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Motivation and Engagement Across the Kindergarten Transition: A Self Determination Perspective

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by

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Abstract

The American school system currently faces gaps in achievement between its low-income, minority students and their higher-income, white peers. These gaps exist both in academic and socioemotional skills, are present by kindergarten entry, and persist throughout students' school careers. One proposed strategy through which these gaps may be reduced is through the promotion of student motivation and engagement. In the primary and secondary school settings, these constructs are promoted through teachers' motivational support of students' psychological needs for relatedness, autonomy, and competence. However, the development of these factors prior to kindergarten entry has not been as well studied.

Data from 333 students and their 98 preschool classrooms were used to examine whether highly motivationally supportive preschool experiences can buffer the negative effects of risk in order to support the development of a high sense of motivation and engagement that is sustained across the transition to kindergarten. In terms of normative changes, results indicated that both engagement and disaffection declined across the kindergarten transition. High maternal education was a consistent predictor of increases in engagement and motivation and declines in disaffection across the kindergarten transition. While need support did not consistently buffer the loss of engagement or enhance declines in disaffection, it did seem particularly beneficial for boys, whose motivation and disaffection outcomes tended to improve after preschool experiences characterized by high warmth. Additionally, children's declines in frustration across the kindergarten transition were enhanced by well-structured preschool experiences.

Details of analyses, results, strengths, limitations, and implications for future research are discussed.

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Chapter One: Problem Statement

It is a goal of the American school system to create learning environments in which students from all backgrounds graduate with high levels of knowledge and skill that will allow them to be competent as they move into their chosen careers. However, recent evidence has shown that the school system has been more effective at reaching this goal for some students than for others. Across the primary and secondary school years, there is a well-documented gap in academic skills between students who are members of African-American and Hispanic minority groups and their Caucasian peers (Burchinal et al., 2011; Reardon & Gallindo, 2009). Even more so, the gap in achievement between students who come from low-income families and those who come from high-income families is not only wide, but is growing in size (Reardon, 2011).

These disparities in achievement exist not only in test scores and development of academic competencies but also in high school retention and rates of degree attainment. While 95% of Caucasian students obtain a high school diploma or its equivalent by the age of 29, only 89% of African-American students and 69% of Hispanic students complete this goal (Aud et al., 2010). This disparity is troubling, as many jobs, especially those that are high-paying, require a high school degree. In this light, it appears that the school system may not be adequately serving the needs of all of its students.

However, not all of these gaps can be accounted for by students' differential development within the primary and secondary school system setting. The achievement gaps between African-American and Hispanic students and their Caucasian peers already exist by the time these students enter kindergarten (Burchinal et al., 2011; Reardon & Gallindo, 2009), and these gaps generally widen during school vacations (Alexander,

Entwisle, & Olson, 2007). The achievement gap between students from low-income backgrounds and their higher-income peers is also present at kindergarten entry and remains fairly consistent throughout the rest of these students' school careers (Reardon, 2011).

In addition to gaps in academic skill at kindergarten entry, some students are at risk for the development of poor socioemotional skills by kindergarten entry as well. Students with low family income and low maternal education tend to enter kindergarten with lower self-regulation skills, less enjoyment of learning, and more difficulty with social interactions than their peers (Zill & West, 2001). The same is true for boys and students who enter kindergarten at a comparatively young age. These gaps in socioemotional competence are not only noteworthy for their own sake, but they may also contribute to later academic difficulties, as socioemotional competence at kindergarten entry is predictive of academic achievement throughout students' school careers (Duncan et al., 2007; Claessens, Duncan, & Engel, 2009; Li-Grining, Votruba-Drzal, Maldonado-Carreño, & Haas, 2010).

These statistics paint a troubling picture for those interested in promoting positive educational outcomes for students from all backgrounds. In order to reduce these achievement gaps, it is critical to identify points of leverage through which student outcomes may be improved. One such lever is academic motivation, which is a socioemotional approach to learning characterized by interest, challenge-seeking, participation, and enthusiasm. Motivation to learn has gained research interest both for its effects on achievement and dropout rates (Niemiec and Ryan, 2009; Greene and Miller, 1996; Klem and Connell, 2004) and the degree to which it can be influenced

through students' learning environments (Niemiec & Ryan, 2009). Because high motivation can be a helpful tool for students as they progress through school, interventions designed to boost students' motivation may be one strategy through which to improve achievement.

The processes by which motivation is developed have been studied mostly in the k-12 school system setting. One particularly useful theoretical framework that has emerged to explain the development of these values and behaviors is Self Determination Theory, which proposes that when students' academic contexts meet their psychological needs for relatedness, competence, and autonomy, they will be highly motivated and engaged in their schoolwork (Ryan & Deci, 2000). There are certain practices that teachers can utilize to support these needs: when teachers are warm, have autonomy-supportive classroom practices, and have high structure in their classes, students' psychological needs are met, and they go on to develop high motivation to learn and high engagement in school (Stroet, Opdenakker, & Minneart, 2013).

Gaps in both academic achievement and motivation to learn are already present at the start of kindergarten; therefore, in order to fully understand how to support motivation as a strategy through which to reduce achievement gaps, it is essential to understand how motivation develops prior to kindergarten entry. First, it is critical to understand how the development of motivation can be supported in the preschool context. Furthermore, to understand whether early motivation to learn can be helpful in ameliorating gaps present at kindergarten entry, it is also important to understand how children maintain their motivation during the transition to kindergarten.

The processes underlying students' development of motivation have not been

studied as closely in the preschool setting as in the primary and secondary school settings. This is surprising for several reasons. First, interventions during this developmental stage have been shown to have societal payoffs that are particularly high in magnitude (Heckman, 2000, 2007). In addition, there may be something about the preschool context that is unique from the k-12 setting in the way it promotes development of motivation and engagement. The two contexts are structured very differently (Rimm-Kaufman, 2000), which may impact the ways in which need-supportive environments function to promote motivation and engagement. Additionally, there is some evidence that suggests that the trajectory of motivation and engagement may be positive across preschool years (Dominguez, Vitiello, Maier, & Greenfield, 2010), whereas it is negative across k-12 school years (Ladd, Buhs, & Seid, 2000; Marks, 2000).

