③	④	⑤
26) After school, I do my homework and/or study on a regular schedule – the same time each day.	⓪	①	②	③	④	⑤
27) After school, I have a routine for completing homework and participating in extracurricular activities.	⓪	①	②	③	④	⑤
28) After school, I review my assignments, tests, projects and due dates with my parent.	⓪	①	②	③	④	⑤
29) After school, I review my progress reports and grades with my parent.	⓪	①	②	③	④	⑤

Thank you for completing this survey!

APPENDIX B

WAYNE STATE UNIVERSITY

IRB Administration Office
87 East Canfield, Second Floor
Detroit, Michigan 48201
Phone: (313) 577-1628
FAX: (313) 993-7122
http://irb.wayne.edu

NOTICE OF EXPEDITED APPROVAL

To: Jennifer Porcaro
College of Education

From: Dr. Deborah Ellis or designee D. Ellis / 2.2
Chairperson, Behavioral Institutional Review Board (B3)

Date: April 28, 2016

RE: IRB #: 035716B3E
Protocol Title: Middle School Student Learning Styles, Support, and Academic Achievement
Funding Source:
Protocol #: 1603014786

Expiration Date: April 27, 2017

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 (#7)* by the Chairperson/designee *for* the Wayne State University Institutional Review Board (B3) for the period of 04/28/2016 through 04/27/2017. This approval does not replace any departmental or other approvals that may be required.

- Revised Protocol Summary Form (revision received in the IRB office 04/26/16)
- Research Protocol - Dissertation (dated March 2016 received in the IRB office 03/23/16)
- Medical records are not being accessed therefore HIPAA does not apply
- A waiver of consent and waiver of written documentation of consent for has been granted according to 45CFR 46 116(d) and 45CFR 46 117(c) and justification provided by the Principal Investigator in the Protocol Summary Form. 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) providing participants additional pertinent information after participation is not appropriate.
- Parental Supplemental Information Letter with Decline to Participate Option (revision dated 04/25/2016)
- Adolescent Assent Form Ages 13 - 17 (revision dated 04/25/16)
- Script for Oral Assent
- Data Collection Tool : Master Survey Questions (Dated March 2016)

- 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

Letter of Support

26524 John R Road
Madison Heights, MI 48071
248.399.7800, Ext. 3403
248.399.2229 - Fax

March 16, 2016

To Whom It May Concern:

I have agreed to let Jennifer Porcaro collect data for her dissertation, "Middle School Student Learning Styles, Support, and Academic Achievement" at Wilkinson Middle School in Madison District Public Schools, Madison Heights, Michigan, where I am the principal.

Angel Abdulahad
Principal, Wilkinson Middle School

APPENDIX D

Middle school student learning styles and achievement

Parent Supplemental Information Letter with "Decline to Participate" Option
Title of Study: Middle school student learning styles, support, and academic achievement
Researcher's Name *Jennifer Porcaro*

Purpose
You are being asked to allow your child to be in a research study at their school that is being conducted by Jennifer Porcaro, Doctoral Candidate in the department of Educational Psychology from Wayne State University to learn more about student perceptions of family, school, and individual factors that support their academic achievement in middle school. Your child has been selected because he or she attends Wilkinson Middle School.

Study Procedures
If you decide to allow your child to take part in the study, your child will be asked to complete a questionnaire during their Enrichment class. Topics of questions include your child's perceptions of parental involvement, peer and teacher support for learning, their engagement in learning activities at school, and their own thinking and study skills. Demographic information regarding age, gender, race, and grades in school will be collected.

- Your child has the option of not answering some of the questions in the study, may decline participation or withdraw from the study even after deciding to participate.
- Your child will be in the study one day to complete the questionnaire, which will take 20-30 minutes. The study will take place in your child's Enrichment class on one day.
- Copies of the questionnaire will be available for parents to review in the main office at Wilkinson Middle School.

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
By taking part in this study, your child may experience some uncomfortable feelings due to a heightened awareness of their feelings about school and their academic performance.

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.
For taking part in this research study, your child will receive a small snack.

Confidentiality:
All information collected about your child during the course of this study will be kept without any identifiers. The data are anonymous. There is no way to match a survey with a specific student.

