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Predictors of Initial Level and Change over Time of Academic Enablers during the Kindergarten Year: The Role of Gender, Preschool, and the Home Learning Environment

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Predictors of Initial Level and Change over Time of Academic Enablers During the Kindergarten Year: The Role of Gender, Preschool, and the Home Learning Environment

by

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Abstract

Academic enablers comprise a set of beliefs and skills that significantly contribute to student success. Although these skills are crucial to academic competence, gaps exist in the research related to the development of academic enablers. Namely, previous research has not investigated how these behaviors change over the kindergarten year. Moreover, there are inconsistent findings regarding the influence of experiences prior to entering kindergarten, specifically preschool attendance and the home learning environment, on the development of academic enablers in young students. Using a sample of 83 parent-child dyads, the present study investigated academic enablers in kindergarten students. A mixed between-within analysis of variance found that girls displayed greater academic enablers at the beginning of the kindergarten year, but neither gender demonstrated growth over the kindergarten year. Additionally, hierarchical multiple regression analyses were run to determine whether environmental factors predicted academic enablers at the beginning and end of kindergarten. Findings indicated the length of preschool experience did not predict adaptive academic enablers at the beginning of the kindergarten year or the end of the year, regardless of gender. Conversely, the home learning environment predicted kindergarten students' levels of academic enablers at the beginning of the year, such that those with educationally enriched home environments displayed higher levels of academic enablers, regardless of gender. This influence was not maintained over the kindergarten year. Implications for practice and future research are discussed.

Chapter One:

Introduction

Statement of the Problem

Early intervention and prevention is widely accepted as best practice among educators dedicated to promoting student success. Considering this commitment to early intervention and prevention, early childhood education has received attention from leaders in research, policy, and practice (Burger, 2010). Oftentimes, these efforts aim to foster school readiness in young children so that they enter school with skills necessary for academic success (Pianta, Cox, & Snow, 2007). The National Educational Goals Panel (NEGP: 1997) identified five dimensions of school readiness: physical well-being and motor development, social and emotional development, approaches to learning, language development, and cognition and general knowledge. These dimensions therefore comprise potential areas of intervention and prevention during early childhood education.

Approaches to learning are often referred to as academic enablers in the school psychology literature. DiPerna and Elliot (2000) define academic enablers as "the behaviors that interact with instruction to enable the learning and productive use of academic skills" (p. 5). Constructs of motivation, engagement, study skills, and interpersonal skills are considered enablers that contribute to student success (DiPerna & Elliot, 2002; McClelland, Morrison, & Holmes, 2000; McWayne, Fantuzzo, & McDermott, 2004). Given the intuitive appeal of

academic enablers and their inclusion in the NEGP goals, they have been included in Head Start and multiple state early childhood education standards (US Department of Health and Human Subjects, 2003). Despite the attention given to academic enablers in practice and policy, significant gaps exist in the literature related to this construct.

Of the dimensions identified by the NEGP, academic enablers may be particularly amenable to intervention. As highlighted in the definition, academic enablers are dependent on an interaction between the environment and individual characteristics. Thus, academic enablers are less child-centered than other dimensions that contribute to school readiness, such as prior achievement or cognitive abilities. Educators can alter the environment to maximize students' academic enablers (Chen & McNamee, 2011; Hyson, 2008). As with any area of intervention, the typical development of these behaviors must be researched. Once naturally occurring changes in academic enablers are understood, educators can compare students' level of these skills to their peers. This will allow educators to identify whether a gap exists and if intervention is necessary. Additionally, this information would provide a standard to set goals and monitor the progress of academic enablers in young children. Currently, research has examined these changes in preschool samples (Dominguez, Vitiello, Maier, & Greenfield, 2010). These changes should also be investigated in kindergarten students because this is a students' first year of formal education and an important time for early intervention.

Additionally, it is important to identify the environmental factors that influence the development of academic enablers in young children. Prior to formal schooling, children spend significant amounts of their time in a preschool program or at home. Preschool programs typically aim to foster students' school readiness. As mentioned previously, many state, private, and Head Start preschool programs include the development of academic enablers as part of their

standards. However, the evidence does not consistently support that more preschool experience yields greater competencies related to academic enablers (Nelson, 2005; Taylor, Gibbs, & Slate, 2000). Conversely, interactions with educational materials in the home environment emerge as an important variable associated with young students' academic enablers (McWayne, Fantuzzo, Perry & Childs, 2004; Nelson, 2005). Research has not investigated whether the home learning environment influences change in these behaviors over the kindergarten year. Lastly, the literature consistently indicates that gender is associated with the presence and growth of academic enablers. Girls tend to have higher levels and a faster rate of growth of academic enabling skills in preschool (Dominguez et al., 2010). These factors must be better understood to allow for the identification of risk factors related to the development of these skills, as well as to identify potential areas of prevention.

Purpose of the Current Study

The current study examined the change in academic enablers over the school year for a sample of kindergarten students. Additionally, this study explored the potentially moderating effect of gender on this change. Research has demonstrated that patterns of change of academic enablers differ for males and females in preschool children, in that girls have higher initial levels and growth in these skills (Dominguez et al., 2010). The present study extended this research to a kindergarten sample. Additionally, this study investigated the influence of environmental factors prior to kindergarten on students' academic enablers. Specifically it examined whether the length of preschool attendance and more enriched home learning environment predict the presence of academic enablers in kindergarten students at the beginning of the year.

Research Questions

1. Are parent ratings of kindergarten students' academic enablers at the beginning of the year significantly different than parent ratings at the end of the kindergarten year? To what extent does gender have a moderating effect?
2. To what extent do longer preschool experiences predict students' academic enablers at the beginning of kindergarten? To what extent does gender have a moderating effect?
3. To what extent do longer preschool experiences predict students' academic enablers at the end of kindergarten when taking the level of academic enablers at the beginning of kindergarten into account? To what extent does gender have a moderating effect?
4. To what extent is the Home Learning Environment (HLE) a significant predictor of students' academic enablers at the beginning of kindergarten? To what extent does gender have a moderating effect?
5. To what extent is the Home Learning Environment (HLE) a significant predictor of students' academic enablers at the end of kindergarten when taking the level of academic enablers at the beginning of kindergarten into account? To what extent does gender have a moderating effect?

Hypotheses

Regarding research question 1, it was hypothesized that parent ratings at the end of the kindergarten year would be significantly higher than ratings at the beginning of the year. Additionally, it is hypothesized that females would demonstrated greater growth in academic enablers than males. This hypothesis was based on previous research suggesting change over time in academic enablers in preschool children, particularly female students (Dominguez et al., 2010).

Research questions 2 and 3 are related to preschool experience. The author hypothesized that the length of preschool experience would predict higher levels of academic enablers both at the beginning and the end of the kindergarten year. This hypothesis was based on previous research suggesting that preschool attendance influences the level of kindergarten students' academic enablers (Taylor, Gibbs & Slate, 2000). Additionally, it was hypothesized that gender would moderate these relationships. Specifically that preschool experience would account for more of the variance in academic enablers for boys than girls; however no research has specifically investigated this moderating effect.

Regarding research questions 4 and 5, it was hypothesized that HLE would predict higher levels of academic enablers both at the beginning and the end of the kindergarten year. This hypothesis was based on previous research suggesting that enriched HLEs influence students' levels of academic enablers (Nelson, 2005). Additionally, it was hypothesized that the HLE would predict later academic enablers to a greater extent for male students than for female students, despite the lack of research related to the influence of gender on the relationship between HLE and academic enablers.

Contribution to the Current Literature

The current knowledge base related to academic enablers indicates that these beliefs, behaviors, and skills positively impact students' academic achievement throughout elementary school. The presence of academic enablers in kindergarten serves as a protective factor for at-risk populations and students with low prior achievement (DiPerna, Lei, & Reid, 2007; Li-Grining et al., 2010; McClelland et al., 2000; Stipek, Newton, & Chudgar, 2010).

Furthermore, academic enablers are readily observable and may be more amenable to change than intelligence or achievement. Therefore, interventions in these areas may be

particularly rewarding for students and educators (DiPerna, 2006; Keith, 2002; McDermott, 1999). However, naturally occurring change in students' academic enablers must be understood so that educators and researchers can recognize typical changes in these behaviors. The kindergarten year is particularly important because this is the first year of formal education for students. Although students may enter school with some skills, the goal of kindergarten is to introduce students to formal schooling and build skills that will yield success throughout their academic career. Thus, improvements in school related behaviors in kindergarten would be expected. Additionally, the kindergarten year is a crucial point for early intervention so that achievement gaps do not continue or widen throughout a student's education.

Few existing studies examine the change in students' academic enablers and these studies focus on preschool populations. Additionally, findings inconsistently demonstrate whether changes in students' academic enablers occur without intervention. The moderating effects of demographic variables, namely gender, may account for the lack of consistent findings. Therefore, the current study extended the scant literature on change over time in students' academic enablers to kindergarten students. Additionally, the current study may contribute to the research suggesting that gender leads to differential patterns of change.

Lastly, this study attempts to add to the literature regarding the influence of the environment prior to formal education on the level and change in academic enablers over the kindergarten year. The home learning environment appears in the literature as an influence over students' development of academic enablers in preschool (McWayne et al., 2004; Nelson, 2005). In addition to interacting with educational materials in the home, many young children are enrolled in preschool programs that often aim to foster academic enablers, yet the research does not consistently demonstrate this growth. The current study investigated whether the home

learning environment and/or the length of preschool attendance yield greater academic enabling skills. Additionally, this study investigated whether these factors predict outcomes at the end of the kindergarten year. This analysis contributes to the literature to support preschool attendance and/or cultivating the home learning environments as targets for early intervention and prevention.

Definition of Key Terms

Academic enablers. In addition to intelligence and prior achievement, a set of beliefs, behaviors, and skills, contribute to students' ability to perform academically. Various terms have been used in the literature to describe these learning behaviors, such as learning-related skills (McClelland & Morrison, 2003) and approaches to learning (McDermott, Leigh, & Perry, 2002). DiPerna and Elliot (2002) identified the term academic enablers and include interpersonal skills, motivation, study skills, and engagement as components of their definition.

School readiness. School readiness refers to the level of knowledge, experience, and skills related to academic success that a child possesses prior to beginning formal education. The National Education Goals Panel includes reading and math skills, physical well-being, motor development, social and emotional development, and approaches to learning as the key components of school readiness.

Preschool experience. Some children attend educational programs prior to formal education. Examples of preschool programs include voluntary prekindergarten (VPK), school district prekindergarten exceptional student education (ESE) programs, Head Start, and private preschool. In this study, preschool experience will include any previously attended preschool program and will be measured in the total number of months attended.

Home learning environment. Young children learn both inside and outside of a classroom. While at home, children are exposed to a variety of educational materials. The home learning environment can be defined as "the resources, whether material or interpersonal, to which children have access that can foster their learning about critical content" (Hindman & Morrison, 2012, p. 193).

Moderator. A moderator is a variable that influences the direction and/or strength of the relationship between an independent and dependent variables (Cohen, Cohen, Aiken, & West, 2003). Gender, length of preschool attendance, and the home learning environment will serve as moderating variables in this study.

Chapter Two:

Review of the Literature

This chapter summarizes relevant existing literature on academic enablers. Related frameworks are delineated, as different terminology is utilized throughout the literature to define a similar set of beliefs, behaviors, and skills. A discussion of the contribution of academic enablers to students' academic achievement highlights the importance of further research on these skills. Additionally, a review of the current literature on how academic enablers change over time is provided. Lastly, a discussion of the literature regarding the influence of preschool experience, the home learning environment, and gender on students' school readiness, specifically learning-related behaviors such as academic enablers, is included.

School Readiness

Readiness for kindergarten is increasingly important in the escalating demands of early childhood education. Children start their first year of formal schooling with a wide variety of knowledge, experiences, and abilities that impact their level of school readiness (Konold & Pianata, 2005; Wertheimer et al., 2003). School readiness refers to the set of skills including academic, behavioral, social, and emotional dimensions that yield academic success (Duncan et al., 2007; Snow, 2007). Despite this broad definition, certain components of school readiness have been consistently identified through the National Education Goals Panel (NEGP; 1997), Head Start (US Department of Health and Human Subjects, 2003), and multiple state early childhood education standards. These constructs include reading and math skills, physical well-

being, motor development, social and emotional development, and approaches to learning. Approaches to learning, also referred to as academic enablers, are defined as "the behaviors that interact with instruction to enable the learning and productive use of academic skills" (Diperna & Elliot, 2000, p. 5). Academic enablers are particularly appealing constructs to consider when investigating school readiness since they have not only been linked to student success (McClelland, Morrison, & Holmes, 2000; McWayne, Fantuzzo, & McDermott, 2004), but may also be amenable to interventions (Chen & McNamee, 2011; Dominguez et al., 2010).

Common Frameworks

Researchers have identified academic enablers as a specific set of beliefs, behaviors, and skills beyond academic skills that promote student successes in the classroom. Various terms have been used to describe these learning behaviors, namely, learning-related social skills (McClelland & Morrison, 2003), approaches to learning (McDermott, Leigh, & Perry, 2002), and academic enablers (DiPerna & Elliot, 2000). The definitions associated with these names differ in terms of the constructs included in the overall framework. However, collectively, these terms imply that certain beliefs, behaviors, and skills enhance students' learning. In the following section, definitions of each construct of academic enablers have been provided, as well as the history of how they have been developed.

Learning related social skills. Cooper and Farran (1988) provided a justification for investigating learning-related social skills. Through the Cooper-Farran Behavior Rating Scales (CFBRS; Cooper & Farran, 1991), behaviors that place kindergarten students (n = 650) at risk for special education classification were assessed. These authors described learning related skills as falling into two categories, interpersonal skills, including social interactions such as aggressiveness and disruptiveness, and work-related skills, namely organization, dependence,

distractibility, and noncompliance. Results indicated that deficits in both interpersonal and work-related skills were associated with increased relative risk for special education classification. However, work-related skills were found to be significantly more indicative of risk for special education classification than interpersonal skills.

Learning related skills. Stemming from these findings, a body of literature has examined the importance of classroom behaviors that extend beyond interpersonal skills. McClelland, Morrison, and colleagues have contributed much of this research and refer to these behaviors as learning-related skills (McClelland, Acock, & Morrison, 2006; McClelland & Morrison, 2003; McClelland, Morrison, & Holmes, 2000). Learning-related skills are considered behavioral and social manifestations of executive functions critical to academic achievement. Specifically, these skills include self-regulation, planning and organizing tasks, and three aspects of social competence: responsibility, independence, and cooperation (McClelland et al., 2006). McClelland and Morrison (2003) investigated learning-related skills in early childhood using a confirmatory factor analysis with a sample of 3-4 year old children (n = 72) enrolled in preschool. Results indicated that the learning-related skills construct consisted of separate domains for self-control, cooperation, assertion, and mastery behaviors in preschool students.

Approaches to learning. McDermott and colleagues have also investigated a set of learning behaviors, which they refer to as approaches to learning. Approaches to learning can be defined as "a distinct sets of behaviors that indicate ways that children become engaged in classroom learning activities" (Fantuzzo, Perry, &McDermott, 2004, p. 213). In a study of 100 kindergarten students, McDermott (1984) identified preschool approaches to learning as a unique contribution to their kindergarten achievement. Although not as strong of a predictor of achievement as IQ, this study highlighted the importance of considering learning behaviors in

addition to traditional ability measures due to their influence on academic performance. The aforementioned findings led to the design of the Learning Behaviors Scale (LBS; McDermott, Green, Francis, & Stott, 1999). Following a common factor analysis of this teacher-report behavioral questionnaire in a sample of 1500 children from ages 5 to 17 years, four components of learning behaviors were identified: Competence Motivation, Attitude Toward Learning, Attention/Persistence, and Strategy/Flexibility (McDermott, 1999).