When motivation has been studied during the preschool years, it has typically been studied as part of a higher-order socioemotional construct called Approaches to Learning, which combines motivation, engagement, self-regulation, attention skills, and creativity into a single factor (Duncan et al., 2007; Li-Grining et al., 2010; Dominguez et al., 2010; Dominguez, Vitiello, Fuccillo, Greenfield, and Fulotsky-Shearer, 2011). Students' overall Approaches to Learning at kindergarten entry positively predict both their later math and reading achievement (Duncan et al., 2007; Claessens et al., 2009) and also the rate at which they gain academic skills (Li-Grining et al., 2010). While this factor does not include only motivation and engagement, it is probable that students' motivation and engagement are important contributors to these positive outcomes.

Efforts to understand the development of Approaches to Learning at the preschool level have generally used a wide set of classroom process quality measures to predict

Approaches to Learning. However, because this factor contains a broad set of socioemotional skills, attitudes, and behaviors, each of which may have a different developmental trajectory and different developmental precursors, it may be that this approach introduces extraneous information into both the predictor and the outcome that acts as noise in the analysis. Furthermore, this approach does not tell us anything specific about the development of motivation. In order to understand the development of this narrower construct of interest, it may be beneficial to narrow the predictors to only those classroom processes that Self Determination Theory suggests form a need-supportive classroom (Stroet et al., 2012).

This study also examines the extent to which students retain their engagement with school across the transition to kindergarten. The kindergarten transition can be a time of difficulty for many children (Rimm-Kaufman, Pianta, & Cox, 2000), as evidenced by findings that students' engagement starts to decline after kindergarten entry (Ladd et al., 2000). Because children's socioemotional skills at kindergarten entry seem to matter for their future academic success (Duncan et al., 2007; Claessens et al., 2009; Li-Grining et al., 2010), navigating this transition with motivation and engagement intact may be crucial for students.

There is evidence that providing students with additional supports during this transition is especially beneficial to those students who are at risk for academic and socioemotional problems (Schulting, Malone, & Dodge, 2005, LoCasale-Crouch, Mashburn, Downer, & Pianta, 2008). This may mean that the kindergarten transition is a good developmental context in which to provide interventions designed to reduce achievement gaps. It is therefore critical to study the processes behind the development

of early motivation for students from these backgrounds, in order to build a strong theoretical understanding of this construct that will be applicable to later intervention.

In sum, this study will examine whether the qualities of students' experiences in preschool contexts can buffer the impacts of high-risk personal and background characteristics in order to support the development of a high sense of motivation and engagement that is sustained across the transition to kindergarten. The following chapter, Chapter Two, will a) describe popular theories of motivation and engagement, b) highlight Self Determination Theory as a useful theoretical framework with which to understand the development of motivation and engagement, c) discuss the preschool context as ripe for further research, d) summarize what is known about motivation and engagement in preschool through research on Approaches to Learning, e) propose a narrower framework through which to study motivation and engagement in preschool, f) describe the challenges students may face during the kindergarten transition, and g) present several potential child personal and background characteristics that may impact their motivational development.

Chapter Three will present the current study, including research questions and hypotheses, proposing that a) motivation and engagement will decline across the kindergarten transition; b) this decline will be more pronounced for students who are male, young, and/or whose mothers had low levels of educational attainment; c) need-supportive preschool classrooms will buffer the loss of motivation and engagement across the kindergarten transition; and d) the effects of high levels of need support will be more beneficial for children who are male, young, and/or whose mothers had low levels of educational attainment.

Chapter Four will describe preliminary measurement work that was completed to create a measure of need support in preschool that aligned with Self Determination Theory as well as measures of engagement in preschool and kindergarten. Chapter Five will describe the methods through which the study's hypotheses will be tested, including information on the participants, measures, and procedures this study will use. Chapter Six describe the results of the study. Finally, Chapter Seven will include discussion of the results of this study and their implications, as well as the strengths and limitations of this research.

Chapter Two: Literature Review

Chapter One has identified a major problem facing our system of public education: there is a troubling achievement gap between low-income and high-income students (Reardon, 2011), as well as between students from racial minority groups and their white peers (Reardon & Gallindo, 2009; Burchinal et al., 2011). This gap exists not only in test of academic skills and grades, but also in drop-out rates and approaches to learning (Aud et al., 2010, Zill & West, 2001). Academic and socioemotional gaps are already present at kindergarten entry and persist throughout the duration of students' academic careers (Reardon, 2011; Burchinal et al., 2011, Zill & West, 2001). The previous chapter presented one potential strategy through which to improve students' achievement and reduce their dropout rates-- boosting students' academic motivation-- and argues that this construct would benefit from further study among preschool-aged children. The current chapter will expand upon these arguments.

The first section, Student Motivation and Engagement, describes what is known about the development of motivation and engagement in the primary and secondary school context. The second section, Student Motivation and Engagement in the Preschool Context, discusses what is currently known about the development of motivation and engagement in the preschool setting, highlighting areas that could benefit from further research. Finally, the last section, Student Motivation and Engagement across the Kindergarten Transition, summarizes research about the kindergarten transition, emphasizing how what is known about this transition can be applied to the study of motivation and engagement.

Student Motivation and Engagement

Theories of motivation. The concept of motivation represents the internal factors that lead people to pursue certain courses of behavior (Ryan & Deci, 2000). In the academic context, the study of motivation often focuses around students' motivation to learn, which refers specifically to the factors that lead students to engage in learning activities. While there are countless theoretical frameworks that have been developed to explain students' motivation to learn, the following review will highlight two in particular: intrinsic vs. extrinsic motivation and learning vs. performance goal orientations.