Voluntary Participation /Withdrawal:
Your child's participation in this study is voluntary. You are free to withdraw your child at any time. Your child may withdraw 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 Jennifer Porcaro at the following phone number (248) 224-9633, or send email to dx2069@wayne.edu. 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 the Wayne State Research Subject Advocate at (313) 577-1628 to discuss problems, obtain information, or offer input.

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 in research, your child will be enrolled into the research. You may contact the PI by phone (248) 224-9633, email at dx2069@wayne.edu, or complete the tear off sheet below and return it to your child's teacher.

If you do not wish to have your child participate 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

APPROVAL PERIOD

APR 28 2016 APR 27 2017

WAYNE STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD

Submission/Revision Date: 4/25/2016
Protocol Version #: [1]

APPENDIX E

Middle school student learning styles and achievement

Adolescent Assent Form

(ages 13-17)

Title: Middle school student learning styles, support, and academic achievement

Study Investigator: Jennifer Porcaro

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 a middle school student at Wilkinson 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 what students think about their thinking skills, how they feel about their engagement at school, and how parents, peers, and teachers support their learning and academic achievement.

What will happen to me?
You will be asked to answer some questions about your views about what your parents, teachers, peers do to help you do well in school. You will also be asked about your thinking skills and how connected you feel to school. The questions are in a survey format where you mark the answer that best describes how you think or feel. You will be asked to report the grades you get in your classes. You will also be asked about your age, grade, race, and gender.

How long will I be in the study?
You will be in the study for about 30 minutes on one day.

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 by providing additional information about skills and support that help middle school students do well academically in school.

Will anything bad happen to me?
Nothing bad will happen to you by participating in this study. You may feel a little uncomfortable answering some questions about your feelings about school; but, if you do, it is ok to talk to the researcher or another adult in the school (counselor, teacher) about what is bothering you. You will be marking answers that reflect how you think and feel and all of your responses will be anonymous and kept confidential.

Will I get paid to be in the study?
For taking part in this research study, you will receive a small snack.

Do my parents or guardians know about this? (If applicable)
This study information has been given to your parents/guardian at least 2 weeks ago. They were given an opportunity to refuse permission for you to participate. 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.

What if I have any questions?
For questions about the study please call Jennifer Porcaro at (248) 224-9633. 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 the Wayne State Research Subject Advocate at (313) 577-1628 to discuss problems, obtain information, or offer input.

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.

APPENDIX F

Script for Oral Assent

Title: Middle school student learning styles, support, and academic achievement
Study Investigator: Jennifer Porcaro

Students whose parents did not refuse consent for their participation will be asked to participate. The principal investigator will ask," Will you participate in a research study about how you feel about your engagement at school and your thinking skills? You will also be asked about your feelings about how your parents, peers, and teachers support your learning and academic achievement in school. If you agree, you will answer questions on a survey questionnaire where you mark the answer that best describes how you think or feel. You will also write down the grades you usually earn in your classes and report your age, grade, race, and gender. Your name will not be on any of this information and no one will know how you answered the questions. It will not affect your grades in any way. If you have any questions or uncomfortable feelings about the questions, you can talk to the research or another adult in the school like a teacher or the counselor. Your parents were given information about the study over 2 weeks ago. They were given the opportunity to refuse permission for you to participate. 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. Everyone will receive a small snack whether you complete the questionnaire or not. As the researcher walks by your desk to pass out the papers, you can tell her if you agree to participate. If you say yes, you will be given the questionnaire. If you choose not to participate, say no to the researcher and you can read or work on another assignment quietly at your desk until the other students are finished."

REFERENCES

Ahmed, W., Minnaert, A., van der Werf, G, & Kuyper, H. (2010). Perceived social support and early adolescents' achievement : The mediational roles of motivational beliefs and emotions. *Journal of Youth and Adolescence, 39*(1), 36-46.

Allen, J. P., Jauser, S. T., Bell, K. L., & O'Connor, T. G. (1994). Longitudinal assessment of autonomy and relatedness in adolescent-family interactions as predictors of adolescent ego development and self-esteem. *Child Development, 65*(1), 179-194.

Anderman, L. H., & Anderman, E. M. (1999). Social predictors of changes in students' achievement goal orientations. *Contemporary Educational Psychology, 25*(1), 21-37.

Arum, R., & Hout, M. (1998). The early returns: The transition from school to work in the United States. *From school to work: A comparative study of educational qualifications and occupational destinations*, 471-510.