Approaches to learning have been studied in pre-school populations as well. The items on the original LBS include specific behaviors and situations that would not apply to the preschool classroom. Therefore, the Preschool Learning Behaviors Scale (PLBS: McDermott, Leigh, & Perry, 2002) was developed to assess observable early learning behaviors in preschool environments, such as daycare or Head Start centers. Common factor analysis was conducted with three samples: a normative sample (n = 100), a national validation sample (n = 170) and a local sample (n = 52). Results supported the use of three factors for all three groups: Competence Motivation, Attention/Persistence, and Attitude Toward Learning. Strategy/Flexibility was not identified as a component of learning behaviors for preschool students.

Academic enablers. Lastly, DiPerna and Elliot (2002) developed another model that emphasizes the importance of non-academic behaviors related to achievement. The term academic enablers encompasses the "attitudes and behaviors that allow a student to participate in, and ultimately benefit from academic instruction in the classroom" (p. 294). These authors posited that student achievement results from two factors, academic skills and academic enablers. Academic skills include reading, math, and critical thinking skills. In this model, academic enablers include interpersonal skills, motivation, study skills, and engagement.

Academic enablers were identified through DiPerna and Elliot's development of a teacher rating scale called the Academic Competence Evaluation Scales (ACES; Diperna & Elliot, 2000). An initial Principal Components Analysis (PCA) incorporating all 73 items on the ACES identified two broad factors, academic skills and academic enablers. Subsequent PCAs of the items that loaded onto each factor indicated that academic skills were comprised of three subscales, reading/language arts, math, and critical thinking, while academic enablers included four subscales, motivation, study skills, interpersonal skills, and engagement. Additionally, they found that the academic enabler constructs measured by the ACES were significantly related to student outcome measures (i.e., grades and standardized tests of achievement).

Using past model-testing and correlational research to guide the hypothesized relationships between the variables, DiPerna, Volpe, and Elliot (2002) created a model to test the effects of academic enablers and prior achievement on current reading skills. The direct and indirect effects of each enabler were tested through structural equation modeling (SEM) for a primary (K-2nd grade; n = 192) and an intermediate (3rd-6th grade; n = 202) sample. In this model, prior academic achievement and interpersonal skills were considered correlated exogenous variables that impact motivation. Motivation is proposed to influence study skills and engagement, which directly influence reading achievement. This model is displayed in Figure 1.

Overall, the model displayed acceptable fit for both samples. For the primary sample, prior achievement and engagement demonstrated large effects on current reading achievement, motivation exhibited moderate indirect effects, interpersonal skills showed small indirect effects, and the effects of study skills were negligible. Similar effects were found in the intermediate sample with the exception of study skills, which increased to moderate effects, and engagement, which was reduced to moderate effects (DiPerna, Volpe, & Elliot, 2002).

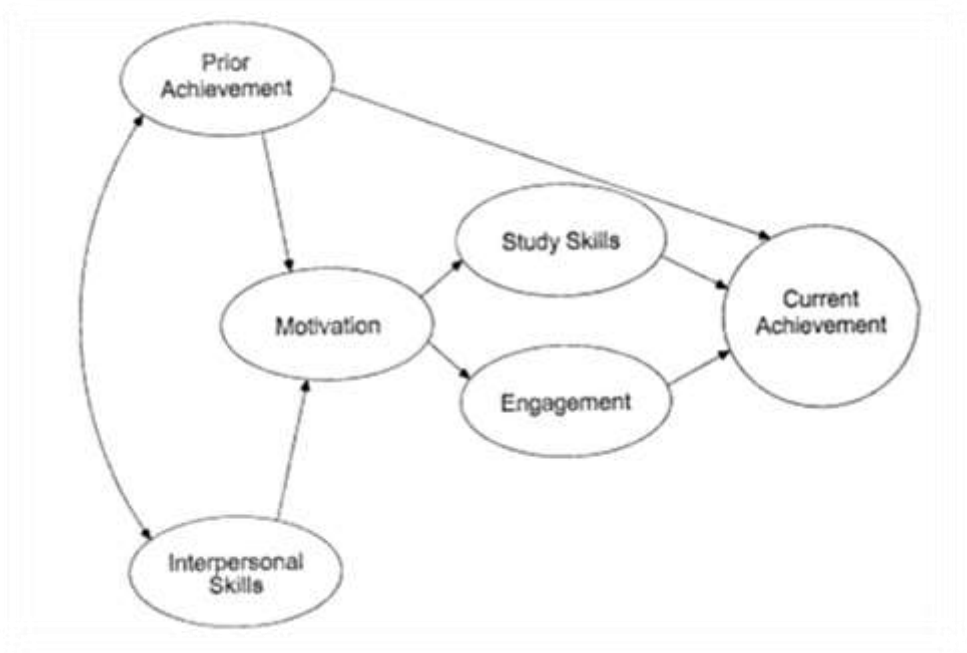

Figure 1: *Model of Academic Enablers and Academic Achievement (DiPerna, Volpe, & Elliot, 2002)*

Additionally, DiPerna, Volpe, and Elliot (2005) tested the model in Figure 1 to current achievement in mathematics utilizing the same sample. The proposed model demonstrated a reasonable fit in the primary sample (K-2; n = 192) and a stronger fit with the intermediate sample (3-6; n = 202). Similar to reading achievement, prior achievement exhibited strong effects and interpersonal skills displayed small indirect effects with both samples. Also, study skills were negligible for the primary sample. The effects for motivation were indirect and moderate to small for both samples. Engagement exhibited less of an effect on math achievement than reading for both samples (i.e., moderate for primary and small for intermediate).

The presence of direct and indirect influences found in these two studies (DiPerna & Elliot, 2002; DiPerna, Volpe, & Elliot, 2005) supports the use of looking at academic enablers as a multidimensional framework. The posited model indicates that prior achievement and interpersonal skills have direct and indirect influence on math and reading achievement by

impacting motivation. Motivation, in turn, influences study skills and engagement that both have a direct impact on achievement. However, study skills have a greater influence on students in later elementary grades, while engagement has more of an impact in earlier grades.

Despite nuances in the various definitions, these frameworks highlight that student achievement outcomes relate to child factors beyond intelligence and prior achievement. How students approach academic tasks promote their learning and understanding. For this discussion, the term academic enablers will be adopted to describe behaviors that encourage student learning, including motivation, engagement, study skills, and interpersonal skills.

Constructs of the individual enablers. Prior to considering approaches to learning as a broad construct, the various enablers have long existed in education research as individual contributors to academic success. Table 1 summarizes the terminology used to describe each enabler in the previously mentioned frameworks. These attitudes and behaviors are associated with various definitions and frameworks (Diperna, 2006). A brief explanation of the individual enablers, namely motivation, engagement, study skills, and social skills, is provided.

Motivation. Motivation is central to the framework of academic enablers (DiPerna, Volpe, & Eliiot, 2002; DiPerna, Volpe & Elliot, 2005) and is present in the approaches to learning framework (McDermott, 1999). Motivation is defined as the interrelationship between a student's individual characteristics and features of the task that contribute to the performance and completion of a task. Four key families of motivational beliefs that enable academic success exist within the literature; adaptive self-efficacy, adaptive attributions, intrinsic motivation, and adaptive goal orientation (Linnenbrink & Pintrich, 2002).

Table 1

Enablers within the Learning Behavior Frameworks

Academic Enablers (DiPerna and Elliot; 2002)	Approaches to Learning (McDermott; 1999)	Learning Related Skills (McClelland and Morrison; 2003)	Learning Related Skills (Cooper and Farran; 1988)
Motivation	Competence Motivation	Not Included	Not Included
Engagement	Attention/Persistence	Completion of Tasks	Distractibility
Study Skills	Strategy/Flexibility	Mastery Behaviors	Organization
Social Skills	Attitude toward Learning	Social Competence	Interpersonal Skills

Engagement. All of the academic enablers frameworks described previously include a concept referred to in this discussion as engagement. DiPerna (2006) defines engagement as "active participation in a task" (p. 9). Within the approaches to learning framework, this construct is termed Attention/Persistence and includes behaviors such as sticking to and concentrates on tasks, cares about success or failure, and not easily distracted (McDermott, 1999). McClelland and Morrison (2003) include completion of tasks as a learning-related skill. Lastly, distractibility is included in Cooper and Farran's (1988) framework of learning related skills.

Study skills. Study skills encompass a variety of behaviors that allow students to learn and interact effectively with educational materials. Specifically, this includes behaviors such as organization, planning, self-regulation, synthesizing, and applying information (DiPerna, 2006).

Cooper and Farran (1988) refer only to organization in regard to study skills in their model. This construct is also labeled Strategy/Flexibility (McDermott, 1999) and Mastery Behaviors (McClelland & Morrison, 2003).

Social skills. Interpersonal and social skills are often used interchangeably within the literature to describe a set of learning behaviors related to personal interactions within an educational setting. Although the relationship between interpersonal skills and academic functioning is less clear, a student's prosocial behaviors have been found to be a significant predictor of academic achievement (Malecki & Elliot, 2002). Therefore, it is incorporated in each of the learning behavior constructs as Social Skills (DiPerna, 2006), Attitude toward Learning (including items such as "aggressive or hostile when frustrated; uncooperative in group activities;" McDermott, 1999), Social Competence (McClelland & Morrison, 2003), and Interpersonal Skills (Cooper & Farran, 1988). Examples of specific behaviors include response to frustration, disruptiveness, cooperation, self-control, requesting help, and sharing.

Contribution of Academic Enablers to Academic Achievement

Learning-related behaviors have been defined and the various constructs outlined. These behaviors are important to investigate as they have been shown to improve students' reading and math achievement. Research has shown that academic enablers have an impact on the learning trajectories of students throughout their education, particularly for at-risk populations (DiPerna, Lei, & Reid, 2007; Li-Grining et al., 2010; McClelland et al., 2000; Stipek, Newton, & Chudgar, 2010).

McClelland et al. (2000) found evidence supporting the importance of learning-related skills at the beginning of kindergarten in predicting academic achievement for 540 students. The work-related and interpersonal skills subscales of the CFBRS were used to assess learning-

related skills. Interpersonal skills were not predictive of academic outcomes. Work-related skills, including self-regulation, responsibility, independence, and cooperation, predicted academic achievement at the beginning of kindergarten. Additionally, work-related skills accounted for some of the variance in math and reading skills at the end of the second grade, beyond the influence of a child's IQ, entrance age, preschool experience, ethnicity, parental education level, and home literacy environment These findings indicate that students with lower levels of work-related skills have statistically significantly lower academic outcomes, concurrently and over time, as compared to students with higher levels of work-related skills.

A similar study extended these findings to reading and math achievement in the sixth grade with a sample of 538 students from the above mentioned study (McClelland et al, 2006). Results from latent growth curve analyses suggested that learning-related skills uniquely contribute to reading and math skills in kindergarten, as well as the growth in these skills through the sixth grade. Learning-related skills predicted growth in academic skills from kindergarten to second grade; however, they did not predict the growth between third and sixth grade. This suggests that the contribution in early education has an influence on reading and math throughout early elementary school. Moreover, students with lower levels of learning-related skills had significantly lower academic outcomes and the discrepancy between their performance and that of peers with high levels of learning-related skills widened between kindergarten and second grade and persisted from 3rd to sixth grade.

Stipek, Newton, and Chudgar (2010) investigated the relationship between learning-related behaviors and achievement for students from families who met federal poverty guidelines. In this study, learning-related behaviors included emotional self-regulation, cognitive processing skills, and classroom behaviors and were measured by the Teacher Rating Scale of

School Adjustment (TRSSA; Birch & Ladd, 1997). To examine the directionality of this relationship, the authors conducted a longitudinal study with 379 low-income kindergarten and first grade students, following them through fifth grade. Results indicated that learning-related behaviors consistently predicted literacy achievement in later grades, as measured by subtests of the Woodcock-Johnson psycho-educational battery-revised (Woodcock & Johnson, 1990). Furthermore, this relationship was not reciprocal; literacy achievement in kindergarten or first grade did not predict later learning-related behaviors. These findings suggest that learning-related behaviors were separate from achievement and positively influenced academic performance over time.

In order to decipher the impact of academic enablers on math achievement through the third grade, DiPerna, Lei, and Reid (2007) conducted an analyses on a data set from the Early Childhood Longitudinal Study—Kindergarten Cohort (ECLS—K), a national longitudinal study on children's educational experiences throughout elementary school. Utilizing a sample of 6,905 students from this dataset, the authors differentiated the effect of a variety of behaviors, including interpersonal skills, approaches to learning, externalizing problem behaviors, and internalizing problem behaviors. In this study, approaches to learning were measured through the teacher version of the ECLS-K Approaches to Learning Scale, including items for attentiveness, task persistence, eagerness to learn, independence, flexibility, and organization. Results indicated a small, positive relationship between approaches to learning and initial mathematics knowledge at the beginning of kindergarten and growth in mathematics knowledge through the end of third grade. In contrast, externalizing and internalizing behaviors were not significantly related to growth in math skills. Interpersonal skills demonstrated a small negative relationship with

growth in math performance. These results add to the literature on the positive relationship between academic achievement and approaches to learning.

Li-Grining and colleagues (2010) investigated the impact of approaches to learning in kindergarten on reading and math achievement trajectories through the fifth grade, and whether these behaviors serve as a protective factor. Using individual growth trajectories, the authors analyzed data from the Early Childhood Longitudinal Study's Kindergarten Cohort (ECLS-K). Approaches to Learning were measured with teacher and parent versions of the ECLS-K Approaches to Learning scale and ECLS-K Self-Control Scale. These scales include items on attentiveness/concentration, persistence, learning independence, flexibility, organization, eagerness to learn, responsibility, creativity, eagerness to learn, interest, and self-regulation. Achievement was assessed through an academic measure created for used with the ECLS-K. This measure incorporated items from psychometrically sound tests (e.g., Peabody Picture Vocabulary Test—Revised) regarding basic literacy skills and general math knowledge.

Two analyses were conducted in this study (Li-Grinning et al., 2010) for both reading and math. The first analysis utilized a sample of 9,790 students, while the second used a sample of 10,666. The first analysis examined achievement trajectories, depending on level of adaptive approaches to learning from the beginning of kindergarten through spring of fifth grade, while controlling for various child, family and school demographic characteristics. The second trajectory controlled for previous achievement during the fall of kindergarten in addition to the demographic characteristics, and examined the reading and math trajectories from spring of the kindergarten year through spring of fifth grade.

Results indicated that early approaches to learning positively impacted later achievement and served as a protective factor for at-risk populations of children. When controlling for

demographic variables alone, the presence of early approaches to learning led to higher scores in both math (0.56 standard deviations above children with less adaptive approaches to learning) and reading (0.52 standard deviations above children with less adaptive approaches to learning). Introducing achievement in fall of kindergarten as a control substantially reduced these effects; however, they were not completely negated. Students with more adaptive approaches to learning performed 0.26 of a standard deviation higher in math and 0.35 of a standard deviation higher in reading than those students with less adaptive approaches to learning. While controlling for previous achievement, early approaches to learning were positively linked to trajectories of reading and math performance. Moderating effects were seen for gender and achievement level, but not for race/ethnicity or SES. These findings suggest that approaches to learning may be a protective factor for girls' math achievement and boys' reading achievement. Additionally, they serve as a protective factor for both reading and math achievement for low-performing students. This study's sophisticated statistical analyses, along with the longitudinal design and large sample size, further educators' confidence in the potential influence of these behaviors on students' performance, particularly for at-risk populations (Li-Grinning et al., 2010).

The findings outlined above illustrate the importance of academic enablers in Kindergarten as skills contributing to concurrent and future success in the classroom. The definitions and frameworks of this group of behaviors may differ within the literature, but generally include the constructs of motivation, persistence, engagement, and attention. Despite some differences in how these behaviors are defined, small positive relations to both academic performance and growth are consistently demonstrated. Research has examined the impact of kindergarten academic enablers on achievement in later elementary or early middle school

grades (Diperna et al., 2007; Li-Grining et al., 2010). This relationship highlights the importance of understanding and fostering academic enablers in early education.