This review will also highlight the construct of engagement, which represents an observable state during which students are active and enthusiastic participants in classroom activities. While the concept of engagement is distinct from motivation in that it refers to an externally observable state as opposed to internal perceptions and values, the two are related in that they both represent positive student approaches to learning, both have similar academic outcomes, and the development of both can be explained through the same theoretical framework.

While these three frameworks are all different ways to consider students' motivation, each has been shown to lead to positive academic outcomes (Niemiec & Ryan, 2009; Greene & Miller, 1996; Klem & Connell, 2004). The following section will describe these three theories of motivation and their outcomes as they have been studied in students in primary, secondary, and post-secondary schools.

Intrinsic vs extrinsic motivation. One theory of motivation makes the distinction between intrinsic and extrinsic motivation. Proponents of this theory argue

that learning is an activity in which humans are naturally inclined to engage (Ryan & Deci, 2000). Because of this, people find tasks in which they get to develop new competencies intrinsically motivating. When individuals have high senses of intrinsic academic motivation, their desire to learn stems from their personal values. They feel that their actions have an internal locus of control, resulting from their own interests rather than from external sources (Niemiec & Ryan, 2009).

In contrast, when people feel that their actions stem from external sources like punishment or desire to please another person, they are extrinsically motivated. Some external motivators are in line with individuals' intrinsic personal values while others conflict with them, and as such, extrinsic motivation exists on a continuum that ranges from external motivation, based on fear of punishment and desire for reward, to integrated motivation, in which values that were once external to a person become fully internalized. The more internalized academic values become to a student, the closer to intrinsic their academic motivation becomes. Research indicates that students who have an intrinsic or integrated motivation to learn have higher psychological wellbeing, lower anxiety, greater interest in and enjoyment of their work, and higher academic achievement than students who are extrinsically motivated (Niemiec & Ryan, 2009).

Learning vs. performance goals. Another similar way to conceptualize motivation is to consider the different reasons that students choose to engage in learning activities. Theorists who think about motivation from this perspective look at students' goals and place them into two primary categories: learning goals and performance goals (Dweck, 1986; Mueller & Dweck, 1998). In this framework, learning goals represent a more intrinsic approach to learning, in which students engage in learning activities

because they wish to understand the subject matter and develop new competencies. In contrast, performance goals represent a more extrinsic approach, in which students engage in learning activities mostly to gain others' admiration or to avoid incurring disapproval from others.

Students who have learning goal orientations are more likely to believe that effort, not inherent ability, is the way to succeed (Dweck, 1986). These students are more likely to seek challenging tasks that will support their development of new skills and base their self-perceptions of competence on how much they have learned. In contrast, students who have performance goal orientations prefer tasks that they already know how to do, tend to believe that ability is fixed, and base their self-perceptions of competence on how they are externally evaluated or how their performance compares to other students' performance. Research indicates that mastery goal orientation has been linked to increased academic achievement (Greene & Miller, 1996).

Engagement. Another approach to understanding motivational precursors to achievement is through the study of engagement. Students who are highly engaged in school are characterized through their enthusiastic participation in classroom activities. Through the framework of engagement, students learn best when they are both emotionally and behaviorally engaged in their schoolwork. The study of engagement is distinct from the study of motivation in that engagement refers to an observable state in which students have productive classroom behaviors and positive attitudes, whereas motivation delves into students' perceptions and values. However, both engagement and motivation are precursors to effective learning and predict student achievement (Niemiec & Ryan, 2009; Greene & Miller, 1996; Klem & Connell, 2004), and both can be

influenced through support of the same psychological needs (Ryan & Deci, 2000; Skinner, Furrer, Marchand, & Kindermann, 2008).

Academic engagement consists of two distinct components: emotional engagement and behavioral engagement. Students who are emotionally engaged exhibit positive emotions as they participate in school activities. These emotions can include enthusiasm, interest, and enjoyment (Skinner, Kindermann, & Furrer, 2009). A student who is emotionally engaged during class may smile and show excitement during learning activities.

In comparison, behavioral engagement refers to students' participation in class. Engaged behaviors include on-task behavior and class participation and can be marked by effort, persistence, attention, and concentration. Students who are behaviorally engaged can be observed to be actively involved in classwork.

The opposite pole of engagement is called disaffection. Emotional disaffection can come in many forms, which are described in detail by Skinner et al. (2009). One form is enervated disaffection, which includes emotions like being tired, bored, and sad. Enervated students may seem disinterested in class. Another type of emotional disaffection involves alienation. Students who feel alienated during school may express anger and frustration. A final possible dimension of emotional disaffection is pressured participation, in which students feel anxious about academics. While these students may be actively involved with tasks, they experience anxiety and worry about their class activities instead of enjoyment. Behaviorally, disaffection can take the form of passivity, lack of initiation, lack of effort, giving up, and lack of attention.

Students with high engagement are more likely to have higher grades and better

test scores than their disaffected peers, and they are also less likely to drop out of school (Klem & Connell, 2004). In contrast, disaffected students are at risk for poor academic outcomes, including absenteeism and behavior problems.

Summary. Intrinsic motivation, learning goal orientation, and behavioral and emotional engagement are three ways to think about students' motivation that have been shown to be associated with students' achievement (Niemiec & Ryan, 2009; Greene & Miller, 1996; Klem & Connell, 2004). In the academic context, these have mostly been studied in primary, secondary, and post-secondary schools. Because of their link to achievement, they have been targeted as a potential leverage point through which to improve student outcomes. In order to intervene on motivation and engagement, however, researchers must first understand how they develop.

Development of motivation: Self Determination Theory. One theory that has been effective at explaining the development of motivation and engagement in primary and secondary school students is Self Determination Theory. This is a needs-based theory of motivation that states that all people have three main innate psychological needs-- the need for relatedness, autonomy, and competence-- and that when these needs are met, a host of positive outcomes follow (Ryan & Deci, 2000). This theory initially sprung from research into intrinsic and extrinsic motivation (Ryan & Deci, 2000), but it has since been applied to a diverse set of outcomes, including engagement (Skinner et al., 2008). The following section outlines Self Determination Theory in detail and describes the contextual factors that can support the fulfillment of its psychological needs.