Assor, A., Kaplan, H., & Roth, G. (2002). Choice is good, but relevance is excellent: Autonomy enhancing and suppressing teacher behaviours predicting students' engagement in schoolwork. *British Journal of Educational Psychology, 72*(2), 261-278.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Battisch, V., Solomon, D., Kim, D., Watson, M., Schaps, E. (1995). Schools as communities, poverty levels of student populations, and students' attitudes, motives, and performance: A multilevel analysis. *American Educational Research Journal, 32*(3), 627-658.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497-529.

Belmont, M., Skinner, E., Welborn, J., & Connell, J. (1992). *Two measures of teacher provision of involvement, structure, and autonomy support*. Retrieved from Rochester, NY:

Birch, S., & Ladd, G. (1997). The teacher-child relationship and children's early school admustment. *Journal of School Psychology, 35*(1), 61-79.

Blair, C. (2002). School Readiness: Integrating Cognition and Emotion in a Neurobiological Conceptualization of Children's Functioning at School Entry. *American Psychologist, 57*(2), 111-127. doi:10.1037///000-066X.57.2.111

Boekaerts, M., & Corno, L. (2005). Self-regulation in the classroom: A perspective on assessment and intervention. *Applied Psychology: An International Review, 54*(2), 199-231.

Boller, B. (2008). Teaching organizational skills in middle school: Moving toward independence. *The Clearing House: A Journal of Educational Strategies, Issues, and Ideas, 81*(4), 169-171.

Brand, S., Felner, R. D., Seitsinger, A., Burns, A., & Bolton, N. (2008). A large scale study of the assessment of the social environment of middle and secondary schools: The validity and utility of teachers' ratings of school climate, cultural pluralism, and safety problems for understanding school effects and school improvement. *Journal of School Psychology, 46*, 507-535. doi:10.1016/j.jsp.2007.12.001

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.

Bronfenbrenner, U. (2005). *Making human beings human*. Thousand Oaks, CA: Sage Publications.

Bronfenbrenner, U., & Cesi. S. J. (1994). Nature-nurture reconceptualized in developmental perspective: A bioecological model. *Psychological Review, 101*(568-586).

Burns, M. K., Peters, R., & Noell, G. H. (2008). Using performance feedback to enhance implementation fidelity of the problem-solving teach process. *Journal of School Psychology, 46*, 537-550. doi:10.1016/j.jsp.2008.04.001

Chan, P. E., Graham-Day, K. J., Ressa, V. A., Peters, M. T., & Konrad, M. (2014). Beyond involvement: Promoting student ownership of learning in classrooms. *Intervention in School and Clinic, 50*(2), 105-113.

Cho, S., & Campbell, J. R. (2011). Differential Influences of Family Processes for Scientifically Talented Individuals' Academic Achievement Along Developmental Stages. *Roeper Review, 33*, 33-45. doi:10.1080/02783193.2011.530205

Connell, J. P., & Wellborn, J. G. (Ed.) (1991). *Competence, autonomy, and relatedness: A motivational analysis of self-system processes* (Vol. 23). Hillsdale, NJ: Erlbaum.

Connell, J. P., Spencer, M. B., Aber, J. L. (2004). Educational risk and resilience in African-Americal Youth: Context, Self, Action, and Outcomes in School. *Child Development, 65*(2), 493-506.

Connell., J. P., Halpern-Felsher, B. L., Clifford, E., Crichlow, W., & Usinger, P. (1995). Hanging in there: Behavioral, psychological, and contextual factors affecting whether african american adolescents stay in high school. *Journal of Adolescent Research, 10*(1), 41-63.

Cooper H., V., J. C. (2001). Using research to answer practice questions about homework. *Educational Psychologist, 36*, 143-153.

Coutts, P. M. (2004). Meanings of homework and implications for practice. *Theory Into*

Practice, 43(3), 182-188.

Cross, D. R., & Paris, S. G. (1988). Developmental and instructional analysis of children's metacognition and reading comprehension. *Journal of Educational Psychology, 80*, 131-142.

Davis, H. A. (2006). Exploring the contexts of relationship quality between middle school students and teachers. *Elementary School Journal, 106*(193-223).

Day, J. C., & Newburger, E. C. (2002). The big payoff: Educational attainment and symthetic estimates of work-life earnings.

Deci, E., & Ryan, R. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.