Change in Academic Enablers Over Time

Few studies have examined how academic enablers change over time (Dominguez, Vitiello, Maier, & Greenfield, 2010; McClelland & Morrison, 2003). Those studies have focused on the stability of these behaviors in preschool children. As academic enablers comprise a potential area of intervention for students throughout early childhood education, it is important to understand patterns relevant to these behaviors (DiPerna & Elliot, 2000).

A study conducted by McClelland and Morrison (2003), mentioned previously for examining the nature of learning-related social skills in preschool children, also investigated the stability of these behaviors between the ages of 3-4 years and 4-5 years (n = 72). The measures of children's learning-related social skills included subscales from two teacher-rated behavior scales, specifically, the Assertion, Self-Control, and Cooperation scales from the Social Skills Rating System and the Mastery Behaviors scale of the Child Behavior Rating Scale. The mean change from time 1 and time 2, one year later, was analyzed with an ANCOVA, with child age, preschool experience, family learning environment, parent education level, and ethnicity as covariates. The authors found variation in the individual skills between time points. However, results from the ANCOVA indicated that improvements in learning-related social skills as a whole, as well as the individual scales, were not significant when controlling for various factors. Furthermore, using hierarchical multiple regressions, authors demonstrated stability in relative ranking of learning-related skills. This stability was displayed for children, whether or not they had the same preschool teacher at both time points.

Dominguez and colleagues (2010) presented two longitudinal studies examining the change of learning behaviors over the preschool year as well as child and classroom characteristics that predicted the change of these academic enablers. In these studies, learning behaviors were referred to as approaches to learning and included five domains: initiative and curiosity, learning about objects and events, engagement and persistence, goal setting and planning, and reasoning and problem solving. The first study used multilevel modeling to investigate the changes in these behaviors over the preschool year for a large, state-wide sample of 23,434 children enrolled in Head Start programs. Results indicated that learning behaviors improved over the course of the preschool year. Additionally, age and gender were predictors of initial presence of learning behaviors as well as rate of change. Students who entered preschool at an older age had higher ratings on the approaches to learning scale; however, they had slower rates of change over the year. Furthermore, girls displayed more adaptive approaches to learning at the beginning of preschool and continued to develop these skills at a quicker rate than boys.

Given the presence of change in learning behaviors over the preschool year, Dominguez and colleagues (2010) sought to investigate the impact of various child and classroom characteristics on that change. Using a sample of 275 preschool children enrolled in Head Start, demographic characteristics (i.e. age, sex, and minority status), behavioral adjustment (shyness and aggression), and classroom process quality (emotional support, classroom organization, and instructional support). These findings supported results from the first study in that significant change over the preschool year was observed and age was a predictor of learning behaviors at the beginning of the year. However, age was not a predictor of the rate of change. This difference may have resulted from the smaller sample size and more limited age range in the second sample. Additionally, gender did not predict either the initial presence or rate of change of

learning behaviors in the second study. Moreover, shyness emerged as a negative predictor of baseline learning behaviors. Lastly, results indicated that classroom organization increased rates of improvement over the year, but this only accounted for 1% of the variance in learning behavior. These findings add to the knowledge on how academic enablers vary over the preschool year. Although there was some inconsistency in the findings, age, gender, shyness and classroom organization have been shown to relate the growth of these skills.

The two studies presented above provide opposing evidence on the stability of learning behaviors over the preschool years. However, these studies differ in terms of their framework, measures, sample size, and statistical analysis. Of note, the first study found no change and controlled for child age, preschool experience, family learning environment, parent education level, and ethnicity (McClelland & Morrison, 2003). The second study examined whether age, gender, shyness, and classroom organization had moderating effects on the change in students' academic enablers over the year. This study found that improvements in academic enablers were moderated by all three variables. Further research should be conducted to examine how time influences academic enablers and the role of various demographic factors (Dominguez et al., 2010). Additionally, this growth should be investigated during years of formal schooling, particularly the kindergarten year.

Methodological Issues when Measuring Change

Change in students' academic enablers over time is important to understand for assessment, intervention, and progress monitoring of these behaviors. Education and social science literature has historically investigated how various outcomes change over time. However, there has been debate over acceptable methodologies for studying this change. Traditional studies of change utilize two-waves of data. Yet there are two issues to consider

when using two waves to measure change, the psychometric properties of the outcome measures and the linearity of change (Willett, 1997).

When investigating change over time, researchers are typically interested in an outcome measure, such as achievement or a behavior. Measures of the outcome, such as a test or rating scale, attempt to quantify an individual's true level of the variable of interest. However, measures provide an observed status, or combination of the true level and random error associated with the measure. This error can obscure what was the true level of a variable. When studying change over time, the error in a measure is exacerbated. Differences between scores at time one and time two may be attributable to the error in the measure as opposed to true change (Willett, 1997).

Additionally, the pattern of change over time may be more nuanced than an outcome increasing, decreasing, or remaining stable. Utilizing two time points to investigate change assumes linearity. However, the rate of improvement may not be consistent over the selected time frame. Instead the change over time may be curvilinear or have different rates of change across the studied time frame (Willett, 1997).

In sum, two issues arise when studying change over time, the presence of error in outcome measures and the nature of change. To address the potential error when looking at outcomes over time, researchers must use psychometrically strong measures when studying change. Additionally, when conducting a longitudinal analysis, multiwave data and individual growth modeling can detect non-linear trends in change. Thus, researchers must consider the psychometric properties of measures incorporated in the study as well as the number of time points when measuring change (Willett, 1997).

Factors that Influence the Change in Academic Enablers Over Time

Multiple factors potentially contribute to the development and change over time of academic enablers in kindergarten students. Evidence in the literature exists to suggest child, parent, and environmental factors may influence kindergarten students' academic enablers. Regarding child factors, gender should be considered because it consistently appears in the literature as a moderating factor of the presence and change of academic enablers (Dominguez et al., 2010). Environmental factors comprise a vital influence on a child's development, as described in Bronfenbrenner's (1977) seminal work on the ecological perspective. Prior to formal schooling, young children's environments mainly consist of home or preschool programs. The influence of these environments on academic enablers should be investigated.

Preschool experience. Since academic enablers have been identified as a component of school readiness, the development of these behaviors and attitudes comprise an aim of early childhood education. Due to the amount of policy attention and funding invested in preschool as well as the recognition of the importance of early intervention and prevention, the impact of early education programs has been studied extensively (Pianta et al., 2009). However, far less research has been dedicated to the impact of preschool experience on academic enablers compared to the vast amount of information on cognitive abilities, achievement, and behavior. Two ways preschool experience can be examined is by looking at whether a child attended a preschool program and how long a child attended preschool.

Preschool attendance. Taylor, Gibbs, and Slate (2000) examined the influence of preschool experience on students' readiness to enter the first grade. Scores from the Georgia Kindergarten Assessment Program (GKAP), administered state-wide at the end of kindergarten, were collected from 171 kindergarten students. The GKAP includes measures of

Communicative, Logical-mathematical, Physical, Personal, and Social capabilities. Items within the Personal and Social domains align with concepts included in academic enablers framework, including positive self-concept, independence, responsibility within the Personal domain and participation in group activities and working on assignments within the Social domain. An ANOVA indicated that students who attended preschool prior to entering kindergarten displayed significantly higher total GKAP scores than students who did not attend preschool. When investigating the differences in each area, a MANOVA demonstrated that scores in the Personal domain was significantly higher for students with preschool experience. An additional finding of this study indicated that girls scored significantly higher than boys on the Social measure, regardless of preschool attendance.

These findings (Taylor, Gibbs, & Slate, 2000) suggest that attending preschool has a positive impact on school readiness for early elementary school students, particularly for skills related to personal competencies. Furthermore, gender has an effect on students' readiness. Interestingly, these authors did not find significant differences in the domains measuring cognitive abilities between students with and without preschool experience. Past research has demonstrated the impact of preschool programs on cognitive and academic development (Camilli, Vargas, Ryan, & Barnett, 2010). This discrepancy may be due to the limitations of the study by Taylor and colleagues (2000). Specifically, these findings may not be generalizable to other students since the sample comprised of students from a single elementary school. Additionally, factors such as the home learning environment and SES were not taken into account in this study despite past literature indicating their moderating effect on the relationship between preschool attendance and student outcomes (Burger, 2010; Umek, Kranjc, Fekonia, &

Bajc, 2013). Lastly, while the GKAP has been approved by the Georgia Board of Education, no research has been conducted to support the measure's reliability and validity.

Nelson (2005) found that preschool experience did not have an effect on approaches to learning, but did have an effect on reading and math achievement. The author conducted a MANOVA utilizing archival data from the Early Childhood Longitudinal Study—Kindergarten Cohort (ECLS-K; n = 10,307). This study examined the effects of preschool attendance on reading achievement, math achievement, and approaches to learning as measured by parents and teachers. In this study, kindergarten students who attended preschool performed significantly higher than those who did not attend preschool on math and reading assessments; the difference in approaches to learning scores was not significant. Nelson's findings suggest that preschool attendance may not influence students' academic enablers.

These two studies illustrate the scant and inconclusive findings regarding the influence of preschool attendance on academic enablers. The first study (Taylor, Gibbs, & Slate, 2000) found that attending preschool had a positive influence on certain aspects of school readiness, including components reflective of academic enablers. However, Nelson (2005) measured academic enablers directly and did not find a significant difference between those who attended experience school and those with no preschool experience. This study had a much larger sample and considered risk factors in the analysis. Given that a clear conclusion cannot be drawn from these two studies, additional research is warranted. Additionally, the above studies examined the impact of preschool attendance by categorizing the sample into students who attended preschool and those who did not attend preschool. The influence of early childhood education on academic enablers may be variable depending on other factors related to preschool attendance, such as the amount of time spent in preschool.

Length of preschool. Studies have investigated the benefits of longer preschool experiences, with mixed findings. Length of preschool has been mostly studied by examining the relationship between number of years of preschool and academic outcomes and development. Some suggest that more time in preschool yields enhanced academic development (Bos et al., 2007); however evidence exists to suggest that the level of academic skills does not differ for those with one versus two years of preschool experience (Kreisman, 2003). When looking specifically at academic enablers, although the literature is promising (Taylor, Gibbs, & Slate, 2000; U.S. DHHS, 2005), no conclusive evidence exists to support that longer duration of preschool leads to the development and maintenance of academic enablers in students.

The Head Start Impact Study (U.S. DHHS, 2010) compared two cohorts of children randomly assigned to Head Start programs with a control group. The control group was not prevented from attending alternative preschool programs, approximately 60% of the control group enrolled in some sort of non-parental setting for at least five hours per week. The first cohort of children was randomly assigned at four years old to either Head Start or control groups. Similarly, the second cohort was randomly assigned, but consisted of three year olds. This study utilized different age cohorts to investigate the impact of enrolling in Head Start at three versus four years of age. However, the control group from the three year cohort was allowed to enroll in Head Start at four years old, thus this study does not reflect the impact of one or two years of Head Start attendance. At age four, approximately 50% the control group from the 3-Year-Old Cohort enrolled in Head Start and only 7.6% of these children were in parent care. The analysis examined the impact of Head Start on a variety of outcomes, including multiple measures of children's social-emotional functioning.

For the 4-Year-Old Cohort, the only significant favorable impact in comparison to the control group was on parent-reported withdrawn behavior at the end of first grade. This cohort had significantly higher ratings than the control group on the Social Skills and Positive Approaches to Learning measure (Achenbach et al., 1987) by age 4 ($d = 0.11$; $p < 0.10$) and by the end of kindergarten ($d = 0.14$; $p < 0.10$). Interestingly, this study suggests that Head Start influences low income children's academic enablers more so than parent care or alternative early childhood programs for those who enroll at 3-years-old and not those at 4-years-old. Due to the design of this study, it cannot be determined whether the length of preschool affected the difference between the two cohorts. Nevertheless, this study indicates that students who enter Head Start at three years old have an advantage.

Some studies have investigated the length of preschool more directly. Wen and colleagues (2012) utilized a sample of 1778 children to investigate whether one or two years of Head Start attendance impacted academic, social, and learning behavior outcomes at the end of kindergarten. Specifically, the PLBS (McDermott, Green, Francis, & Stott, 2000) and the Social Skills Rating System (SSRS; Elliot, Gresham, Freeman, & McCloskey, 1988) measured academic enablers in this study. To control for potential confounding factors, propensity score matching was used in which participants were matched based on the probability of being enrolled in Head Start for two years determined by demographic backgrounds. Results indicated that two of the five groups with two years of Head Start attendance had significantly higher scores on the PLBS as well as the SSRS than those with one year. The effect sizes for the differences were moderate for both the PLBS ($d = 0.31 – 0.51$) and the SSRS ($d = 0.28$). The mixed finding of this study further highlight the need for further research to be conducted on the impact of the duration of preschool programs on students' academic enablers.

The influence of the length of preschool experience constitutes a gap in the literature. Research suggests that a longer preschool experience may not lead to different rates of development of reading and math skills among students (Kriesman, 2005). Furthermore, although compelling evidence exists that age of entering Head Start leads to improved outcomes related to academic enablers (US DHHS, 2010), a different study found mixed results when comparing academic enablers in students with one versus two years of Head Start (Wen et al., 2012). These studies do not conclusively dictate the impact of preschool on these learning behaviors. Additionally, these studies looked at length of preschool as two categorical variables (i.e., one versus two years) as opposed to measuring preschool in terms of months. More research is needed to determine whether longer preschool attendance yields greater competencies when children enter formal schooling.

Home learning environment. Kindergarten students not only engage in learning related activities at school, but are also exposed to educational experiences at home. The home learning environment can be defined as "the resources, whether material or interpersonal, to which children have access that can foster their learning about critical content" (p. 193; Hindman & Morrison, 2012). It comprises an important factor in children's learning at home; they must be exposed to educational materials such as books, magazines, visits to museums and libraries, in order to benefit from these resources. Research has demonstrated that the home learning environment contributes to children's language and literacy development (Evans, Shaw & Bell, 2000; Son & Morrison, 2010) as well as later reading and math achievement (Mellhuish et al., 2008). Beyond academic outcomes, the home learning environment has also been positively associated with academic enablers (McWayne, Fantuzzo, Perry & Childs, 2004; Nelson, 2005).

In a previously discussed study, Nelson (2005) also investigated the effect of the home environment on reading achievement, math achievement, and approaches to learning. This analysis (n = 14,874) found significantly different scores on reading and math assessments between students with and without risk factors, but not on approaches to learning scores. Kindergarten students who participated in learning activities at home scored significantly higher than those who did not on reading, math, and approaches to learning measures. No significant interaction effect between home learning environment and risk factors was found. Thus, Nelson's findings suggest that the home environment may influence students' academic enablers more than preschool attendance, regardless of the presence of risk factors.

McWayne and colleagues (2004) also found that the home learning environment is associated with young students' approaches to learning. Parents of 144 students enrolled in Head Start completed the Family Involvement Questionnaire (FIQ; Fantuzzo et al., 2000), measuring school-based involvement, home-based involvement, and home-school conferencing, as well as the PLBS (McDermott, Green, Francis, & Stott, 1996) and the Connors' Teacher Rating Scale-28 (CTRS-28; Conners, 1990). Lastly, the authors assessed the students' receptive vocabulary skills via the Peabody Picture Vocabulary Test—Third Version (PPVT-III). Linear multiple regression analyses were conducted to determine the relationships between each dimension of family involvement measured at the beginning of the Head Start year and the various outcomes at the end of the year. Results indicated positive, significant relationships between all of the dimensions on the FIQ and at least one component of the PLBS. When taking the other FIQ dimensions into account, only home-based involvement remained as a significant predictor of students' approaches to learning. Home-based learning also significantly predicted students' receptive vocabulary skills and low levels of problem behaviors. In sum, this study found that the

home learning environment is not only related to approaches to learning, but also that relationship is superior to those of the other aspects of family involvement.

The home learning environment emerges as an important factor to consider when discussing academic enablers. The two studies described above suggest that the home learning environment may contribute more to these learning behaviors than preschool attendance (Nelson, 2005) or other aspects of family involvement (McWayne et al., 2004). Whether this influence is maintained throughout the kindergarten year, however, has not been investigated.