Psychological needs. Self Determination Theory proposes that all people have three primary psychological needs that need to be met in order to function optimally

(Ryan & Deci, 2000). The first of these needs is relatedness, which is fulfilled when people feel close to, cared for by, and connected with the people around them. In the school setting, students can receive support for their need for relatedness from many sources: teachers, classmates, and even parents all influence the degree to which students' need for relatedness is met through their academic pursuits. However, some studies have suggested that teachers may be the most salient social partner as a source of relatedness support in the school context, as the degree to which students feel connected with and supported by their teacher is the most consistent predictor of their motivation, engagement, and satisfaction in school (Wentzel, 1998; Ryan, Stiller, & Lynch, 1994; Furrer and Skinner, 2003).

The second psychological need espoused by Self Determination Theory is the need for competence. People feel competent when they feel that they are able to successfully complete the tasks they are attempting (Ryan & Deci, 2000). In the school setting, this may mean that students feel able to complete the work they are assigned and gain mastery over the concepts they are being taught (Niemiec & Ryan, 2009).

The final psychological need proposed by Self Determination theory is autonomy. People whose need for autonomy is fulfilled feel that the actions they are performing are meaningful to them and are being performed of their own volition (Ryan & Deci, 2000). Often, people feel a high sense of autonomy while participating in activities that they choose to do of their own free will. In the school context, however, autonomy may look different, since generally, children's school attendance and the activities they experiences are requirements, not choices. However, students may still feel high senses of autonomy in school if they feel that the tasks they are performing in class are meaningful, relevant,

and aligned with their values (Niemiec & Ryan, 2009). Additionally, research has shown that for some students, particularly those from cultures who value interdependence, relatedness and autonomy in the school context may be linked such that students from these cultures feel high senses of autonomy when a trusted adult is making decisions for them (Iyengar & Lepper, 1999).

When students feel autonomous, competent, and related to the people around them, they develop high senses of motivation and engagement (Niemiec & Ryan, 2009). However, the fulfillment of the need for relatedness, autonomy, and competence is a personal experience that cannot be observed but can only be measured through a self-report survey. It is also not something that can be directly acted upon by those wishing to intervene on students' motivation in schools. As such, it is important to understand how it is possible to alter students' contexts to provide them with environments that support the fulfillment of these needs, which will then lead to positive student attitudes and behaviors.

Need supportive classroom contexts. A great deal of research has focused on ways that k-12 teachers can build classroom environments that are supportive of students' relatedness, autonomy, and competence. Through behaving in a way that is motivationally supportive and gearing students' learning activities in a way that is optimally structured for their need fulfillment, teachers can create an environment in which students develop high senses of relatedness, competence, and autonomy, and, subsequently, develop positive motivational approaches and high degrees of engagement (Stroet et al, 2013).

Teachers can support students' need for relatedness by behaving in a way that

expresses warmth and caring about students, being emotionally available, and spending time with students (Stroet et al., 2013). Adolescent students report perceiving teachers as caring when teachers have warm affect and pay attention to the students as individuals and learners (Wentzel, 1997). Conversely, teachers can undermine students' sense of relatedness by expressing coldness and through aggressive communication styles. In Wentzel's (1997) study of student perceptions of caring and uncaring teachers, students reported a rude communication style, characterized by yelling and interrupting, as being the most salient attribute of an uncaring teacher.

To support students' sense of competence, teachers can structure learning activities and feedback in a way that allows students to effectively develop academic mastery and feel successful in their activities (Stroet et al., 2012). The provision of structure is split into four primary categories. The first category, clarity, refers to the degree to which teachers make task instructions and goals explicit and understandable to students. The second component is guidance, which teachers provide by offering support to students as they attempt to complete their work and master new skills. Third, teachers can provide structure through encouragement of academic development; for instance, through communicating positive expectations of students' abilities. Finally, the provision of informational feedback can help students develop a sense of control over their outcomes.

The final dimension of need supportive teacher behavior is autonomy support, which refers to teacher behaviors that help students feel a sense of agency in their own education. There are several ways that teachers can create an autonomy supportive environment in the classroom (Stroet et al., 2012). Teachers can provide students with a

choice of activities, allowing them to control some portion of their classroom experience based on their own personal interests. A second way teachers can provide autonomy support is through aligning learning activities with topics that will be relevant to students' actual lives, thereby allowing students to feel like their work has meaning.

Summary. By supporting students' needs for competence, autonomy, and relatedness, teachers can impact students' development of academic motivation and engagement (Niemiec & Ryan, 2009). They can do this through creating classrooms that are warm, autonomy-supportive, and well structured (Stroet et al., 2012). These processes have been demonstrated largely during primary and secondary schools (Stroet et al., 2012); however, to understand the foundations of these approaches to learning, it may be fruitful to examine their development at an even earlier age.

Motivation and Engagement in the Preschool Setting

The value of studying the preschool context. The preschool context is a ripe time during which to study the development of motivation and engagement for a variety of reasons. First, because gaps in achievement and socioemotional skill exist by kindergarten entry, it is important to understand how the preschool context can support kindergarten readiness. Furthermore, not only does preschool represent a setting that in many ways is ideal for intervention, it also is a setting that may be uniquely motivationally supportive.

Achievement gaps at kindergarten entry. The achievement gap between minority and low-income students and their white and high-income peers already exists by the time children enter kindergarten. The gap in academic scores between black children and their white peers can be found in children as young as three

years old (Burchinal et al., 2011), indicating that interventions that are aimed at school-age children are already missing the beginnings of the achievement disparity. This is not the only minority group in which this is the case: Hispanic children are also at risk for low achievement by kindergarten entry (Reardon & Gallindo, 2009). Furthermore, the achievement gap between low-income students and high-income students at kindergarten entry is not only high but is also growing in size (Reardon, 2011). This gap has gotten 30-40% more pronounced since 1970, and it is now nearly twice as large as the black-white achievement gap.