Deci, E. L. (2009). Large-scale school reform as viewed from the self-determination theory perspective. *Theory and Research in Education, 7*(2), 244-253. doi:10.1177/1477878509104329

Dembo, M. H., & Eaton, M. J. (2000). Self-regulation of academic learning in middle-level schools. *The Elementary School Journal, 100*(5), 473-490.

DeRosier, M. E., Kupersmidt, J. B., & Patterson, C. J. (1994). Children's academic and behavioral adjustment as a function of the chronicity and proximity of peer rejection. *Child Development, 67*, 1799-1813.

DuBois, D. L., Felner, R. D., Brand, S., Adan, A. M., & Evans, E. G. (1992). A prospective study of life stress, social support, and adaptation in early adolescence. *Child Development, 63*(3), 542-557.

Dweck, C. S. (1999). *Self-theories: Their role in motivation, personality, and development*.

Philadelphia: Psychology Press.

Eccles, J. S., & Midgley, C. (1989). Stage-environment fit: Developmentally appropriate classrooms for young adolescents. *Research on motivation in education, 3*, 139-186.

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., MacIver, D. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist, 48*(2), 90-101.

Elliott, A. J., & Dweck, C. S. (Ed.) (2005). *Handbook of competence and motivation*. New York: Guilford Press.

Epstein, J. L., & McPartland, J. M. (1976). The concept and measurement of the quality of school life. *American Educational Research Journal, 13*(1), 15-30.

Felner, R. D., Aber, M. S., Primavera, J., & Cauce, A. M. (1985). Adaptation and vulnerability in high-risk adolescents: An examination of environmental mediators. *American Journal of Community Psychology, 13*, 365-379.

Felner, R. D., Brand, S., DuBois, D. L., Adan, A. M., Mulhall, P. F., & Evans, E. G. (1995). Socioeconomic disadvantage, proximal environmental experiences, and socioemotional and academic adjustment in early adolescence: Investigation of a mediated effects model. *Child Development, 66*(3), 774-792.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist, 34*(10), 906-911.

Ford, D. H., & Lerner, R. M. (1992). *Developmental systems theory: An integrative approach*. Thousand Oaks, CA: Sage Publications.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the

concept, state of the evidence. *Review of Educational Research, 74*(1), 59-109.

Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology, 95*(1), 148-162. doi:10.1037/0022-0663.95.1.148

Garcia, T., & Pintrich, P. R. (1995). *Assessing students' motivation and learning strategies: The Motivated Strategies for Learning Questionnaire*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, CA. Research/Technical

Garcia-Reid, P., Reid, R. J., & Peterson, N. A. (2005). School engagement among Latino youth in an urban middle school context: Valuing the role of social support. *Education and Urban Society, 37*, 257-275.

Gentry, M., Gable, R. K., Rizza, M. G. (2002). Students' perceptions of classroom activities: Are there gradel-level and gender differences? *Journal of Educational Psychology, 94*(3), 539-544. doi:10.1037//0022-0663.94.3.539

Gniewosz, B., & Noack, P. (2012). What you see is what you get: The role of early adolescents' perceptions in the intergenerational transmission of academic values. *Contemporary Educational Psychology, 37*, 70-79. doi:10.1016/j.cedpsych.2011.10.002

Goodenow, C. (1993). Classroom belonging among early adolescent students: Relationships to motivation and achievement. *Journal of Early Adolescence, 13*(1), 21-43.

Graber, J. A., Brooks-Gunn, J., & Warren, M. P. (2006). Pubertal effects on adjustment in girls: Moving from demonstrating effects to identifying pathways. *Journal of Youth and Adolescence, 3*, 391-401. doi:10:107/s10964-006-9049-2

Greene, B.A., Miller, R. B., Crowson, M., Duke, B. L., & Akey, K. L. (2004). Predicting high

school students' cognitive engagement and achievement: Contributions of classroom perceptions and motivation. *Contemporary Educational Psychology, 29*, 462-481.

Grolnick, W. S., Kurowski, C. O., Dunlap, K G., & Hevey, C. (2000). Parental resources and the transition to junior high. *Journal of Research on Adolescence, 10*(4), 465-488.

Guthrie, J. T., & Davis, M. H. . (2003). Motivating struggling readers in middle school through an engagement model of classroom practice. *Reading and Writing Quarterly, 19*, 59-85.

Gutman, L. M., & Midgley, C. (2000). The role of protective factors in supporting academic achievement of poor african american students during the middle school transition. *Journal of Youth and Adolescence, 29*(2), 223-249.