Gender. Gender consistently emerges as an influence of young children's academic enabling skills. Girls are more likely to display school readiness (Taylor, Gibbs, Slate, 2000), attend to and persist in tasks during preschool (McWayne, Fantuzzo, & McDermott, 2004), and have higher levels of reading achievement when entering kindergarten (Kreisman, 2003). Furthermore, Dominguez and colleagues (2010) found that gender not only predicts the level of adaptive approaches to learning at the beginning of preschool, but also the rate of growth over the preschool year. Given the evidence that gender moderates the presence and growth of school competencies, it should be considered in studies investigating academic enablers.

In conclusion, children display varying levels of school readiness as they enter and progress through kindergarten. Literature has investigated many factors that are related to the development of academic performance and behavior in early childhood education. However, less research has been dedicated to factors related the development and change of academic enablers in kindergarten. Preschool experience and the home learning environment have emerged as potential predictors of students' academic enabling skills. Additionally, gender seems to moderate both the initial level and growth of academic enablers in preschool.

Preschool attendance has a positive impact on students' short and long term academic and behavior outcomes (Bos, et al., 2007; Camilli et al., 2010). Preschool has been heralded as a crucial intervention for school readiness. School readiness comprises not only academic and behavior outcomes, but also academic enablers (Pianta et al., 2009). Despite policy regarding and widespread support for preschool as an intervention for academic enablers, little empirical support exists to support this relationship. The existing literature does not consistently support preschool as an intervention to promote academic enablers in students (Nelson, 2005; Taylor, Gibbs, & Slate, 2000). Additionally, literature, although promising, does not conclusively dictate whether the length of preschool has an effect on students' academic enabling skills in kindergarten (US DHHS, 2010; Wen et al., 2012).

More support exists for the role of the home learning environment. This research has determined that engaging, educational activities at home predict Head Start students' levels of academic enablers (McWayne et al., 2004), as well as positively associated with these skills in kindergarten (Nelson, 2005). However, more research should be conducted to determine whether the apparent influence of the home learning environment extends through the end of kindergarten.

Lastly, gender must be considered in any analysis of academic enablers. Girls enter preschool with more academic skills and display higher levels of academic enablers (Taylor, Gibbs & Slate, 2000; McWayne, Fantuzuzzo, & McDermott, 2004). Additionally, female students continue to develop these skills at a faster rate (Dominguez et al., 2010). Research should extend these findings to determine if gender continues to be a moderating factor of change during the kindergarten year.

Conclusions

Academic enablers have a unique and positive influence on academic achievement. Students with higher levels of academic enabling skills perform better than those who lack these skills (DiPerna, Lei, & Reid, 2007; Li-Grining et al., 2010; McClelland et al., 2000; Stipek, Newton, & Chudgar, 2010). Findings regarding how academic enablers change over time are less conclusive. The two studies examining this question in preschool children found opposing results (Dominguez et al., 2007; McClelland & Morrison, 2003). Further research is needed to demonstrate the change in academic enablers over the kindergarten year. Additionally, research should be dedicated to investigate which factors moderate this change. Some literature supports that preschool attendance may influence these critical skills in kindergarten students (Taylor, Gibbs & Slate, 2000); however, given that academic enablers are considered a goal of early childhood education, this relationship should be researched further. The home learning environment (McWayne et al., 2004; Nelson, 2005) has a and gender may play a potential moderating role in kindergarten students' academic enablers given their presence in the literature (Domiguez et al., 2010).

Chapter Three:

Methods

A quantitative approach was used in this study, specifically a correlational data analysis. An existing data set was utilized. These data came from Dr. Julia Ogg's investigation of the predictors of kindergarten success currently in the analysis stage at the University of South Florida. The current author assisted with collection of these data. The larger study collected data from teacher, parent and student participants across three time points. Data for time 1 were collected in November 2011, time 2 was collected in February 2012, and time 3 were collected in May 2012. Student academic outcome data were collected at all three time points, teachers completed measures at time 3, and parents completed measures at times 1 and 3. For the current study, only the parent measures from time 1 and 3 were analyzed. This section details the participants, measures, and procedures, as well as analyses used to answer the research questions. Lastly, ethical considerations and limitations are discussed.

Participants

This section describes schools, parents, and students that participated in the larger study and were included in the current study.

Schools. Seven schools in one district in the Southeastern United States participated in a study investigating a variety of parent and child related factors that predict success over the kindergarten year. The Director of Psychological Services for a large, urban school district presented the information about the study to all (approximately 150) of the school psychologists

in the district through an e-mail distribution list. Interested school psychologists, in turn, recruited kindergarten teachers to participate at their schools. Those teachers who agreed to participate met with the Principal Investigator (PI) to discuss details of the study and plan the next steps. School administrators were invited to participate in these meetings. Nineteen kindergarten teachers participated in the larger study and assisted in recruiting students from their classrooms to participate. Table 2 provides descriptive information about the district from which schools were recruited. Table 3 presents demographic information for the individual schools involved in this study.

Table 2

District Elementary School Demographic Information for 2011-2012

	N	%
Number of Schools	84	N/A
Number of Students		
Total	197,001	N/A
Kindergarten	15,410	7.8%
Race/Ethnicity		
American Indian or Alaskan Native	668	0.3%
Asian or Pacific Islander	6,709	3.4%
Black, Non-Hispanic	42,313	21.5%
Hispanic	64,058	32.5%
Multiracial	7,346	3.7%
White, Non-Hispanic	75,907	38.5%
Free/Reduced Lunch Status	111,851	56.8%
ELL Services	23,382	11.9%
ESE Services	37,117	18.8%

*Note.*ELL = English Language Learner, ESE = Exceptional Student Education

Table 3

School Demographic Information for 2011-2012

	School 1 *n* (%)	School 2 *n* (%)	School 3 *n* (%)	School 4 *n* (%)	School 5 *n* (%)	School 6 *n* (%)	School 7 *n* (%)
Number of Students							
Total	964	838	906	645	402	631	801
Kindergarten	155 (16.1)	135 (16.1)	157 (17.3)	110 (17.1)	53 (13.2)	100 (15.8)	92 (11.5)
Gender							
Male	481 (49.9)	482 (56.2)	481 (53.1)	321 (49.8)	215 (53.5)	320 (50.7)	408 (50.1)
Female	483 (50.1)	375 (44.7)	425 (46.9)	324 (50.2)	187 (46.5)	311 (49.3)	393 (49.1)
Minority Status	382 (39.6)	545 (65)	428 (47.2)	346 (53.6)	315 (78.4)	151 (23.9)	494 (61.7)
Free/Reduced Lunch Status	373 (38.7)	551 (65.8)	440 (48.5)	146 (22.6)	332 (82.5)	91 (14.4)	384 (47.9)

Parents. One hundred and five kindergarten students and their parents from the seven schools above participated in this data collection at time 1. Consent forms (See Appendix A) were sent home with each student in classrooms with participating teachers in November 2011. Parents also were given an additional copy of the consent form to keep for their records. Eight-seven parents, 82.3% of the original participants, also participated in data collection at time 3. Given that most analyses will incorporate data from time 3, the participants for the current study were drawn from the 87 parent participants from time 3 of the larger study

The students included in the larger study had to meet certain inclusion criteria. These criteria included: students had to be enrolled in kindergarten in public school in participating school districts, students needed parent consent, and students must live with a parent/guardian. Students who repeated kindergarten were excluded from the larger study. Additionally, as measures were only provided in English, non-English speakers were excluded. In addition to the inclusion criteria for the larger study, an additional criterion was applied for the present study. To be included in the present study, parents had to return questionnaires at time 1 and time 3 as well as complete at least two-thirds of the items related to the variables of interest. The specific measures incorporated in the current study are described further below. Table 4 provides the demographic information for the total parent responders from the larger study and those included in the current study. Table 5 provides information regarding student demographic characteristics.

Table 4

Demographic Characteristics of Parent Participants

	Total Participants % (*n*)	Included Participants % (*n*)
Relationship to Child		
Biological Mother	92.4 (97)	92.9 (78)
Biological Father	5.7 (6)	3.6 (3)
Adoptive Mother	1.0 (1)	1.2 (1)
Other	1.0 (1)	1.2 (1)
Level of Education		
Less than High School	1.9 (2)	2.4 (2)
High School or GED	45.7 (48)	44.0 (37)
Some College, 2-year College or Vocational	2.9 (3)	1.2 (1)
Bachelor's Degree	2.9 (3)	2.4 (2)
Some Graduate Work	12.4 (13)	11.9 (10)
Master's Degree	21.0 (22)	22.6 (19)
Doctoral	13.3 (14)	14.3 (12)
Family Income Per Year		
$5001-10000	6.7 (7)	6.0 (5)
$10001 – 20000	3.8 (4)	2.4 (2)
$20001-30000	8.6 (9)	8.3 (7)
$30001-40000	13.3 (14)	15.5 (13)
$40001-50000	9.5 (10)	9.5 (8)
$50001-60000	12.4 (13)	10.7 (9)
Over 60000	44.8 (47)	45.2 (38)

Table 5

Demographic Characteristics of Student Participants

	Total Participants % (*n*)	Included Participants % (*n*)
Gender		
Male	53.3 (56)	55.4 (46)
Female	46.7 (49)	44.6 (37)
Age in Months		
62	1.0 (1)	1.2 (1)
63	10.6 (11)	9.6 (8)
64	3.9 (4)	4.8 (4)
65	6.9 (7)	6.0 (5)
66	4.8 (5)	2.4 (2)
67	12.6 (13)	12.0 (10)
68	8.6 (9)	8.4 (7)
69	6.0 (6)	6.0 (5)
70	5.8 (6)	6.0 (5)
71	11.6 (12)	12.0 (10)
72	7.9 (8)	7.2 (6)
73	9.6 (10)	12.0 (10)
74	7.9 (8)	8.4 (7)
75	2.0 (2)	1.2 (1)
78	1.0 (1)	1.2 (1)
82	1.0 (1)	1.2 (1)
89	1.0 (1)	n/a
Race/Ethnicity		
American Indian or Alaskan Native	1.0 (1)	1.2 (1)
Asian or Pacific Islander	2.9 (3)	3.6 (3)
Black, Non-Hispanic	10.5 (11)	9.6 (8)
Hispanic	21.0 (22)	20.5 (17)
Multiracial	13.7 (14)	9.6 (8)
White, Non-Hispanic	50.5 (53)	55.4 (46)
Other	1.0 (1)	n/a

Measures

In the present study, measures completed by parents were used to answer the research questions. Specific information about each measure is described below.

Demographic form. The Parent Demographic Questionnaire (Appendix C) was developed by the PI to gather demographic information regarding the parent and student participants. It consists of 11 items related to parent demographic factors and six items about child characteristics. Parent information obtained through this questionnaire includes, relationship to child, race/ethnicity, highest level of education, hours of work per week, number of adult caregivers in the home, marital status, income, and primary language spoken in the home. Parent relationship to the child, race/ethnicity, highest level of education, and family income were utilized in this study to describe the demographic makeup of the parent sample. Demographic information collected about the student in this questionnaire include gender, date of birth, race/ethnicity, receipt of psychological services, and use of medications to treat behavioral or mental disorders. The present study utilized age, race/ethnicity, and gender to provide a demographic description of the student sample included in this study.

Approaches to learning scale. The Approaches to Learning Scale (ATLS; U.S. Department of Education, 2010; see Appendix D) includes six items from the subset of Approaches to Learning items from the ECLS-K Social Rating Scale (SRS). Parents were asked to indicate how often their child displayed certain behaviors or characteristics on a scale of one (never) to four (very often). The six items rate the child's attentiveness, task persistence, eagerness to learn, learning independence, flexibility and organization as reflected in the home environment (e.g., helps with chores). The items for attentiveness and task persistence most closely resemble the construct of engagement in the academic enablers framework. Motivation is

reflected by the items on eagerness to learn and learning independence. Lastly, study skills are encompassed in the item on flexibility and organization with home activities. Interpersonal skills are not measured with the Approaches to Learning Scale. Table 6 below summarizes this information.

Table 6

Approaches to Learning Scale Items

Academic Enabler Construct	Approaches to Learning Scale Item
Engagement	*Attentiveness*
	Concentrate on a task and ignore distractions?
	Task persistence
	Keep working at something until (he/she) is finished?
Motivation	*Eagerness to learn*
	Eager to learn new things?
	Learning Independence
	Shows interest in a variety of things?
Study Skills	*Flexibility and organization*
	Helps with chores?

The parent ATLS was utilized in the ECKLS-K data set with a sample of 15,574 kindergarten students throughout the United States. To determine the reliability of this subscale, split half reliability was calculated at 0.68 (US Department of Education, 2002). Several studies have utilized this scale as an outcome measure for the ECKLS-K sample (DiPerna, Lei, & Reid,

2007; Li-Grining et al., 2010). However, additional reliability and validity data have not been presented.

The ATLS was administered to parent participants at time 1 and time 3. In the proposed study, a mean item score for each time point was utilized for the analysis. Additionally, internal consistency for this measure was calculated through Cronbach's alpha.

Preschool experiences. The PI developed the Preschool Experiences measure to examine the preschool experiences of the student participants (see Appendix E). This measure was administered during time 3 of data collection and included two sets of questions. First, it asks parents to indicate their child's previous education experiences, including repeating a year of Kindergarten, Voluntary Prekindergarten (VPK), School District Prekindergarten Exceptional Student Education (ESE) Programs, Head Start (including Head Start, Migrant Head Start, American Indian Head Start, and Early Head Start), Private Preschool or other. Second, parents were asked to indicate the total number of months that the student attended each preschool program their child had attended. The sum of the number of months of preschool attendance was used to quantify the length of preschool in this study. Additionally, participants that indicated their child repeated Kindergarten on this questionnaire were excluded from the present study.

Parental support for learning scale. The Parent Support for Learning Scale (PSLS; Rogers, Markel, Midgett, Ryan & Tannock, 2013) was used to measure aspects of parent involvement in their children's education. The PSLS has two versions completed by the student: the Parental Support for Learning Scale—Mother (PSLS-M) and the Parental Support for Learning Scale—Father (PSLS-F). In a study investigating this measure with a sample of 231 children aged 10-13, exploratory factor analysis indicated that items fit within four subscales: Management of the Learning Environment, Parent Participation with Homework, Supportive

Parental Involvement, and Controlling Parental Involvement. Additionally, Cronbach's Alphas for each subscale were calculated to examine the reliability. These results are displayed in Table 7.

Table 7

Cronbach's Alphas for PSLS-M and PSLS-F Subscales (Rogers, Markel, Midgett, Ryan & Tannock, 2013).

Measure	Parental Management of the Learning Environment	Controlling Parental Environment	Parental Participation with Homework	Supportive Parental Involvement
PSLS-M	.82	.75	.60	.65
PSLS-F	.89	.71	.77	.83

The larger study utilized the school entry version of the PSLS, which includes three subscales, Instrumental Involvement in Learning, Supportive-Controlling Parental Involvement, and the Management of Home Learning Environment (see Appendix F). The school entry version adapts the PSLS to use with early elementary school aged children. This version is completed by parents regarding their own behaviors, as opposed to student report of parent behavior. Additionally, it replaces the Parental Participation with Homework subscale with the Instrumental Involvement in Learning subscale. The Instrumental Involvement subscale includes two items from the school aged PSLS and four items that are similar to those on the Parental Participation with Homework subscale (i.e., I often help my child with his/her schoolwork).

Parents rate each item on a 5-point scale ranging from 1 (Strongly Disagree) to 3 (Neither Agree nor Disagree) to 5 (Strongly Agree) in order to indicate their agreement with the statement. The average item rating was calculated and analyzed in the present study. All of the

items in the Management of the Learning Environment subscale were utilized to measure the home learning environment. This subscale includes six items, such as "I provide different kinds of things to read, like magazines, stories, and non-fiction." Additionally, the items in the Instrumental Involvement in Learning subscale were used to measure home learning environment (HLE) in the proposed study. Six items are included in this subscale with items such as, "I read to my child before he/she goes to sleep." These two subscales were chosen because the items most closely reflect those included in past research on the HLE, such as the FIQ used by McWayne and colleagues (2004) and items used by Nelson (2005). For example, all three measures include items related to reading in the home (i.e., PSLS: My child and I read together sometimes; FIQ: I spend time working with my child on reading; Participation in Home Learning Activities: I read books with my child). A list of the items on each measure is included in Appendix G.