In addition to gaps in achievement, students enter kindergarten with different socioemotional skillsets, and some personal and background characteristics can put students at risk for lower socioemotional kindergarten readiness. Students who are older at kindergarten entry and/or female tend to be more eager to learn, more persistent, and more attentive during class than their younger and/or male peers (Zill & West, 2001). These gender gaps persist across students' school careers, as girls tend to have higher engagement than boys across elementary, middle, and high school (Marks, 2000).

Some family background characteristics also predict socioemotional skills by kindergarten entry. In Zill and West's (2001) analysis of the Early Childhood Longitudinal Study-- Kindergarten cohort (ECLS-K) dataset, four family risk factors were identified: low maternal education, low family income, single-parent family, and primary home language other than English. The researchers combined these risk factors to create a risk index. Students with one or more of these risk factors were at risk for low academic, socioemotional, and motivational skills by kindergarten entry. Again, some of these gaps persist through school, as socioeconomic status positively predicts

engagement during elementary, middle, and high school (Marks, 2000).

All in all, the presence of achievement gaps at kindergarten indicates that it may be helpful to start interventions prior to kindergarten. The preschool setting is one context in which it is possible to implement interventions that will help these students gain the skills and competencies they need to be on an even footing at the beginning of kindergarten.

The value of preschool intervention. In general, preschool is a good time to begin interventions that are designed to boost students' achievement, reduce problem behaviors, and help students learn the socioemotional skills that are critical to later school success. Nobel Laureate James Heckman (2000, 2007) demonstrated that the earlier in students' lives interventions are implemented, the greater the societal return for those interventions. For example, Cunha and Heckman (2006) showed that for the Perry Preschool Project, a program in the 1960s that gave poor, African-American students who scored low on early IQ tests the opportunity to attend a daily preschool program, there was $9 return on every $1 spent in early interventions when adult outcomes such as higher high school completion rates and lower adult arrest rates were taken into account. This high rate of return for early intervention indicates that the preschool years may be a prime time to begin interventions aimed towards improving youth's lives.

With the value of early intervention in mind, preschool becomes particularly noteworthy as a point during which to concentrate efforts to boost children's success, because it represents the first time that large groups of children from all backgrounds come to a school setting. In the United States, 69% of 4-year-olds enrolled in pre-Kindergarten in 2012 (Organization for Economic Cooperation and Development, 2012),

making this a time in which the majority of children are in an environment in which they can be easily reached by interventions. Because this represents an early point at which it is possible to intervene directly on children's lives on a broad scale, understanding how to positively impact preschoolers' lives is particularly key to those interested in improving student outcomes at all ages.

Preschool is a unique motivational setting. Finally, preschool represents a very different context than the k-12 school system, and due to these qualitative differences, the development of motivation and engagement may look different in the preschool context than it does for older students. Kindergarten and preschool contexts generally differ on a variety of factors. When children enter kindergarten, they enter a context that is characterized by far more formal instruction-- instructions directly aimed at improving children's academic skills-- than they generally experience in the preschool setting (Rimm-Kaufman & Pianta, 2000). Whereas preschool is often more nourishing of socioemotional competence, kindergarten's primary goal is to impart academic skills. Interactions with teachers may now be more focused on academic growth than social growth (Rimm-Kaufman & Pianta, 2000). These qualitative shifts in context may have dramatic impacts on children's development of motivation as well as engagement in class.

One indicator that these processes may develop differently in these different contexts is that while there is some evidence that children grow in motivation-related approaches to learning across a given preschool year (Dominguez et al., 2010), students who have entered the formal school system actually lose motivation and engagement across school years (Ladd et al., 2000; Marks, 2000). One potential explanation for this may be age effects; however, another explanation may be that there is something about

the preschool context that is particularly supportive of the development of motivation and engagement.

Summary. The preschool context is an interesting context in which to study motivation and engagement, because not only is it a valuable setting in which to implement effective interventions, it also may be a time during which the processes by which positive motivation and engagement are developed happen differently than they do in the context of formal schooling. Despite this, not much has been studied about motivation and engagement during the preschool years.

Motivation and engagement as Approaches to Learning. When motivation and engagement have been examined in early education, they have been included as part of a comprehensive factor that combines several attitudes, socioemotional skills, and behaviors. This factor, called Approaches to Learning (ATL), has gained researchers' interest because it is a positive predictor of later academic outcomes and trajectories of learning (Duncan et al., 2007; Claessens et al., 2009; Li-Grining et al., 2010). The following section will describe the ATL construct emphasizing its ties to motivation and engagement, summarize what is known about the outcome of early ATL, describe its apparent developmental trajectory in preschool, and critique the construct's usefulness in intervention.

The Approaches to Learning construct. Approaches to Learning, as it is measured, includes several items that assess different positive socioemotional skills, behaviors, and attitudes as indicators of a child's overall attitudinal and behavioral style in the classroom. Because a one-factor scale measuring ATL contains items relating to motivation, engagement, self-regulation, attention behaviors, interest, and creativity, what

this variable actually represents can be difficult to piece apart, and different researchers have interpreted the scale in different ways.

For an example of the ways in which the one-factor ATL model can be interpreted differently by different researchers, it is instructive to examine a variety of studies that have all analyzed the same dataset and interpreted the ATL variable in different ways. One such dataset is the Early Childhood Longitudinal Study—Kindergarten Cohort (ECLS-K). This study followed students from kindergarten entry through eighth grade, documenting a comprehensive set of factors, including students' family lives, achievement, and classroom behavior. This set of factors included a scale called Positive Approaches to Learning, which consisted of six items in which teachers reported on students' classroom behavior. The differences with which this scale was interpreted in different studies were fairly dramatic.