Hafen, C. A., Allen, J. P., Mikami, A. Y., Gregory, A., Hamre, B., & Pianta, R. C. (2012). The pivotal role of adolescent autonomy in secondary school classrooms. *Journal of Youth Adolescence, 41*, 245-255. doi:10.1007/s10964-011-9739-2

Hallinan, M. T. (2008). Teacher influences on students' attachment to school. *Sociology of Education, 81*(3), 271-283.

Hampshire, P. K., Butera, G., & Bellini, S. (2011). Self-management and parents as interventionists: Improving homework performance in middle school students with disabilities. *Beyond Behavior, 21*(1), 28-35.

Henry, K. L., Knight, K. E., Thornberry, T. P. (2012). School disengagement as a predictor of dropout, delinquency, and problem substance use during adolescence and early adulthood. *Journal of Youth Adolescence, 41*, 156-166. doi:10.1007/s10964-11-9665-3

Hill, N. E., Castellino, D. R., Lansford, J. E., Nowlin, P., Dodge, K. A., Bates, J. E., & Pettit, G.

S. (2004). Parent academic involvement as related to school behavior, achievement, and aspirations: Demographic variations across adolescence. *Child Development, 75*(5), 1491-1509.

HIll, N. E., & Tyson, D. F. (2009). Parental involvement in middle school: A meta-analytic assessment of the strategies that promote achievement. *Developmental Psychology, 45*(3), 740-763. doi:10.1037/a0015362

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology, 102*(3), 588-600.

Karabenick, S. A. (2003). Seeking help in large college classes: A person-centered approach. *Contemporary Educational Psychology, 28*(1), 37-58.

Karbach, J., Gottschling, J., Spengler, M., Hegewald, K., & Spinath, F. M. (2013). Parental involvement and general cognitive ability as predictors of domain-specific academic achievement in early adolescence. *Learning and Instruction, 23*, 43-51.

Kern, L., Ringdahl, J. E., & Hilt, A. (2001). Linking self-management procedures to functional assessment results. *Behavioral Disorders, 26*(215-226).

Kim, H. Y., Schwartz, K., Cappella, E., & Seidman, E. (2014). Navigating middle grades: Role of social contexts in middle grade school climate. *American Journal of Community Psychology, 54*, 28-45. doi:10.1007/s10464-014-9659-x

Kobayashi, K. (2006). Combined effects of note-taking/-reviewing on learning and the enhancement through interventions: A meta-analytic review. *Educational Psychology: An International Journal of Experimental Educational Psychology, 26*(3), 459-477.

Kuhn, D. (2006). Do cognitive changes accompany developments in the adolescent brain?

Perspectives on Psychological Science, 1(1), 59-67.

Lerner, R. (1996). Relative plasticity, integration, temporality, and diversity in human development: A developmental contextual perspective about theory, process, and method. *Developmental Psychology, 32*(4), 781-786.

Malecki, C. K., & Demaray, M. K. (2002). Measuring perceived social support: Development of the Child and Adolescent Social Support Scale. *Psychology in the Schools, 39*, 1-18.

Marchand, G., & Skinner, E. A. (2007). Motivational dynamics of children's academic help-seeking and concealment. *Journal of Educational Psychology, 99*(1), 65-82. doi:10.1037/0022-0663.99.1.65

Marchant, G. J., Paulson, S. E., & Rothlisberg, B. A. (2001). Relations of middle school students' perceptions of family and school contexts with academic achievement. *Psychology in the Schools, 38*(6), 505-519.

Masten, A. S., Cutuli, J. J., Herbers, J. E., & Reed, M. G. (Ed.) (2009). *Resilience in development* (2nd ed.). New York: Oxford University Press.

McDougall, P., & Hymel, S. (1998). Moving into middle school: Individual differences in the transition experience. *Canadian Journal of Behavioural Science, 30*(2), 108-120.

McNair, R., & Johnson, H. D. (2009). Perceived school and home characteristics as predictors of school importance and academic performance in a diverse adolescent sample. *North American Journal of Psychology, 11*(1), 63-84.

Muennig, P. (2005). *Health returns to education interventions*. Paper presented at the Symposium on The Social Costs of Inadequate Education, Columbia University Teachers College.