The school entry PSLS was administered to parent participants at time 1 and time 3 of data collection. The present study included data collected from time 1. Currently, there is no published research to support the reliability and validity of the school entry form of the PSLS.

Procedures

Data collection. The proposed study used a secondary analysis of data from a larger study. Data were collected in November 2011 through June 2012 as part of a study on predictors of kindergarten success that was approved by the Institutional Review Board (IRB) at the University of South Florida (USF) and through the participating school district IRB. Additional IRB approval was granted for the proposed study. The PI for the larger study is Dr. Julia Ogg. Graduate students in the school psychology program at USF, including the author of this proposal, and the PI collected and entered the data for the larger study. Collection of data was

completed in three phases. The first phase was conducted in November 2011. During this time, parents completed and returned a variety of measures, including the aforementioned Parent Demographic Questionnaire, ATLS (U.S. Department of Education, 2010), and PSLS (Rogers, Markel, Midgett, Ryan & Tannock, 2013). Parents placed completed measures in a provided, sealed envelope and returned them to school. An investigator then collected the packets and sent a $10 gift card home with the respective student. Additionally, the parents were told that they could contact the PI and discuss alternative methods of returning the packet if they felt uncomfortable with this method. Children were asked to provide verbal assent and subsequently assessed with early literacy and math assessments during this phase.

The second time point of data collection consisted of student and teacher measures, but did not include measures completed by the parents. Since only measures completed by parents were needed to answer the research question, this data collection point was not included in the current study. The third and final time of data collection occurred during May 2012 and incorporated student assessments, parent questionnaires, and teacher questionnaires. The assessments and parent measures were collected in the same manner as the first data collection phase. The ATLS (U.S. Department of Education, 2010), preschool experience, and PSLS (Rogers, Markel, Midgett, Ryan & Tannock, 2013) were distributed again during this phase. Parents received a second $10 gift card for returning the questionnaire packets. Table 8 summarizes the measures that were used in this study and the time at which they were collected.

Table 8

Data Collection Measures and Times

Measure	Time 1 November 2011	Time 2 February 2012	Time 3 May 2012
Parent Demographic Questionnaire	X*		
Approaches to Learning Scale	X*		X*
Parental Support for Learning Scale	X*		X
Preschool Experiences			X*

Note: * indicates measures included in the current study

Data Analysis

This study aimed to answer five research questions through a series of quantitative statistical analyses. First, this study examined how strongly associated parent ratings of students' academic enablers at the beginning of the kindergarten year are with parent ratings at the end of the kindergarten year. Second, the study investigated whether preschool experience was a significant predictor of the presence of academic enablers at the beginning of the kindergarten year, as well as at the end of the kindergarten year when taking academic enabling skills at the beginning of the year into account. Third, this analysis examined whether the HLE is a significant predictor of students' academic enablers at the beginning as well as the end of the kindergarten year, when taking the level of academic enablers at the beginning of kindergarten into account. For each of these analyses, the extent to which gender has a moderating effect was examined.

Descriptive analyses. Prior to analyzing data to examine the above questions, preliminary analyses were run for the appropriate variables. First, the data set was screened for participants with missing data. Participants with less than two-thirds of the data on the Approaches to Learning Scale at either time point, or the PSLS at the beginning of the year were excluded from this analysis. For participants with at least two-thirds of the measures completed, an average score was calculated using the items that were complete. Moreover, data were screened for outliers to determine the potential impact of including these data in the statistical analyses. Means, standard deviations, range, skew, and kurtosis were obtained for the entire sample for parent ratings of approaches to learning (ATLS) at both time points. These analyses were also obtained for the parent ratings of the HLE as measured by the PSLS at time 1 and months of preschool experience as indicated on the Preschool Experiences Scale at time 3.

Cronbach's alphas were calculated to determine the internal consistency for each measure of students' approaches to learning as well as the PSLS with this sample of Kindergarten students. In order to determine the direction and strength of the relationship between the variables of interest, a correlation matrix was calculated. These analyses were completed through IBM SPSS Statistics 21.0.

Change in academic enablers over the kindergarten year. The first research question in this study examined the change in parent reports of kindergarten students' approaches to learning at the beginning of the school year and at the end of the year. Additionally, this study examined if student gender had a moderating effect on this change. Parent ratings were collected at two time points, time 1 in November of 2011 and time 3 in April, 2012. To examine the change in parent ratings of academic enablers, a 2 (Gender) x 2 (Time) ANOVA was conducted. This statistical analysis demonstrated whether students' mean scores on the Approaches to

Learning Scale at time 2 were significantly higher than at time 1. Additionally, this statistical analysis demonstrated whether the relationship between parent ratings of approaches to learning at time 3 and time 1 differ based on student gender.

Although no research has been conducted to examine this change over the kindergarten year, similar studies looking at this change in preschool has yielded inconsistent results (Dominguez et al., 2007; McClelland & Morrison, 2003). Nevertheless, it was hypothesized that scores at time 3 would be significantly greater than scores at time 1. Past research has identified student gender as a moderating factor in the growth of teacher ratings of approaches to learning in a preschool population (Dominguez et al., 2010). Given these findings, it was hypothesized that the change between time points would be greater for girls than for boys.

Regression analysis. Research questions 2-5 addressed in this study were answered through regression analyses. Prior to conducting the regression analysis, the relationships between the variables were analyzed through correlations as stated above. This allowed for the identification of any issues related to multicollinearity between the independent variables.

To answer questions 2 and 4, multiple regression analyses was utilized. The first analysis incorporated the length of preschool experience, in months, as a predictor variable, while the second used parent ratings of the HLE. Gender was included as a predictor variable in both analyses due to its presence in the literature as an important factor to consider in relation to academic enablers in young children. Parent ratings of academic enablers at time 1 was the dependent variable. Series of two models were run. The first model analyzed the amount of variance of the outcome variable (academic enablers) that can be accounted for by the predictor variables (gender and preschool or HLE). Model two examined whether gender had a moderating effect on the relationship between HLE or preschool experience and academic enablers by

adding an interaction term. A moderator effect was determined by a statistically significant change in R^2, identified by an alpha level below .05. Below is a sample equation for research question 2. For question 4, HLE would replace preschool in the equation.

Academic Enablers Time 1 = Preschool + Gender + Preschool*Gender

Two similar multiple regression analysis were used to investigate research questions 3 and 5. These determined the extent that length of preschool experience and home learning environment predicted kindergarten students' academic enablers at the end of the year as rated by parents. In order to account for the influence of students' level of academic enablers at the beginning of kindergarten, parent ratings at time 1 were entered as an additional predictor variable. Additionally, gender was included as a predictor variable and its role as a moderating factor was examined. Both analyses included two models. For the first model, each predictor variable (gender, academic enablers at time 1, and preschool or HLE) were entered into the equation to determine its influence on the amount of variance in academic enablers at time 3. In model two, the interaction effect between the main predictor variable (preschool or HLE) and gender was examined. Gender was considered a moderating factor if the interaction term significantly changed R^2 at an alpha level of .05. A sample equation for this analysis of preschool experience is displayed below. HLE replaced preschool in the equation below to address question 5.

Academic Enablers Time 3 = Gender + Academic Enablers Time 1 + Preschool + Gender*Preschool

Ethical Considerations

Prior to the data collection, IRB approval from USF was obtained for the larger study. Precautions were taken throughout data collection to protect all participants. Parent participants

were provided a consent form (see Appendix A). This form delineated the purpose of the study as well as the risks and benefits association with their and their children's participation. Additionally, the PIs contact information was included in case of any questions or concerns regarding the study. Parents were also provided the option of returning rating scales directly to the PI if they had any privacy concerns. Verbal assent was obtained for all students whose parents returned consent forms. Due to the young age of the participants, examiners read the assent form aloud (see Appendix B). Lastly, in order to protect participants' confidentiality, the data examined for this secondary analysis did not contain specific, identifying information (i.e., name, address, phone number). In addition, code numbers were removed by the PI prior to giving the data set to this investigator to limit the possibility that these data could be linked to specific participants.

Chapter Four:

Results

This chapter delineates the results of the statistical analyses used to answer the five research questions addressed in the current study. First, procedures used to screen the data set, construct variables for each scale of interest, and descriptive analyses are presented. Next, preliminary analyses are described. The results of analysis of variance to examine the change over time in academic enablers depending on gender are presented. Lastly, the results of multiple regression analyses investigating the predictors and moderators of both initial status of academic enablers in kindergarten students as well as the change over time of this variable are presented.

Data Entry and Screening

Data from the larger study were entered into an Excel spreadsheet by graduate students. Ten percent of code numbers were randomly selected and checked for accuracy. The PI for the larger study, who did not participate in initial data entry, checked for accuracy by comparing questionnaire responses with those entered into the spreadsheet. A high level of accuracy was found, ranging from 97.4 to 100% across participants and measures. The data relevant to the current study were transferred to a data set in IBM SPSS 22.0 for the analyses conducted as part of the current study.

At time 1, the study included 105 participants. With an attrition rate of 17%, the sample at time 3 consisted of 87 families. Descriptive analyses for the variables of interest for these

participants were conducted to examine whether data fell in the expected range, was normally distributed by examining skewness and kurtosis, and contained any outliers. Four cases were excluded from the analysis for research questions 1, 2 and 3. Three cases were excluded due to missing more than two thirds of the data on the ATLS. One additional participant was excluded from the study since the child's age did not fall within the expected range. For research questions 4 and 5, two additional cases were excluded due to missing data on the PSLS. Thus, the final sample size for questions 1, 2, and 3 was 83, and 81 for questions 4 and 5.

Variable Construction

The present analysis includes three variables of interest (i.e., ATL, Preschool Experience, and HLE) that were constructed as described below.

Approaches to learning. Two variables were constructed regarding approaches to learning: approaches to learning at time 1 and approaches to learning at time 3. At each time point, the average of the six items was calculated to determine the total mean score utilized in this analysis. At least four of the six items had to be completed at each time point to be included. Three participants who completed measures at both time 1 and time 3 did not meet this criterion, and thus were excluded from the study.

Preschool experiences. Participants indicated the number of months the student attended various preschool programs. To calculate the length of preschool experience, the number of months across each type of preschool program was summed to yield a total preschool experiences score. Participants were required to respond to the first question on the survey, which asked participants to circle yes or no to indicate whether the student attended preschool. Parent participants were then asked to list the number of months the student attended each type of preschool program. Exclusions for missing data were only considered if participants circled

"yes" that they did have a certain preschool experience, but did not include the number of months. This criterion did not result in any exclusions. This is in contrast to a participant who circled "no" to any type of experiences. In this case, a student was considered to have 0 months of preschool experience.

Home learning environment. Items from the PSLS were used to construct the HLE variable. The mean item score was calculated from the items on the Instrumental Involvement in Learning and Management of Home Learning Environment subscales of the PSLS. This consisted of 13 total items (Instrumental Involvement: 7, 9, 18, 19, 23, 29; Management of Home Learning Environment: 10, 11, 13, 14, 26, 27, 38). Item 23 was reverse scored and was transformed prior to analyses. Participants had to complete at least nine of the 13 items (69%) to be included in the study. Two families were excluded from the analysis for research questions 4 and 5 due to missing data on the PSLS.

Descriptive Analyses

Descriptive statistics for each variable included in this study are presented in Table 9. The means and standard deviations in the ECLS-K psychometric report for the ATLS (M = 3.1, SD = 0.5; USDOE, 2002) are comparable to those found in the present study (Time 1: M = 3.2, SD = 5.0; Time 2: M = 3.18, SD = .49). The skewness and kurtosis of the variables of interest were calculated to examine univariate normality. Scores on the ATLS at both time points and scores on the PSLS demonstrated approximate normal distribution as the skewness and kurtosis falls within -1.0 and +1.0. The obtained values for preschool experiences exceeded the stringent range of -1.0 to +1.0. However, the skewness and kurtosis for preschool experiences does fall within the range of -3.0 and + 3.0, which is an acceptable range according to Tabachnick and Fidell (2013).

Table 9

Descriptive Statistics for Variables of Interest

Variable	*N*	Minimum	Maximum	*M*	(*SD*)	Skew	Kurtosis
ATLS							
Time 1	83	2.17	4.00	3.20	.50	-.09	-.83
Time 2	83	1.83	4.00	3.18	.49	-.30	-.41
PSLS	81	3.31	4.69	4.19	.35	-.48	.27
Preschool Experiences	83	0	60	11.66	14.03	1.69	2.64

Scale reliability. Cronbach's alphas were calculated to determine the internal consistency of the various measures utilized in subsequent analyses, as presented in Table 10. The obtained values fell above .74, indicating that the measures had acceptable estimates of reliability for the present sample (Gall, Gall, & Borg, 2007).

Table 10

Cronbach's Alpha (α) for all Measures Utilized in Analyses

Scale Name	Number of Items	Cronbach's Alpha (α)
ATLS		
Time 1	6	.79
Time 2	6	.77
PSLS	13	.74

Correlational Analyses

Pearson product-moment correlations coefficients were obtained for the variables of interest included in the study, including academic enablers at time 1 and time 3, preschool experiences, the home learning environment, and gender. Results are displayed in Table 11. As expected, a strong, positive relationship exists between academic enablers at time 1 and time 3, $r = .73$, $p < .001$. Academic enablers at time 1 also had a moderate but significant association with the HLE ($r = .40$, $p < .001$), indicating that higher scores on the ATLS at time 1 were associated with higher scores on the PSLS. A similar relationship was found between the HLE and academic enablers at time 3, $r = .43$, $p < .001$. Gender was significantly, positively related to academic enablers at both time points (Time 1, $r = .29$, $p < .001$; Time 3, $r = .27$, $p = .01$). This indicates that there is a moderate tendency for girls to score higher on the ATLS at both time points. Length of preschool experience had small correlations the other variables of interest that did not reach statistical significance.

Table 11

Intercorrelations between Variables

	1	2	3	4	5
1. ATLS: Time 1	1				
2. ATLS: Time 3	.73**	1			
3. Preschool Experiences	.11	.21	1		
4. PSLS	.40**	.43**	-.02	1	
5. Gender	.29**	.27*	-.01	.13	1

Note. Gender (0 = male; 1 = female)
*$p < .05$. ** $p < .01$.

ANOVA Analysis

To determine whether kindergarten students' approaches to learning differed over time and whether gender moderated this change, a mixed between-within subjects analysis of variance (ANOVA) was performed. Alpha levels below .05 were considered statistically significant.

Assumptions. Six assumptions apply to mixed between-within analysis of variance analyses, level of measurement, random sampling, independence of observations, normal distribution, homogeneity of variance, and homogeneity of intercorrelations. Level of measurement was not violated since the dependent variable, academic enablers, was quantified with a continuous measure. As discussed previously, this analysis does not violate the assumption of normality since the skewness and kurtosis of each variable falls within an acceptable range. According to results from Levene's test for equality of variances, homogeneity of variance was not violated, F (1, 81) = 2.29, p = .13. Moreover, the assumption of homogeneity of intercorrelations was not violated according to Box's M statistic, F (3, 2037148) = 2.19, p = .09. Two general assumptions of analysis of variance analyses were violated. First, the participants are considered a convenience sample, as opposed to a random sample, and thus results may not be representative of the entire kindergarten population. Lastly, the independence of observations assumption was violated since the data are nested; participants come from groups of schools and classrooms. However, these two assumptions are commonly violated in education research since it is not feasible to obtain an ungrouped sample that is completely representative of the entire kindergarten population. Thus, we continued with the analyses, keeping these cautions in mind.