Hair, Halle, Terry-Humen, Lavelle, and Calkins (2006) take the broadest interpretation of the ECLS-K's scale, saying that "approaches to learning include openness and curiosity to tasks and challenges, task persistence, imagination, attentiveness, and cognitive learning style (p 433)" Other theorists interpreted the construct as representing more self-regulatory behaviors. Li-Grining et al. (2010) argue that "with components such as persistence, emotion regulation, and attentiveness, children's ATL largely reflects self-regulation (p 1062)." Duncan et al. (2007) further reduce the construct, interpreting it largely as attention-related behaviors. While they state that Approaches to Learning represents "both attention skills and achievement motivation (p 1434)", they go on to call the construct "attention skills" for the rest of their analyses. Duncan et al. (2007) are not alone in viewing this construct as related to

motivation: Xue and Meisels (2004) call Approaches to Learning "a proxy for motivation (p 203)." Similarly, Bodovski and Farkas (2007) use the ATL construct to measure engagement.

Overall, many researchers agree that the one-factor measure of ATL, as represented in the ECLS-K, seems to include information about students' motivation and engagement. However, it seems that this variable also contains a great deal of information about other positive classroom attitudes and behaviors.

Outcomes of Approaches to Learning. Despite its issues with interpretability, the Approaches to Learning construct has gained interest over the course of the past few years because ATL at kindergarten entry is a good predictor of later achievement.

Duncan et al. (2007) used the ECLS-K to examine early predictors of third grade academic success. They found that students' attention-related behaviors at kindergarten entry (assessed with the ATL scale) predicted third grade reading and math achievement test scores and teacher-rated achievement over and above students' reading and math ability at school entry. In fact, this was the only socioemotional factor to uniquely predict third grade achievement: internalizing and externalizing behaviors and social skills were unrelated to later achievement when ATL was controlled for. Furthermore, a later study showed the same pattern in students' fifth grade achievement (Claessens et al., 2009).

Li-Grining et al. (2010) showed that in addition to predicting later levels of achievement, ATL at kindergarten entry was also positively related to trajectories of academic achievement from 1st to 5th grade. In other words, children who have positive ATL develop academic competencies more quickly than their peers who have less

positive ATL.

These promising results indicate that attention should be given to Approaches to Learning. The skillset that this measure comprises seems to be a beneficial one for students' academic development. However, because this construct contains so many different skills, attitudes, and behaviors, it is impossible to know which active ingredient or ingredients in this measure might be contributing to children's development.

Development of Approaches to Learning. Although the Approaches to Learning construct at kindergarten entry has been shown to predict positive academic outcomes, not much research has looked at kindergarten entry ATL as an outcome itself. However, a few studies have examined the trajectory of ATL during the preschool years.

Dominguez et al. (2010) tracked the preschool development of ATL. They followed four-year old students through their first year of Head Start to assess the trajectory of development of ATL as well as predictors of that development. They found that in general, students made gains in ATL across the preschool year. Girls had both higher baseline scores on the ATL scale and also gained more across the school year. Additionally, students who were in well-organized classrooms gained in ATL more quickly than those whose classrooms were less well-organized.

Another study also looked preschool predictors of ATL. Dominguez et al. (2011) looked at the interactions between fall child characteristics and classroom environments that predicted spring ATL in preschool. They found that students' problems in structured learning situations and with teacher and peer interaction in the fall predicted lower ATL by the spring. Additionally, there were significant interactions between child characteristics and classroom environments. For children with problems interacting with

teachers or in structured class activities, low teacher emotional support was particularly detrimental to later ATL.

Overall, both child and classroom characteristics seem to influence students' development of ATL in preschool. Both classroom organization and teacher emotional support seem important to students' development of these skills, attitudes, and behaviors, as do demographic and personality characteristics like gender and shyness. However, again, this measure of Approaches to Learning flattens several socioemotional factors into one construct, making it hard to say what these relationships mean. In particular, it is impossible to say whether these patterns represent predictors and trajectories of motivation and engagement during preschool or whether these patterns are due to the influence of some other socioemotional factor that is also represented by the ATL construct.

Preschool Learning Behavior Scale as a solution. One possible way to separate the distinct factors present in the Approaches to Learning construct can be found in the Preschool Learning Behavior Scale (PLBS). The PLBS is a measure of ATL that is theoretically attuned to three major dimensions: competence motivation, attention/persistence, and learning strategies (McDermott, Leigh, & Perry, 2002). Although this scale is often collapsed to give an overall ATL score (Dominguez et al., 2010; Dominguez et al., 2011), these three dimensions are distinguishable from each other and represent distinct socioemotional constructs.

The first dimension of the PLBS, competence motivation, has close ties to intrinsic, mastery-oriented motivational approaches. Competence motivation is an early theory of motivation whose central idea is that all humans have an intrinsic desire to

develop new skills (White, 1959, as cited by Stipek, 2002). Individuals with high competence motivation seek out challenging tasks and are primarily driven to master new skills. Students who score highly on the competence motivation dimension of the PLBS tend to approach rather than avoid difficult tasks and do not give up easily when faced with setbacks (McDermott et al., 2002), behaviors that are indicative of a mastery approach to learning (Dweck, 1986). Additionally, they show a high degree of interest in their class work, demonstrating behavior that is in line with what one might expect from someone who is intrinsically motivated (Ryan & Deci, 2000).

Additionally, while neither of the other pre-existing dimensions of the PLBS aligns with engagement and disaffection, the scale includes 29 different items measuring a rich set of behaviors that relate to a variety of socioemotional constructs, including items that represent students' engagement and disaffection in the classroom. While the three dimensions that are already part of the structure of the PLBS may not be organized in ways that allow researchers to understand engagement and disaffection, it may be possible to use this measure in a different way. By examining only those items that represent engagement and disaffection, it may be possible to adapt this commonly-used scale to provide information about these attitudes and behaviors.