Muennig, P., Franks, P., Jia, H., Lubetkin, E., & Gold, M. R. (2005). The income-associated

burden of disease in the United States. *Social Science & Medicine, 61*, 2018-2026.

Murdock, T. B. (1999). The social context of risk: Status and motivational predictors of alienation in middle school. *Journal of Educational Psychology, 91*(1), 62-75.

Murdock, T. B., Anderman, L. H., & Hodge, S. A. (2000). Middle-grade predictors of students' motivation and behavior in high school. *Journal of Adolescent Research, 15*(3), 327-351. doi:10.1177/0743558400153002

Murray, C., & Greenberg, M. T. (2000). Children's relationship with teachers and bonds with school. *Journal of School Psychology, 38*(423-445).

Murray, C. (2009). Parent and teacher relationships as predictors of school engagement and Functioning among low-income urban youth. *Journal of Early Adolescence, 29*(3),376-404. doi:10.1177/0272431608322940

O'Farrell, S. L., & Morrison, G. M. (2003). A factor analysis exploring school bonding and related constructs among upper elementary students. *The California School Psychologist, 8*, 53-72.

Olsen, B., & Sexton, D. (2009). Threat rigidity, school reform, and how teachers view their work inside current education policy contexts. *American Educational Research Journal, 46*(1), 9-44. doi:10.3102/0002831208320573

Park, S., & Holloway, S. D. (2013). No parent left behind: Predicting parental involvement in adolescents' education within a sociodemographically diverse population. *The Journal of Educational Research, 106*. doi:10.1080/00220671.2012.667012

Paulsen, K., & Sayeski, K. L. (2013). Using study skills to become independent learners in

secondary content classes. *Intervention in School and Clinic, 49*(1), 39-45. doi:10.1177/1053451213480026

Pierson, L., H., & Connel, J. P. (1992). Effect of grade retention on self-system processes, school engagement, and academic performance. *Journal of Educational Psychology, 84*(3), 300-307.

Pintrich, P. R., & DeGroot, E. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*, 33-40.

Pintrich, P. R., Smith, D. A. F., Garcia, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the Motivated Strategies for Learning Questionnaire. *Educational and Psychological Measurement, 53*, 801-813.

Raphael, L. M., Pressley, M., & Mohan, L. (2008). Engaging instruction in middle school classrooms: An observational study of nine teachers. *The Elementary School Journal, 109*(1), 61-81.

Ream, R. K., & Rumberger, R. W. (2008). Student and engagement, peer social capital, and school dropout among Mexican American and Non-Latino White students. *Sociology of Education, 71*(2), 109-139.

Reeve, J. J., H., Carrell, D., Jeon, S., & Barch, J. (2004). Enhancing students' engagement by increasing teachers' autonomy support. *Motivation and Emotion, 28*, 147-169.

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin, 138*(2), 353-387. doi:10.1037/a0026838

Rockoff, J. E., & Lockwood, B. B. (2010). Stuck in the middle: Impacts of grade configuration

in public schools. *Journal of Public Economics, 94*, 1051-1061.

Roebers, C. M., Cimeli, P., Rothlisberger, M., & Neuenschwander, R. (2012). Executive functioning, metacognition, and self-perceived competence in elementary school children: an explorative study on their interrelations and their role for student achievement. *Metacognition Learning, 7*, 151-173.

Roeser, R. W., Midgley, C., & Urdan, T. C. (1966). 88. *Journal of Educational Psychology, 88*(3), 408-422.

Rogers, M., Markel, C., Midgett, J. D., Ryan, B. A., & Tannock, R. (2014). Measuring children's perceptions of parental involvement in conjoint behavioral consulatation: Factor structure and reliability of the Parental Support for Learning Scale. *Assessment for Effective Intervention, 39*(3), 170-181. doi:10.1177/1534508413493110

Ryan, A. M., & Patrick, H (2001). The classroom social environment and changes in adolescents' motivation and engagement during middle school. *American Educational Research Journal, 38*(2), 437-460.

Ryan, R. M., Stiller, J. D., & Lynch, J. H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *Journal of Early Adolescence, 14*, 226-249.

Sameroff, A. J. (2000). Developmental systems and psychopathology. *Development and Psychopathology*, 12, 297-312.