Research question one. A 2 (Gender) X 2 (Time) ANOVA was conducted to examine the differences in students' academic enablers over time, depending on gender. The dependent

variable was student scores on the ATLS, time was the independent variable, and gender was the moderating variable. No substantial main effect for time was found, Wilks' Lambda = 1.00, F (1, 81) = .29, p = .59, partial eta squared = .004. This suggests that students' scores on the ATLS neither increased nor decreased, regardless of gender. A statistically significant main effect for gender was found, F (1, 81) = 8.0, p = .006, partial eta squared = .09, with males displaying lower scores on the ATLS than females. A statistically significant interaction effect between time and gender was not found, Wilks' Lambda = 1.00, F (1, 81) = .06, p = .81, partial eta squared = .001.

Table 12

Group Means and Standard Deviations: Approaches to Learning Scale Scores Over the Kindergarten Year

	Males (n = 46)	Females (n = 37)
Time 1	3.07 (.47)	3.36 (.50)
Time 3	3.06 (.52)	3.32 (.41)

Regression Analyses

In order to investigate the predictors of kindergarten students' level of academic enablers at the beginning of the kindergarten year, multiple regression was used.

Assumptions. Various assumptions must be considered prior to conducting a multiple regression. First, multiple regression analyses assume normal distribution of the variables. As mentioned previously, the skewness and kurtosis of scores on the ATLS and PSLS fell within an acceptable range of -1.0 to +1.0. The length of preschool experience was slightly skewed (skewness = 1.69; kurtosis =2.64), although this also falls within an acceptable range. To ensure

that this skew did not impact the analyses, the multiple regressions for research question two and three were run with a logarithmic transformation of the preschool variable. This transformation did not change the significance or trends of the findings. Thus, the reported analysis utilizes the original (untransformed) variable.

Second, multiple regression analyses require a certain sample size. Tabachnick and Fidell (2013) suggest that researchers use the equation: $N > 50 + 8m$ to calculate minimum sample size, where m stands for the number of independent variables. Each analysis included three independent variables, which yields a minimum sample size of 74. The present sample size ranges from 84-82, and thus meets this criterion. Multiple regression is also sensitive to multicolinearity and singularity. The included independent variables are not highly correlated (see Table 11), nor is any variable a combination of other independent variables. Thus these assumptions are not violated. The presence of outliners highly impacts the results of multiple regression analyses and must be detected and addressed. Data screening identified one possible univariate outlier for the ATLS at time 3. The z-score for this value was computed ($z = -2.73$) and determined to fall within an acceptable range (-3.3 to 3.3, Tabachnick & Fidell, 2013). Therefore, this score was retained for the analyses.

Research question two. To determine the extent to which preschool experience predicts initial levels of kindergarten academic enablers, as well as determine the moderating effect of gender, a hierarchical multiple regression was run. Preschool experience and gender was entered into model one, which explained 9.3% of the variance in academic enablers at time 1 F (2, 80) = 4.12, $p = .02$. In this model, only gender was a statistically significant predictor of academic enablers at time 1 ($\beta = .29$, $p < .01$).

An interaction term, preschool experience by gender, was added to model two. The model as a whole explained 11% of the variance F (1, 79) = 3.23, p = .03. The addition of the interaction term accounted for an additional 1.6% of the variance in initial academic enablers, R squared change = .02, F change (1, 79) = 1.40, p = .24, which was not significant. This indicates that model two does not account for significantly more variance than model one. None of the predictors in model two were significant.

Table 13

Summary of Regression Analyses for Preschool Experience and Gender as Predictors of Initial Academic Enablers (n = 83)

Variable	Model 1		Model 2	
	B (SE)	B	B (SE)	β
Preschool Experience	.00 (.00)	.11	-.01 (.01)	-.25
Gender	.29 (.11)	.29*	.18 (.14)	.18
Preschool X Gender			.01 (.01)	.39
R^2	.09		.11	
F	4.12*		3.23*	

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

Research question three. A hierarchical multiple regression was utilized to investigate whether preschool experience predicted ratings of academic enablers at the end of the kindergarten year, while controlling for ratings at the beginning of the kindergarten year, as well as determine whether gender had a moderating effect on this relationship. Academic enablers at time one, preschool experience, and gender were entered into model one. The model as a whole explained 55% of the variance in academic enablers at time 3, F (3, 79) = 32.59, p < .001. In this

model, scores on the ATLS at time one significantly predicted scores at time 3 (β = .69, p < .001). No other predictors were significant.

Model two included an interaction term, preschool experience by gender, and this model also explained 55% of the variance, F (4, 78) = 24.18, p < .001. The interaction term did not significantly account for more of the variance in academic enablers at the end of kindergarten, R squared change = .001, F change (1, 78) = .10, p = .76. Academic enablers at time 1 was the only statistically significant predictor of academic enablers at time 3 (β = .70, p < .001).

Table 14

Summary of Regression Analyses for Preschool Experience and Gender as Predictors of Final Academic Enablers, controlling for Initial Academic Enablers (n = 83)

	Model 1		Model 2	
Variable	B (SE)	B	B (SE)	β
ATLS Time 1	.68 (.08)	.69**	.69 (.08)	.70**
Preschool Experience	.01 (.00)	.13	.01 (.01)	.20
Gender	.07 (.08)	.07	.10 (.10)	.10
Gender X Preschool			.00 (.01)	-.07
R^2	.55		.55	
F	32.59**		24.18	

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

Research question four. To determine the extent to which HLE predicts initial levels of kindergarten academic enablers, as well as determine the moderating effect of gender, a hierarchical multiple regression was run. HLE and gender were entered into model one, which explained 19% of the variance in academic enablers at time 1 F (2, 78) = 10.25, p < .001. In this

model, both HLE (β = .37, p < .001) and gender (β = .22, p = .03) were statistically significant predictors of academic enablers at time 1.

An interaction term, HLE by gender, was added to model 2. The model as a whole explained 18% of the variance F (3, 77) = 6.92, p < .001. The addition of the interaction term accounted for an additional 0.6% of the variance in initial academic enablers, R squared change = .004, F change (1, 77) = .409, p = .52, which was not significant. This indicates that model two does not account for significantly more variance than model one. None of the predictors in model two were significant.

Table 15

Summary of Regression Analyses for Home Learning Environment and Gender as Predictors of Initial Academic Enablers (n = 81)

Variable	Model 1		Model 2	
	B (SE)	B	B (SE)	β
HLE	.52 (.14)	.37**	.79 (.44)	.56
Gender	.22 (.10)	.22*	1.02 (1.25)	1.03
HLE X Gender			-.19 (.30)	-.85
R^2	.19		.18	
F	10.25**		6.92**	

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

Research question five. A hierarchical multiple regression was utilized to investigate whether HLE predicted ratings of academic enablers at the end of the kindergarten year, while controlling for ratings at the beginning of the kindergarten year, as well as determine whether gender had a moderating effect on this relationship. Academic enablers at time one, HLE, and

gender were entered into model one. The model as a whole explained 54% of the variance in academic enablers at time 3, F (3, 77) = 31.75, $p < .001$. In this model, scores on the ATLS at time one significantly predicted scores at time 3 ($\beta = .64$, $p < .001$). No other predictors in the model were significant.

Model two included an interaction term, HLE by gender, which also explained 54% of the variance, F (4, 76) = 24.41, $p < .001$. The interaction term did not significantly account for more of the variance in academic enablers at the end of kindergarten, R squared change = .01, F change (1, 76) = 1.61, $p = .21$. Academic enablers at time 1 was the only statistically significant predictor of academic enablers at time 3 ($\beta = .64$, $p < .001$).

Table 16

Summary of Regression Analyses for Home Learning Environment and Gender as Predictors of Final Academic Enablers, controlling for Initial Academic Enablers (n = 81)

Variable	Model 1		Model 2	
	B (SE)	B	B (SE)	β
ATLS Time 1	.63 (.08)	.64**	.62 (.08)	.63**
HLE	.27 (.12)	.16	.62 (.33)	.44
Gender	.07 (.08)	.07	1.24 (.93)	1.28
Gender X HLE	-.28 (.22)	-1.27		
R^2	.54		.54	
F	31.75**		24.41**	

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

A follow-up analysis was run to determine whether HLE predicted ratings of academic enablers at the end of kindergarten without controlling for the initial level of academic enablers. The moderating role of gender was examined as well. HLE and gender were entered into model one. As a whole, model one explained 23% of the variance in academic enablers at time 3, F (2, 78) = 11.54, $p < .001$. HLE emerged as a significant predictor of academic enablers at time 3 ($\beta = .40$, $p < .001$). Gender was not a significant predictor.

An interaction term, HLE by gender, was added to model two. This model explained 25% of the variance, F (3, 77) = 8.43, $p < .001$. The interaction term did not account for significantly more variance in academic enablers, R squared change = .02, F change (1, 75) = 1.93, $p = .17$. In this model, HLE was a significant predictor of academic enablers at time 3 ($\beta = .79$, $p = .01$).

Table 17

Summary of Regression Analyses for Home Learning Environment and Gender as Predictors of Final Academic Enablers, without controlling for Initial Academic Enablers (n = 81)

Variable	Model 1		Model 2	
	B (SE)	B	B (SE)	B
HLE	.56 (.14)**	.40	1.11 (.42)*	.79
Gender	.21 (.10)	.22	1.88 (1.20)	1.93
Gender X HLE			-.40 (.29)	-1.81
R^2	.23		.25	
F	11.54**		8.43**	

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

Summary of Results

In sum, students' academic enablers were found to be stable over the kindergarten year. Male students were rated lower on these skills than female students. Furthermore, the length of preschool experience did not predict level of academic enablers at the beginning or end of the kindergarten year, regardless of gender. The HLE was predictive of academic enablers at the beginning of the year for both male and female students. However, HLE was not found to predict students' academic enablers at the end of kindergarten for either gender when academic enablers at the start of the year was taken into account. When this control was not taken into account, HLE emerged as a significant predictor of academic enablers at the end of the kindergarten year.

Chapter Five:

Discussion

The current study examined changes in, and predictor variables related to, kindergarten students' academic enablers. Specifically, the study addressed five questions. The first question investigated how ratings of kindergarten students' academic enablers change over time. The remaining four questions examined whether environmental factors predicted academic enablers, as well as the moderating effect of gender. Specifically, question two and three looked at whether preschool experience predicts academic enablers at the beginning and end of the kindergarten year, respectively. Questions four and five study examined whether the home learning environment predicts kindergarten students' academic enablers at the beginning of the kindergarten year, and at the end of the kindergarten year.

Differences in Academic Enablers over Time

Findings from the current study indicate that academic enablers remain stable over the kindergarten year for both male and female students. Results show that male students begin the kindergarten year with lower ratings of academic enablers than female students. Although previous literature investigating these changes in kindergarten was not found, literature has examined change in preschool students with disparate results (Dominguez et al., 2010; McClelland & Morrison, 2003).

The results from the present study correspond to those from McClelland and Morrison (2003) that demonstrated stability in learning-related social skills in preschool students. The

present study utilized a similar statistical analysis and sample size as the previous authors. Despite similar findings, these two studies differ in multiple ways beyond the age of the participants. McClelland and Morrison (2003) initially found change over the year before controlling for a variety of factors including child age, preschool experience, family learning environment, parent education level, and ethnicity. The current study did not control for any of these variables, yet change was not seen. Moreover, the previous study utilized a different measure, the Social Skills Rating System (Gresham & Elliot, 1999), which assesses learning-related social skills.

Dominguez and colleagues (2010) investigated change over the preschool year using the teacher version of the ATLS. Findings from this previous study showed that approaches to learning improve over the preschool year in a sample of 23,434 Head Start children, which contrast with results from the current study. Although present results indicating that male students display fewer academic enablers than female students are aligned with those from Dominguez and colleagues (2010), this past research also showed that female students displayed more growth over the preschool year than male students. The current study found that while female kindergarten students display more adaptive academic enablers than male kindergarten students, neither gender group displayed significant change over time.

Various factors may have accounted for the differences in the findings of the present study and past research. First, the two studies utilized different methodologies. The present study analyzed change over time with an ANOVA, while Dominguez and colleagues used multilevel modeling. Multilevel modeling is considered a more sophisticated statistical technique. ANOVAs assume independence of each observation, whereas multilevel modeling accounts for the similarities of participants clustered within higher-order units. Thus, multilevel modeling

may be more appropriate for research completed in schools. Moreover, the sample size for the previous study included 23,434 students. This large of a sample size would be more sensitive to detecting change than the smaller sample of 83 students in the present study.

Another difference between the two studies was the rater of the students' academic enablers. The present study utilized the parent report version of the ATLS, while Dominguez and colleagues used the teacher report version of the ATLS. In a summary of key findings of the ECLS-K data set, parents and teachers had similar ratings for most of kindergarten students' academics enablers, with the exception of eagerness to learn. Teachers rated kindergarten students' eagerness to learn more conservatively than parents (US DOE, 1998). Differences in perception may have led to a higher mean item score on the ATLS as rated by parents when compared to teachers, and thus less variability. No current literature was found that compares whether teacher or parent reports of eagerness to learn are more accurate.

Most notably, these two studies examined change in two different populations. Past literature has investigated change in academic enablers in preschool children (McClelland & Morrison, 2003), and specifically Head Start students (Dominguez et al., 2010). The present study investigated the change over time in kindergarten students. The amount of change in academic enablers may differ for these two age groups. Students may develop these skills in early childhood and thus exhibit growth during preschool. When students enter kindergarten, growth in academic enablers may have leveled off and these skills become more stable.

Preschool as a Predictor of Academic Enablers

Results show that length of preschool experience is not a predictor of academic enablers at the beginning of kindergarten. This was found for both male and female students. Findings also indicated that the length of preschool experiences do not predict academic enablers at the

end of kindergarten, when considering academic enablers at the beginning of the year and student gender.

Few studies have investigated the effects of preschool on academic enablers. Most have included preschool as a categorical variable measuring whether a student has or has not attended preschool (Nelson, 2005; Taylor, Gibbs, & Slate, 2000). Two past studies found contrasting effects of preschool attendance. Taylor, Gibbs, and Slate (2000) found that students who attended preschool displayed more adaptive academic enablers at the end of kindergarten. The present study aligns with findings from Nelson (2005) indicating that preschool does not influence kindergarten academic enablers.

One study was found that directly investigated whether length of preschool experience influences students' academic enablers (Wen et al., 2012). Wen and colleagues initially found that two years of preschool did not predict greater competencies in academic enablers than one year of preschool. The authors separated the sample into groups based off of the probability of qualifying for two years of Head Start, which is determined by various demographic factors. This resulted in five groups with different percentiles of being eligible. Participants were then paired using propensity score matching. After this method of controlling for confounding variables, two of the five groups, the lowest probability and one of the mid-range probabilities of qualifying for two years of Head Start, demonstrated higher competencies in academic enablers for those who attended two years of preschool over those who attended one year.

Findings from the present study diverge from the one study that did investigate the length of preschool (Wen et al., 2012); length of preschool was not predictive of higher ratings of academic enablers at the beginning or end of the kindergarten year. Several differences between the two studies exist that could explain the divergent findings. First, the design of the two studies

differed. Wen and colleagues used propensity score matching and calculated effect sizes to demonstrate the impact of preschool, whereas the present study utilized regression analyses. The additional control provided by matching participants based on demographic variables may have led to the different results. Moreover, different measures were used to assess approaches to learning; the previous authors investigated learning behaviors with the PLBS (McDermott, Green, Francis, & Stott, 2002) and the SSRS (Elliot, Gresham, Freeman, & McCloskey, 1988).

The sample utilized by the previous authors was larger than the current study (i.e., n = 171 versus n = 81) and comprised of students who attended Head Start for either one or two years. Nelson (2005), who also did not demonstrate change in academic enablers as a result of preschool attendance, included students who attended a variety of programs. The current study did not differentiate the type of preschool program that the student attended. Thus, disparities in the findings could be due to differences in type of preschool or demographics of those who attend Head Start.