Summary. When motivation and engagement have been studied in early years, they have largely been collapsed into a larger measure of Approaches to Learning, which includes other socioemotional skills, attitudes, and behaviors in addition to motivational constructs. This factor has been shown to predict later academic achievement (Duncan et al., 2007; Claessens et al., 2009; Li-Grining et al., 2010). Students tend to gain in positivity in their Approaches to Learning across the preschool

years, a gain that is moderated by both student and classroom characteristics (Dominguez et al., 2010; Dominguez et al., 2011). However, because the Approaches to Learning construct contains so many theoretically distinct components, it is impossible to say what the active ingredient or ingredients in this variable are. One potential solution to this problem can be found through use of the PLBS, which can be disaggregated into dimensions that are more directly theoretically aligned with motivational constructs.

Preschool contexts that support Approaches to Learning. In general, there are two primary categories within which to understand the qualities of a preschool setting that support student development. The first is *structural quality*, which refers to the features of preschool programs that are determined through policies, which can include elements such as training requirements for preschool teachers, required child-adult ratios in classrooms, curricular demands, and extra services that are provided by preschools. In contrast, *process quality* refers to the elements of a preschool that the children directly experience day-to-day, which includes teacher-child interactions and the physical environments that children interact with through the program. While structural quality does not have consistent positive impacts on children's academic and social competence, research on process quality has shown consistently positive ties between high-quality interactions and physical learning space in preschool and children's development of academic and social skills (Mashburn, in press). This indicates that measures of quality that directly tap into students' classroom experiences may be the best predictors of those students' outcomes.

Dominguez et al. (2010, 2011) demonstrated that there are measures of process quality that predict the development of student Approaches to Learning. Both classroom

organization and classroom level of teacher emotional support predicted student outcomes. However, while these measures do represent the quality of interactions that students experience during kindergarten, the measures used were still fairly broad, as were the outcomes measured. It is not enough to know that in general, process quality is predictive of student outcomes; rather, in order to truly understand the factors underlying students' development of motivation and engagement, it is necessary to understand which specific processes lead to the development of which specific outcomes. In order to do this, it may be valuable to re-imagine current measures of process quality, to determine how these measures might be used to get at specific, rather than broad, processes.

Classroom Assessment Scoring System (CLASS). One of the most commonly used measures of preschool process quality is the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008). With this measure, independent observers enter classrooms and rate the frequency with which they observe a variety of behaviors that are indicative of the quality of classroom processes. While the class-level attributes this system measures include a broad array of behaviors, the CLASS aggregates lower-level classroom context dimensions into three higher-level domains: emotional support, classroom organization, and instructional support. Each of these primary domains is composed of three or four lower-level dimensions.

The CLASS was designed to measure contexts that boost students' development of a host of academic and socioemotional competencies. Its primary domains include a broad array of dimensions that should theoretically provide high-quality contexts for the development of an equally broad array of positive child outcomes, including motivation and engagement. When focusing on narrower outcomes, however, it may be more

helpful to focus in on the specific dimensions that might target the development of specific outcomes. The following review will elaborate on the CLASS structure to provide more detail about the contexts that each domain and dimension directly measure.

Emotional support. The domain of emotional support represents positive, close relationships between teachers and students and a warm classroom environment. It includes four dimensions: *positive climate*, *negative climate*, *teacher sensitivity*, and *regard for student perspectives*. The creation of this domain was guided by research indicating that children who feel high senses of connectedness to others during their early years are more likely to go on to develop positive trajectories of social and academic development later in life (Hamre & Pianta, 2001; Ladd, Birch, & Buhs, 1999).

Positive climate refers to "the emotional connection, respect, and enjoyment demonstrated between teachers and students and among students." (Pianta et al., 2008, p. 3) A high score on this dimension reflects a classroom that contains warm relationships, positive affect from teachers and student, positive verbal and physical communication, and an atmosphere of respect.

In contrast, *negative climate* refers to "the level of expressed negativity such as anger, hostility, or aggression exhibited by teachers and/or students in the classroom." (Pianta et al., 2008, p 3) This measure is marked by high irritability, yelling, harsh punishment, sarcasm, and victimization in a classroom.

Teacher sensitivity refers to "teachers' awareness of and responsivity to students' academic and emotional concerns." (Pianta et al., 2008, p 3). A high score on this construct means that teachers are aware of students who need extra support, provide

individualized support, help resolve problems effectively, and create an atmosphere in which students feel comfortable seeking support from the teacher.

Finally, *regard for student perspective* represents "the degree to which teachers' interactions with student and classroom activities place an emphasis on students' interests, motivations, and points of view." (Pianta et al., 2008, p 3) This measure is marked by a flexible class schedule that is responsive to students' interests, in an environment where student autonomy is supported, student expression is encouraged, and students have the freedom to move during activities.

Classroom organization. The domain of classroom organization constitutes the measurement of classroom processes related to the management of students' behavior, time, and attention. This domain includes three dimensions: *behavior management*, *productivity*, and *instructional learning formats*. The development of this domain was guided by research on the development of children's self-regulation, which has shown that students develop self-regulatory skills best in well-regulated classroom environments (Pianta et al., 2008).

Behavior management represents "how effectively teachers monitor, prevent, and redirect behavior." (Pianta et al., 2008, p 4) A high score on this dimension indicates that teachers have clear and consistent behavior expectations, anticipate problem behavior, have low reactivity, effectively redirect misbehaving children, and have classrooms in which students are mostly compliant.

Productivity refers to "how well the classroom runs with respect to routines and the degree to which teachers organize activities and directions so that maximum time can be spent in learning activities." (Pianta et al., 2008, p 4) This measure is high in a

classroom that maximizes learning time, with few disruptions and appropriate pacing, in which there are consistent routines, brief transitions, and in which the teacher is fully prepared for activities and lessons.

Finally, *instructional learning formats* is a dimension that represents "how teachers facilitate activities and provide interesting materials so that students are engaged and learning opportunities are maximized." (Pianta et al., 2008, p 4). A high score on this dimension represents a classroom in which teachers effectively facilitate students' engagement in activities and use a variety of materials that allow for hands-on learning, students actively participate and maintain interest in activities and lessons, and learning objectives are made clear to students.