Schmitt-Wilson, S. (2013). Social class and expectations of rural adolescents: The role of parental expectations. *The Career Development Quarterly, 61*, 226-239. doi:101002/j.2161-0045.2013.00051.x

Schwerdt, G., & West. M. R. (2013). The impact of alternative grade configurations on student

outcomes through middle and high school. *Journal of Public Economics, 97*, 308-326.

Seginer, R. (Ed.) (2002). *The family-school link: Microsystemic and mesosystemic stress and coping*. Shaker: Aachen.

Seginer, R. (2006). Parents' educational involevement: A developmental ecology perspective. *Parenting: Science and Practice, 6*(1), 1-48.

Serbin, L. A., Stack, D. M., & Kingdon, D. (2013). Adcademic success across the transition from primary to secondary schooling among lower-income adolescents: Understanding the effects of family resources and gender. *Journal of Youth Adolescence, 42*, 1331-1347. doi:10.1077/s10964-013-9987-4

Shute, V. J., Hansen, E. G., Underwood, J. S., & Razzouk, R. (2011). A review of the relationship vetween parental involvement and secondary school students' academic achievement. *Educational Research International, 2011*, 1-10. doi:10.1155/2011/915326

Skinner, E., Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology, 100*(4), 765-781. doi:10.1037/a0012840

Skinner, E. A., Wellborn, J. G., & Connell, J. P. (1990). What it takes to do well in school and whether I've got it: A process model of perceived control and children's engagement and achievement in school. *Journal of Educational Psychology, 82*(1), 22-32.

Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom. *Journal of Educational Psychology, 85*(4), 571-581.

Skinner, E. A., Zimmer-Gembeck, M. J., & Connel, J. P. (1998). Individual differences and the

development of perceived control *Monographs of the Society for Research in Child Development, 63*(2/3), 1-231.

Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection: Coneptualization and assessment of children's behavioral and emotional participation in academic activities in the classroom. *Educational and Psychological Measurement, 69*(3), 43-525. doi:10.1177/0013164408323233

Smith, D. C., Ito, A., Gruenewald, J., & Yeh, H. (2010). Promoting school engagement: Atitudes toward school among American and Japanese youth. *Journal of School Violence, 9*, 392-406.

Spera, C. (2005). A review of the relationship among parenting practices, parenting styles, and adolescent school achievement. *Educational Psychology Review, 17*(2), 125-146. doi:10.1007/s10648-005-3950-1

Steinberg, L., Dornbusch, S. M., & Brown, B. B. (1992). Ethnic differences in adolescent achievement. *American Psychologist, 47*(6), 723-729.

Stroet, K., Opedenakker, M., & Minnaert, A. (2013). Effects of need suppportive teaching on early adolescents' motivation and engagement: A review of the literature. *Educational Research Review, 9*, 65-87.

T., B. (2004). Children's friendships: Shifts over a half-century in perspective on their development and their effects. *Merrill-Palmer Quarterly, 50*, 206-223.

Taylor, R. T. (2012). *Review of the Motivated Strategies for Learning Questionnaire (MSLQ) using reliability generalization techniques to assess scale reliability*. (Doctor of Philosophy), Auburn University, Auburn, Alabama.

Van Acker, R., & Wheby, J. H. (2000). Exploring the social contexts influencing student success

or failure: Introduction. *Preventing School Failure, 44*, 93-96.

Van Ryzin, M. J., Gravely, A. A., & Roseth, C. J. (2009). Autonomy, belongingness, and engagement in school as contributors to adolescent psychological well-being. *Journal of Youth Adolescence, 38*, 1-12. doi:10.1007/s10964-007-9257-4

Veenman, M. V. J., & Verheij, J. (2003). Technical students' metacognitive skills: relating general vs. specific metacognitive skills to study success. *Learning and Individual Differences, 13*, 259-272.

Veenman, M. V. J., Wilhelm, P., & Beishuizen, J. J. (2004). The relation between intellectual and metacognive skills from a developmental perspective. *Learning and Instruction, 14*, 89-109. doi:10.1016/j.learninstruc.2003.10.004

Veenman, M. V. J., & Spaans, M. A. (2005). Relation between intellectual and metacognitive skills: Age and task differences. *Learning and Individual Differences, 15*, 159-176. doi:10.1016/j.lindif.2004.12.001

Veenman, M. V. J., Van Hout-Wolters, B. H. A. M., & Afflerbach, P. (2006). Metacognition and learning: Conceptual and methodological considerations. *Metacognition and Learning, 1*, 3-14. doi:10.1007/s11409-006-6893-0

Vrugt, A., & Oort, F. J. (2008). Metacognition, achievement goals, study strategies and academic achievement: Pathways to achievement. *Metacognition and Learning, 30*(2), 123-146. doi:10.1007/s11409-008-9022-4

Wang, M. T., Dishion, T. J., Stormshak, E. A., & Willett, J. B. (2011). Trajectories of family management practices and early adolescence behavioral outcomes in middle school. *Developmental Psychology, 47*, 1324-1341.