Wen and colleagues (2012) only found an influence when controlling for a variety of demographic factors. The present study only included one demographic factor, gender, in the analysis. According to the results, gender did not have an effect on the influence of preschool experience. Thus, whether preschool experiences predict kindergarten academic enablers may depend on some demographic characteristic that was not included in the present analysis. For example, preschool may impact various SES groups differently. Furthermore, the Head Start curriculum may specifically have an influence on later academic enablers for some students, whereas other preschool programs may not. Head Start programs specifically include approaches to learning in its standards (US Department of Health and Human Subjects, 2003), and thus may

incorporate strategies specifically focused on fostering these skills. The nuances in the effects of different preschool programs may have resulted in the null findings of the present study.

Additionally, the method of measurement could have contributed to the null findings. Specifically, the current study utilized a measure of academic enablers as reflected in the home environment. Parents completed the ATLS, as opposed to teacher completed rating scales used in past research. This methodological difference could account for discrepant findings with previous studies. Moreover, preschool experience did not predict academic enablers exhibited in the home environment, but may predict academic enablers that are demonstrated in the classroom.

In sum, past literature indicates that some (Taylor, Gibbs, & Slate, 2000; Wen et al., 2012), but not all (Nelson, 2005; Wen et al., 2012), students with longer preschool experiences demonstrate higher academic enablers in kindergarten. The current study suggests that longer preschool attendance does not lead to greater competencies in academic enablers in kindergarten, regardless of gender. Thus, longer preschool attendance does not appear to be an effective universal intervention for academic enablers. However, these findings may be due to measurement of these behaviors in the home environment as opposed to the school environment.

Home Learning Environment as a Predictor of Academic Enablers

HLE emerged as a predictor of academic enablers for kindergarten students at the beginning of the kindergarten year; thus those students with educationally enriched home environments displayed higher levels of academic enablers. This relationship did not depend on gender, thus both boys and girls benefit from interacting with educational materials in the home. However, the influence of HLE on academic enablers was not maintained over the kindergarten year for either gender, after controlling for the initial level of academic enablers.

These findings converge with past findings that HLE contributes to students' initial academic enablers in kindergarten. Two studies were identified that examined whether HLE predicted kindergarten students' academic enablers (McWayne et al., 2004; Nelson, 2005). Both studies found results similar to the current study, indicating a positive influence of the HLE on these learning behaviors. Additionally, Nelson (2005) showed that HLE was more predictive of academic enablers than preschool attendance. The current study also indicates that HLE may contribute to higher levels of academic enablers, whereas preschool experience did not. Interacting with academic materials in the home setting appears to encourage young students to approach learning tasks in a more adaptive manner. It is unclear why this would be the case. It may be an artifact of how these skills are measured. Preschool experience was focused simply on whether the student attended, while HLE focused on the frequency with which parents engaged in certain interactive behaviors. Further research should investigate both home and school environments using similar methodology to determine if one environment is more influential than the other.

Neither of the previous studies investigated whether higher rates of academic enablers accounted for by HLE were maintained over the kindergarten year. The present study indicates that, although HLE has a positive influence on academic enablers at the beginning of the kindergarten year, this effect is not maintained over the year. Past literature (Fantuzzo, McWayne, Perry, & Childs, 2004) has found that HLE at the beginning of preschool predicts academic enablers at the end of preschool. However, this study did not control for academic enablers at the beginning of the year. Additionally, research has found that HLE predicts literacy through the end of first grade (Powell, Son, File & Froiland, 2012) as well as the end of elementary school (Froiland, Peterson, & Davison, 2013). Increases in HLE through preschool

and kindergarten were also predictive of greater math achievement through the end of first grade (Powell, Son, File, & Froiland, 2012). Thus, it is surprising that this study indicated that HLE at the beginning of kindergarten did not continue to have an impact on academic enablers through the end of the year.

The relationship between the sustained effects of HLE on academic enablers may be different than that of academic outcomes. The nature of academic activities in the home may change after children enter formal schooling. These different activities may foster academic skills more directly than academic enablers. Parents may spend more time working with their children on homework assignments or using flashcards following the beginning of kindergarten. The focus of educational activities in the home may change to mastering specific academic benchmarks such as memorizing the alphabet or numbers. Prior to formal education, the HLE may consist of more play-based academic activities. These activities may be more engaging and thus foster academic enablers to a greater extent than activities focused on explicit academic skills. Additionally, past literature has suggested that HLE decreases over the kindergarten year (Powell, Son, File, & Froiland, 2012). A reduction in interactions with HLE over the year may influence the maintenance of the influence of HLE at the beginning of the year.

Furthermore, the null findings may have been due to the stringent nature of the statistical analysis. Controlling for ratings of academic enablers at the beginning of the year accounted for a significant amount of the variance in ratings of academic enablers at the end of the year. However, when this control was not included, HLE did predict academic enablers at the end of the year.

Contribution to the Literature

Findings from the present study contribute to the literature in several ways. This study extends previous research to a new population. Additionally, the findings contradict past literature that suggests preschool has a positive effect on academic enablers. Lastly, findings indicate that HLE is a better predictor of academic enablers at the beginning of the year, but it does not predict these outcomes at the end of the year when taking skills at the beginning of the year into account.

Past literature has found divergent results regarding the stability of academic enablers in preschool. Dominguez and colleagues (2010), utilizing a sophisticated design and large sample size, found that academic enablers improve over preschool. The present study extends this body of literature to a kindergarten sample. Adaptive academic enablers in kindergarten contribute to academic success throughout a student's education (DiPerna, Lei, & Reid, 2007; Stipek, Newton, & Chudgar, 2010). Thus, trends in these skills during this first year of formal schooling are important to understand. According to the findings of the present study, academic enablers do not significantly change over the kindergarten year. This result was unexpected. Kindergarten comprises the first year of formal education and aims to build skills necessary for school. Thus, it was hypothesized that growth in these academic enablers would be observed.

Findings from the current study suggest that children enter kindergarten displaying academic enablers and these skills remain stable over the year. This research provides evidence that change in academic enablers in kindergarten differs from the change seen prior to kindergarten. When considering findings from Dominguez and colleagues (2010), it appears that academic enablers develop in early childhood prior to entering kindergarten. After entering kindergarten, students continue to display the level of academic enablers they demonstrate at the

beginning of the kindergarten year. This is a novel finding that contributes to the literature by extending knowledge about the change in academic enablers to the kindergarten year. It indicates that preschool may be a period of development for academic enablers, whereas these skills remain stable during kindergarten. Thus, research and practice should approach changes in, assessment of and interventions for academic enablers during these two time periods differently.

Furthermore, the present study furthers the literature regarding the role of gender in the development of academic enablers. Past research demonstrates that girls not only have higher levels of academic enablers in early childhood, but also continue to develop these skills at a faster rate than male students (Dominguez et al., 2010). Findings in the present study support that boys are at risk for displaying fewer academic enablers. However, in kindergarten, it appears that the level of these skills remains stable for both genders. The faster rate of growth that females demonstrate prior to kindergarten does not continue into the first year of schooling. Boys are at risk for deficits in academic enablers throughout early childhood education. The boys who demonstrate a deficit in preschool may be at particular risk for this gap widening prior to kindergarten entry and should receive intensive intervention. However, this gap may not continue to widen in kindergarten, thus less intensive interventions may be necessary for these students to achieve levels of academic enablers similar to their peers.

Academic enablers are important skills for academic success, are readily observable, and may be more amenable to change than intelligence or achievement (DiPerna, 2006; Keith, 2002). Results from this study indicate that academic enablers are developed prior to entering kindergarten, and thus early childhood is a critical time for prevention and early intervention. Thus, research should investigate what factors contribute to students' higher levels of these skills when they begin school.

The present study examined the role of preschool and HLE in predicting initial levels of academic enablers. Preschool attendance has emerged as a predictor of various academic and behavioral outcomes in kindergarten (Camilli, Vargas, Ryan, & Barnett, 2010; Pianta, et al., 2009). However, past research indicates that preschool does not lead to higher levels of academic enablers for kindergarten students (Nelson, 2005). The present study supports this finding. Nelson (2005) examined this relationship by grouping students into those who did or did not attend a preschool program. This study extends this research by investigating whether length of preschool matters; preschool experience was defined in terms of months of attendance. Looking at the results from these two studies, it appears that preschool experience does not account for academic enablers in the beginning of kindergarten, regardless of whether preschool attendance or length of preschool is measured.

Wen and colleagues (2012) found that longer preschool experience predicted academic enablers for two of five groups included in their study. These groups differed based on probability of qualifying for two years of Head Start. This probability could be considered a measure of SES since qualification is based on demographic factors, such as family income, typically used as indicators of SES. However, further research should be done to determine whether more meaningful demographic factors, such as direct measures of SES, gender, or special education status, moderate the role of preschool. The current study extends the current literature on preschool and academic enablers by incorporating gender as a moderating variable to see if preschool has an impact depending on a student's gender. Findings indicate that neither male nor female students had higher levels of academic enablers as a result of longer preschool experiences.

As hypothesized, past literature (Nelson, 2005; McWayne et al., 2004) and the present findings converge to support HLE as an important factor related to academic enablers. However, this past research did not investigate whether gender moderated the impact of HLE. The present study determined that HLE accounted for academic enablers at the beginning of kindergarten for both male and female students. Thus, these findings demonstrate the universally positive impact of the HLE.

Lastly, this study extends past research by examining whether the influence of environmental factors prior to entering kindergarten (i.e., preschool and HLE) are maintained throughout the kindergarten year. Past research was not found investigating these longitudinal effects. Since preschool did not emerge as a predictor of academic enablers at the beginning of the kindergarten year, it would be expected that it would not predict these skills at the end of the year. Findings support this expectation. Preschool did not have a delayed influence on academic enablers. Moreover, results indicate that variability in academic enablers at the end of the year was not due to enriched HLEs above and beyond student's academic enabling skills at the start of the year. More research is needed to confirm these findings and extend the literature regarding the factors that influence the development of academic enablers in early childhood. Specific topics for future research are delineated further below.

Implications for Practice

The findings from the present study have multiple implications for practice. Educators, policy makers, and school psychologists can incorporate implications from this study.

First, the indication that academic enablers do not change over the kindergarten year has implications for the timing of intervening with these skills. Educators should identify students demonstrate deficits in academic enablers as early as the beginning of kindergarten. Since these

skills appear to develop prior to the first year of school, prevention may be particularly important during preschool. Academic enablers comprise an important area of intervention since they positively impact academic achievement throughout elementary school (Li-Grining et al., 2010; Stipek, Newton, & Chudgar, 2010). Once a student enters school, educators should not expect students to improve in this domain or catch up to their peers. In order to see improvements in academic enablers, educators must put evidence-based interventions in place. Interventions for kindergarten students that target academic enablers as a general construct have not been rigorously investigated. DiPerna (2006) suggests using a sequence of modeling, coaching, behavioral rehearsal, and reinforcement to encourage skills with which students demonstrate a deficit. Additionally, literature has supported various interventions for the skills that comprise academic enablers. Interventions such as Peer-Assisted Learning (PAL; Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003), task preference and choice making (Morgan, 2006), and social skills curricula (McGinnis & Goldstein, 2003) have been shown to improve kindergarten students' motivation, engagement, and social skills. Moreover, gender consistently emerges as an important factor related to these skills. Male students are at risk for displaying less adaptive academic enablers. Educators should be aware of this risk factor and closely monitor these students to determine which students would benefit from more intensive interventions related to academic enablers. Measures related to the assessment of academic enablers for screening and progress monitoring have not been developed. Additionally, norms related to these skills have not been established. However, a measure such as the ACES (DiPerna & Elliot, 2000) or the teacher form of the ATLS could be used to identify a deficit in these skills for at-risk students. Informal assessments such as direct behavior ratings could then be used to monitor progress. Additionally, educators could monitor individual academic enablers through established

measures for social skills (i.e., SSRS) or engagement (i.e., Behavior Observation of Students in Schools; Shapiro, 2010).

An aim of early childhood education prior to kindergarten is to foster the domains of school readiness, including academic enablers (NEGP, 1997). However, this study and past research (Nelson, 2005) demonstrates that preschool may not lead to improved skills in this domain. The present study includes all preschool and examines the length of preschool attendance. It may be that certain types of preschool, or certain quality indicators determine the role that preschool has in the development of academic enablers as opposed to length of preschool. The present study did not indicate that preschool was more important for a particular gender. These findings imply that educators and policy makers cannot herald preschool as a universal intervention for academic enablers. Instead, attention should be given to specific instruction and evidence-based interventions related to this domain of school readiness. Preschool programs should attempt to incorporate more evidence-based interventions for improving academic enablers into their curriculum in order to promote school readiness and student success throughout school. The Evidence-Based Program for Integrated Curricula (EPIC) is one such curriculum that incorporates instruction in academic enablers (Fantuzzo, Gadsden, & McDermott, 2011). Moreover, current curricula can be adapted to increase task interest, balance teacher and student led activities, incorporating small groups, setting goals and providing larger projects (Hyson, 2008). These curriculum characteristics are likely to enhance academic enabling skills.

Lastly, research supports the crucial role of HLE on the development of academic enablers. HLE influences academic enabling skills during early childhood (Nelson, 2005) through the beginning of kindergarten. However, the influence of an enriched HLE is not

maintained through the end of the school year. This may indicate that the home environment plays a crucial role in the development of academic enablers prior to the beginning of school, while the school environment may be more influential in fostering these skills after the beginning of kindergarten. Thus, prevention efforts may be best focused on encouraging parents to interact with educational materials in the home prior to formal education. Schools forming relationships and directly contacting parents, utilizing effective communication skills, and providing specific strategies can improve the HLE (Galindo & Sheldon, 2012; Hyson, 2008). Meanwhile, schools should focus on intervention and maintaining high levels of academic enablers once a student starts kindergarten. Furthermore, the importance of the HLE on these crucial skills illustrates the necessity for home-school collaboration during early childhood.

Limitations of the Current Study and Future Directions

Although the findings comprise a contribution to the literature, the limitations to the study should be considered when interpreting the results. Various threats to external and internal validity exist in this study. Additionally, some limitations exist related to measurement and statistical analysis. Potential directions for future research are also presented.

The sample included in this study is considered a convenience sample. Therefore, the results may not be generalizable to the entire kindergarten population. School psychologists in a district were recruited for their school's participation in the study. Those who responded may differ from those who did not respond on some variable that motivated them to participate, such as concerns with kindergarten success. Additionally, the teachers and parents within those schools who agreed to participate in the study may differ than those who decided not to participate. Furthermore, the small sample size may have been particularly problematic when it came to testing interaction effects, due to insufficient power to detect interaction effects. These

limitations can be overcome with follow-up studies replicating these findings with larger samples. A larger sample size would also allow for the use of multilevel modeling, which is an appropriate analysis for use with nested data, which is another possible limitation with this study given that students were nested in schools. To determine the extent to which the data were nested, intraclass correlations (ICCs) were run to test the nesting effect of schools on academic enabling scores at time 1 and 3. The ICCs were not suggestive of a high level of nesting in parent ratings of academic enablers at time one (r = .002) or time three (r = .001) within school.

Second, parents completed all of the measures used in this study. This may pose a challenge for multiple reasons. First, parent-report may not be the most accurate method of measuring students' academic enablers. Parent report was used since data collection started at the beginning of the kindergarten year, when parents may be more familiar with children's behavior than the teacher. However, considering that academic enablers are influenced by an interaction between the individual child and environmental factors (Chen & McNamee, 2010), ratings of academic enablers in the school environment may have been more appropriate. Additionally, parents may have rated their child's academic enablers in a socially desirable manner. Social desirability may have also influenced parents' completion of the PSLS as a measure of HLE. This concern exists whenever rating scales are utilized in research and practice and, thus, is not considered a major limitation to the present study. Additionally, some limitations exist with the use of the school entry form of the PSLS. First, the present study utilized two subscales of the PSLS. Although these items align with items used in past literature, confirmatory factor analysis with a larger sample would be beneficial to determine the factor structure of these two scales and implications for combining them. Additionally, the school entry form of the PSLS does not have published research to support the reliability and validity of the measure. The scale demonstrated

acceptable reliability with the present sample; however, research investigating the validity of the items such as focus groups with parent raters and factor analyses is warranted.

Lastly, parents completed the preschool experience questionnaire at time 3. Parent recall, especially by the end of kindergarten, may not have been completely accurate. However, a more accurate measure of months of preschool attendance is not available. Record reviews may have been helpful, but would not have included all of the preschool settings that a child experienced.

A number of methodological issues must be considered when investigating change over time. The present study utilized two time points. Although this design is commonly used to observe change, using the minimum number of time points presents two limitations. Error in a measure can be exacerbated when looking at change; the difference between time points may be due to true change or to error in measurement (Willett, 1997). Moreover, the ATLS consists of only six items. This rating scale may not be as sensitive to change as other measures. However, the teacher version of ATLS has been used in past research that found change over time (Dominguez et al., 2010). Future research incorporating multiple time points would confirm the present findings that academic enablers are stable over the kindergarten year. Furthermore, multiple time points would elucidate any nonlinear trends that may have been overlooked by using only two time points and ensure that the stability seen in this study was not due to the methodological challenges. Despite the potential for error and nonlinearity, investigating academic enablers over time contributes to the literature by improving upon cross-sectional research utilizing one time point.

In addition to confirming the conclusion of the present study, future longitudinal investigations of change in academic enablers is warranted. Longitudinal analysis should examine the change from early childhood (i.e., age three) through the first few years of

elementary school. This investigation would confirm the conclusion that academic enablers develop in early childhood and become stable during kindergarten. Additionally, a large scale study with frequent time points would determine an exact rate of improvement that could be used for identifying discrepancies between individual students and normal levels and growth in academic enablers as well as assist in setting goals and monitoring progress towards these goals.

Lastly, the present study only included gender as a moderating variable because it consistently appeared in the literature as having an impact on students' academic enablers (Domniguez et al., 2010; Taylor, Gibbs, & Slate, 2000). However, research should be dedicated to examining other risk and protective factors related to these skills, such as other demographic variables like ethnicity, SES, and special education status. Moreover, the effect of preschool and HLE as preventions related to these risk factors must be examined. More research is needed on the specific components of preschool that foster the development of academic enablers as well as whether high quality preschool can compensate for less enriched home environments. Furthermore, investigations into specific home learning activities that foster academic enablers throughout early childhood education (i.e., preschool and kindergarten) are warranted. Finally, researchers should investigate how HLE changes after children enter kindergarten and whether this change accounts for why HLE matters less late in kindergarten.

Conclusions

The present study investigated the amount of change in kindergarten students' academic enablers over their first formal school year, the role of gender as a moderating factor, and the role of preschool and the HLE as predictor variables. Findings suggest that girls enter kindergarten displaying higher levels of academic enablers than boys as rated by their parents. These skills remain stable over the year for both male and female students. Since past literature

has indicated growth in academic enablers during preschool (Dominguez et al., 2010), prevention and early intervention in academic enablers may be particularly important prior to kindergarten entry to promote school readiness, especially for male students. Additionally, educators should not expect kindergarten students who display deficits in these skills to catch up to their peers and thus should implement evidence-based interventions with these students.

Longer preschool attendance did not predict higher competencies in academic enablers for either male or female students. This implies that preschool may not be a universal intervention for developing academic enablers. Further research is needed to determine whether preschool impacts various demographic groups differently and what aspects of preschool programs that foster academic enablers in young students. Lastly, the current study found that an educationally enriched HLE predicts students' academic enablers at the beginning of the year for both genders. When controlling for ratings at the beginning of the year, HLE was not a significant predictor of academic enablers at the end of kindergarten. Thus, the positive effects of HLE at the beginning of the year were not maintained. These findings suggest that HLE has a crucial role in the development of students' academic enablers. As such, early childhood educators should invest in supporting families to interact with educational materials in the home. Prevention and early intervention efforts focused on enriched the HLE may be more beneficial for young students' academic enablers than placement in preschool.

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Appendix A:

Parent Consent Form

Dear Parent or Legal Guardian:

This letter provides information about a research study that will be conducted at your school by investigators from the University of South Florida. Our goal in conducting the study is to examine child and family factors that help children start school ready to learn. The title of the study is "Predictors of Kindergarten Success: The Roles of Parental Involvement, Child Behavior, and Academic Skills and Enablers" (USF IRB # Pro 4196).

- ✓ Who We Are: Dr. Julia Ogg, an Assistant Professor in the College of Education at the University of South Florida (USF), is the Primary Investigator for this study which will be conducted in conjunction with the Early Childhood Research Group at USF.

- ✓ Why We are Requesting You and Your Child's Participation: This study is being conducted as part of a project entitled, "Predictors of Kindergarten Success: The Roles of Parental Involvement, Child Behavior, and Academic Skills and Enablers." You and your child are being asked to participate because your child is starting kindergarten in Hillsborough County Public Schools.

- ✓ Why You and Your Child Should Participate: We need to learn more about how parents can help their children start school ready to learn. This study will help us determine how to help parents support their child's development as it relates to getting ready to start school. In addition, you will receive a $10 gift card in the fall for completing a packet of questionnaires and a $10 gift card in the spring for completing another packet of questionnaires. Your child will receive a small incentive (e.g., sticker, pencil) for participating in the study.
- ✓ What Participation Requires: If you consent to participate in the study, you will be asked to fill-out questionnaires regarding your involvement with school, activities you do with your child at home, your parenting practices, and your child's behavior two times during the school year: once when you agree to participate (September), and again at the end of the school year (April or May). The packet of questionnaires will take you approximately 50-60 minutes to complete. Your child will be required to complete short assessments of their academic skills three times throughout the school year: once when you agree to participate (September), once around January or February, and again in April or May. These assessments will be completed during the school day at your child's school and will take approximately 5-10 minutes. Your child's teacher will also be asked to complete questionnaires about your child's behavior and their interactions with you regarding your child's education.

- ✓ Please Note: Your decision to participate and to allow your child to participate in this research study is completely voluntary. You are free to allow your child to participate in this research study or to withdraw him or her at any time. Your decision to participate, not to participate, or to withdraw participation at any point during the study will in no way affect your child's student status, his or her grades, or your relationship with your child's school, USF, or any other party.

- ✓ Confidentiality of You and Your Child's Responses: The risks to you and your child for participating in this research are considered minimal. Your privacy and research records will be kept confidential to the extent of the law. Authorized research personnel, employees of the Department of Health and Human Services, the USF Institutional Review Board and its staff, and other individuals acting on behalf of USF may inspect the records from this research project, but your individual responses will not be shared with school system personnel or anyone other than us. Your questionnaires and your child's completed assessments will be assigned a code number to protect the confidentiality of responses. Only we will have access to the locked file cabinet kept by the Primary Investigator that will contain: 1) all records linking code numbers to participants' names, and 2) all information gathered from assessments and surveys. All records from the study (completed surveys, assessments) will be destroyed in five years.

- ✓ What We'll Do With You and Your Child's Responses: We plan to use the information from this study to inform what parenting and child factors help children be ready to start school. The results of this study may be published. However, the data obtained from you or your child will be combined with data from other people in the publication. The published results will not include your name or any other information that would in any way personally identify you or your child.

- ✓ Questions? If you have any questions about this research study, please contact Julia Ogg at (813) 974-9698. If you have questions about your child's rights as a person who is taking part in a research study, you may contact a member of the Division of Research Integrity and Compliance of the USF at (813) 974-5638.

- ✓ Want to Participate? To indicate your consent to participate and to have your child participate in this study, please sign the consent form at the bottom of this page.

Sincerely,
Julia Ogg, Ph.D., NCSP
Assistant Professor
School Psychology Program
University of South Florida

Consent for Parent and Child to Take Part in this Research Study

I freely give my permission to let my child take part in this study. I also consent to participate in this study. I understand that this is research. I have received a copy of this letter and consent form for my records.

_____	_____
Printed name of child	Date
_____	_____
Signature of parent taking part in the study	Printed name of parent

Statement of Person Obtaining Informed Consent

I certify that participants have been provided with an informed consent form that has been approved by the University of South Florida's Institutional Review Board and that explains the nature, demands, risks, and benefits involved in participating in this study. I further certify that a phone number has been provided in the event of additional questions.

_____	_____	_____
Signature of person obtaining consent	Printed name of person obtaining consent	Date

Appendix B:

Child Assent Description

"We are doing a study to learn about how kids get ready for kindergarten. We are asking you to help because we want to learn more about what kids need to know to do well in school. Your parent has said that it is ok for you to work with me today.

I am going to ask you to do a few activities with me that will let us know which letters, sounds, and numbers you've learned. You will receive a [small prize] for working with me today.

You can ask me questions about the study at any time. If you decide at any time that you want to stop, just let me know. No one will be upset if you want to stop."

Appendix C:

Parent Demographic Questionnaire

Date: _____

Parent Information

Primary caregiver's [your] name: _____

1. **Your relationship to child:**

○ Biological Mother	○ Biological Father	○ Stepparent	○ Foster Parent	○ Other (please specify): _____
○ Adoptive Mother	○ Adoptive Father	○ Parent's Partner (living in household)	○ Other Adult Relative	

2. **Your race/ethnicity:**

○ American Indian or Alaskan Native	○ Native Hawaiian or Pacific Islander
○ Asian	○ White
○ Black or African American	○ Multi-racial (please specify):_____
○ Hispanic or Latino	○ Other (please specify):_____

3. **Your level of education (please check the highest completed):**

○ Less than high school	○ High school or GED
○ Some college, 2-year college or vocational	○ Bachelor's degree
○ Some graduate work	○ Master's degree
○ Doctoral degree	

4. **On average, how many hours <u>per week</u> do you work?**

○ 0-5	○ 6-20	○ 21-40	○ 41 or more

5. **Number of adults in the home who care for children** (including you): _____

6. What is your marital status?

- ○ Single, never married
- ○ Divorced
- ○ Living together as if married
- ○ Separated
- ○ Married
- ○ Widowed

**If Single, never married, please skip to number 10.*

Spouse/Partner's name: _____

7. Spouse/Partner's relationship to child:

- ○ Biological Mother
- ○ Biological Father
- ○ Stepparent
- ○ Foster Parent
- ○ Other (please specify)
- ○ Adoptive Mother
- ○ Adoptive Father
- ○ Parent's Partner (living in household)
- ○ Other Adult Relative

8. Your spouse/partner's level of education (please check the highest completed):

- ○ Less than high school
- ○ Some college, 2-year college or vocational
- ○ Some graduate work
- ○ Doctoral degree
- ○ High school or GED
- ○ Bachelor's degree
- ○ Master's degree

9. On average, how many hours per week does your spouse/partner work?

- ○ 0-5
- ○ 6-20
- ○ 21-40
- ○ 40 or more

10. What is the primary language spoken in your home?

- ○ English
- ○ French
- ○ Chinese
- ○ Russian
- ○ Spanish
- ○ Vietnamese
- ○ Korean
- ○ Other (please specify):_____

11. Family income per year (check one):

- ○ Less than $5,000
- ○ $5,001-$10,000
- ○ $10,001-$20,000
- ○ $20,001-$30,000
- ○ $30,001-$40,000
- ○ $40,001-$50,000
- ○ $50,001-$60,000
- ○ Over $60,001

Child Information

Child's Name:_____

Child's Gender: Male Female

Child's Date of Birth: _____ (month / day / year)

Child's Race/Ethnicity:

- o American Indian or Alaskan Native
- o Asian
- o Black or African American
- o Hispanic or Latino
- o Native Hawaiian or Pacific Islander
- o White
- o Multi-racial (please specify):_____
- o Other (please specify):_____

In the past 2 years, has your child seen a counselor, therapist, psychologist, psychiatrist, social worker or other mental health professional for treatment for mental health or behavior problems s/he may have been having?

_____ Yes _____ No _____ Don't Know

Is this child taking any medications for ADHD, OCD, or other behavioral or mental disorder?

_____ Yes _____ No

Appendix D:

Approaches to Learning Scale

Please circle how frequently your child exhibits each of the following behaviors or characteristics.

Keep working at something until {he/she} is finished?	1 Never	2 Sometimes	3 Often	4 Very Often
Show interest in a variety of things?	1 Never	2 Sometimes	3 Often	4 Very Often
Concentrate on a task and ignore distractions?	1 Never	2 Sometimes	3 Often	4 Very Often
Help with chores?	1 Never	2 Sometimes	3 Often	4 Very Often
Eager to learn new things?	1 Never	2 Sometimes	3 Often	4 Very Often
Creative in work or in play?	1 Never	2 Sometimes	3 Often	4 Very Often

Appendix E:

Preschool Experiences

Parents were asked the following: *Did your child attend any of the following preschool programs prior to the current year of kindergarten (2011-12).*

They were asked to respond Yes (coded as 1) or No (coded as 2), as well as to list the number of months.

1. Kindergarten (if they are repeating)
2. Voluntary Prekindergarten (VPK; including public school, private provider, or summer programs)
3. School District Prekindergarten Exceptional Student Education (ESE) Programs
4. Head Start (including Head Start, Migrant Head Start, American Indian Head Start, and Early Head Start)
5. Private Preschool
6. Other 1 (please list):
7. Other 2 (please list):

Appendix F:

Parental Support for Learning Scale (school entry; PSLS) formerly the Family-School Questionnaire Parent Form (school entry)-FSQ

For this scale, there were both mother and father versions. All items require the parent to respond to the items listed below using the following response options:

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Items are organized into the following subscales.

Instrumental Involvement in Learning:

7. I read to my child before he/she goes to sleep.
9. I help my child with schoolwork that he/she does not understand.
18. I often help my child with his/her schoolwork.
19. My child and I read together sometimes.
23. I rarely help my child with schoolwork. (REVERSED)
29. I talk to my child about things that he/she is learning.

Supportive-Controlling Parental Involvement:

4. I support my child in the things he/she does in school.
5. I am very patient when it comes to my child's education.
8. I push my child to be the best in the class. (REVERSED)
12. I am never satisfied with my child's school performance. (REVERSED)
16. I try to make my child feel confident in his/her school work.
21. I punish my child is he/she does poorly in school. (REVERSED)
25. I try to make my child feel smart in his/her schoolwork.
28. I think my child is lazy when it comes to school. (REVERSED)
30. I am very strict when it comes to schoolwork. (REVERSED)
35. I am still pleased, even if my child does not make the top of the class.
36. I try to make my child feel guilty when he/she does poorly in school. (REVERSED)
37. If my child's schoolwork is not good enough, I will restrict his/her free time. (REVERSED)

Management of Home Learning Environment:

10. I often bring home educational activities for our family.
11. I always keep track of my child's schoolwork.
13. I take my child to special places, like museums and fairs, where we can learn new things.
14. I decide how much TV my child can watch on school days.
26. I set rules on the kinds of TV shows my child can watch.
27. I provide different kinds of things to read, like magazines, stories, and non-fiction.
38. We have lots of helpful books or a computer at home that my child can use for his/her school work.

Appendix G:

Items from Home Learning Environment Scales from Other Studies

FIQ: Home-Based Involvement (McWayne et al., 2004; a = .85)

- I spend time working with my child on number skills
- I spend time working with my child on reading/writing skills
- I talk to my child about how much I love learning new things
- I bring home learning materials for my child (videos, etc.)
- I spend time with my child working on creative activities
- I share stories with my child about when I was in school
- I see that my child has a place for books and school materials
- I take my child places in the community to learn special things
- (i.e., zoo, museum)
- I maintain clear rules at my home that my child should obey
- I talk about my child's learning efforts in front of relatives
- I review my child's school work
- I keep a regular morning and bedtime schedule for my child
- I praise my child for school work in front of the teacher

Participation in Home Learning Activities (Nelson, 2005)

- Reading books
- Telling stories
- Singing songs
- Doing arts and crafts
- Doing chores
- Playing games
- Talking about nature and science
- Building things
- Playing sports