Wang, M., & Eccles, J. S. (2011). Adolescent behavioral, emotional, and cognitive engagement

trajectories in school and their differential relations to educational success. *Journal of Research on Adolescence, 22*(1), 31-39.

Wang, M., & Eccles, J. S. (2012). Social support matters: Longitudinal effects of social support on three dimensions of school engagement from middle to high school. *Child Development, 83*(3), 877-895.

Wang, M., & Eccles, J. S. (2013). School context, achievement motivation, and academic engagement: A longitudinal study of school engagement using a multidimensional perspective. *Learning and Instruction, 28*, 12-23. doi:10.1016/j.learninstruc.2013.04.002

Way, N., & Greene, M. L. (2006). Trajectories of perceived friendship quality during adolescence: The patterns and contextual predictors. *Journal of Research on Adolescence, 16*(2), 293-320.

Wentzel, K. R. (1998). Social relationships and motivation in middle school: The role of parents, teachers, and peers. *Journal of Educational Psychology, 90*(2), 202-209.

Wentzel, K. R. (1999). Social-motivational processes and interpersonal relationships: Implications for understanding motivation at school. *Journal of Educational Psychology, 91*(1), 76-97.

Wentzel, K. R. (2003). Sociometric status and adjustment in middle school: A longitudinal study. *Journal of Early Adolescence, 23*(1), 5-28. doi:10.1177/0272431602239128

Wentzel, K. R., Barry, C. M., & Caldwell, K. A. (2004). Friendships in middle school: Influences on motivation and school adjustment. *Journal of Educational Psychology, 96*, 195-203.

Wentzel, K. R., Filisetti, L., & Looney, L. (2007). Adolescent prosocial behavior: The role of

self-processes and contextual cues. *Child Development, 78*(3), 895-910. doi:10.1111/j.467-8624.2007.01039.x

Wigfield, A., & Eccles, J. S. (2002). Students' motivation during the middle school years. In J. Aronson (Ed.), *Improving Academic Achievement: Impact of Psychological Factors on Education* (pp. 159-184). San Diego, CA: Academic Press.

Wilder, S. (2014). Effects of parental involvement on academic achievement: a meta-synthesis. *Educational Review, 66*(3), 377-397. doi: 10.1080/00131911.2013.780009

Winne, P. H. (1996). A metacognitive view of individual differences in self-regulated learning. *Learning and Individual Differences, 8*(4), 327-353.

Wolters, C. A. (2010). Regulation of motivation: Evaluating an underemphasized aspect of self-regulated learning. *Educational Psychologist, 38*(4), 189-205.

Woolley, M. E., & Bowen, G. L. (2007). In the context of risk: Supportive adults and the school engagement of middle school students. *Family Relations, 56*, 92-104.

ABSTRACT

EXAMINATION OF MICROSYSTEM AND INTRAPERSONAL VARIABLES ASSOCIATED WITH ACADEMIC ACHIEVEMENT IN MIDDLE SCHOOL

by

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Advisor: Dr. Cheryl Somers

Major: Educational Psychology

Degree: Doctor of Philosophy

The purpose of this study was to examine the unique and combined contributions of a variety of contextual variables and intrapersonal variables that influence academic achievement in middle school within a contextual framework. The contextual variables included parent support for learning, teacher support for learning and peer support for learning. Intrapersonal variables included metacognition and behavioral engagement, and student organizational behaviors. Participants were 200 students in sixth, seventh, and eighth grades from a suburban school district in Michigan. The intrapersonal variables were found to explain a significant portion of variance in academic achievement. The main contributor in explaining the variance was behavioral engagement, not metacognition as hypothesized. In testing for moderation effects of the intrapersonal variables in the relationship between the contextual variables and academic achievement, only metacognition was found to moderate the relationship between peer support and academic achievement. Implications are discussed for helping students increase engagement.

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