Instructional support. The final domain, instructional support, represents activities that support the development of academic competencies such as language and critical thinking. This domain includes three dimensions: *concept development*, *quality of feedback*, and *language modeling*. The development of this measure was theoretically guided by research indicating that critical thinking and metacognitive skills are critical to academic development, as is appropriate scaffolding (Pianta et al., 2008).

Concept development refers to "how teachers use instructional discussions and activities to promote students' higher-order thinking skills in contrast to a focus on rote instruction." (Pianta et al., 2008, p 5) This dimension represents how often classroom activities provide the opportunity for students to analyze and use creativity, in addition to teachers' integration of multiple concepts and application of concepts to students' real lives.

Quality feedback represents "how teachers extend students' learning through their responses to students' ideas, comments, and work." (Pianta et al., 2008, p 5) A high score on this dimension represents a class in which teachers appropriately scaffold concepts to students, have back-and-forth exchanges with students, ask students to explain their rationale for answers, provide additional information to clarify concepts, and encourage students' efforts and persistence.

Finally, *language modeling* represents "the extent to which teachers facilitate and encourage students' language." (Pianta et al., 2008, p 5) A high score on this dimension represents a classroom in which there are frequent conversations and in which teachers ask many open-ended questions, often repeat students' responses, map actions with language, and use advanced language with students.

CLASS and Approaches to Learning. While the dimensions of the CLASS were constructed to map onto the three primary domains set forth by Pianta et al. (2008), they represent a broad and varied set of high-quality processes that are observable within classrooms. In turn, these processes are theorized to boost the development of a wide set of positive educational outcomes, both academic and socioemotional. When targeting a specific outcome or set of outcomes, such as those represented in the Approaches to Learning family, it may be helpful to determine the specific processes that are predicted to impact the specific outcome variables, based on what is known empirically and theoretically about their development.

In the case of motivation and engagement, two of the target factors that are central to ATL, these processes include those that boost students' senses of relatedness, autonomy, and competence-- respectively, student-teacher relationships and classroom

environments that convey a high sense of warmth, a curriculum that supports children's choices, and a learning environment that is structured and well-scaffolded. Many of the contextual supports for the needs stipulated by Self-Determination Theory can be found in the classroom processes measured by the CLASS.

While the CLASS's dimensions were not originally organized through the framework of Self-Determination Theory, it is possible to map certain dimensions onto the three needs stipulated by the theory. Because these dimensions directly translate into contexts that should support the fulfillment of relatedness, autonomy, and competence, which in turn support the development of motivation and engagement, classrooms that are high in these dimensions should be particularly supportive of students' development of these facets of children's ATL.

Summary. High process quality in preschool is generally more predictive of positive child outcomes than is structural quality, indicating that the interactions that children directly experience impact their development more than distal predictors. One measure of process quality is the CLASS, which is a comprehensive measure of a variety of high-quality classroom processes that are theoretically predicted to positively impact a breadth of student outcomes (Pianta et al., 2008). Some of the processes measured by the CLASS are theoretically aligned with Self Determination Theory. While the full CLASS has been used before to predict the development of ATL in preschool (Dominguez et al., 2010), it may be more theoretically useful to look at narrower subsets of both measures. Specifically, to predict motivation and engagement, it may be useful to examine only those dimensions of the CLASS that best represent structure, autonomy support, and warmth.

Student Motivation and Engagement across the Kindergarten Transition

Understanding how motivation and engagement develop at the preschool level is not sufficient when explaining children's differences at kindergarten entry: it is also critical to study how students maintain their motivational approaches across the kindergarten transition. As has been demonstrated, children's socioemotional Approaches to Learning at kindergarten entry are strong predictors of their later academic achievement (Duncan et al., 2007; Claessens et al., 2009; Li-Grining et al., 2010); therefore improving students' motivation and engagement at kindergarten entry may be a good goal for those wishing to design interventions. While much of this motivation and engagement may be developed in preschool, it is also important that students maintain high motivation across the kindergarten transition.

Changing contexts across the kindergarten transition. The process of transitioning to kindergarten represents a unique time in children's lives, which may present some students with difficulties. To begin, students are transitioning from an environment which is generally more focused on socioemotional growth to one that is academically oriented (Rimm-Kaufman & Pianta, 2000). This context shift presents a new set of challenges for children, as in addition to an increase in academic requirements, they also are required to maintain attentive behavior for longer durations and remain away from home for more hours a day (Rimm-Kaufman & Pianta, 2000).

While most children seem to adapt to their new environment well, a sizable minority of students have difficulty adapting to this new context. Rimm-Kaufman et al. (2000) found that teachers reported that 16% of kindergarten students experienced difficulties with the transition. Over a third of kindergarten teachers reported that half or

more of the students in their class entered kindergarten with socioemotional difficulties that impeded their adaptation to the k-12 environment.

The kindergarten transition may pose particular difficulties for students' maintenance of high motivation and engagement. While students seem to increase in general socioemotional skills during preschool (Dominguez et al., 2010), their engagement tends to decrease over a typical k-12 school year (Marks, 2000), a decline that begins as soon as children enter kindergarten (Ladd et al., 2000). Despite the differences in these two contexts and the importance of socioemotional skills at kindergarten entry, there is a gap in the current understanding of motivational development at the connection between preschool and kindergarten. Understanding how these approaches to learning change across the kindergarten transition is key to creating interventions to help ensure that they are high at kindergarten entry.

Child characteristics and the kindergarten transition. Some child and family characteristics put students at risk for low academic and socioemotional competence by kindergarten entry. Young age and male gender are two individual factors that are predictive of low socioemotional skill development by kindergarten entry (Zill & West, 2001; Marks, 2000). Members of African-American and Hispanic minority groups, students whose families have low incomes, and students whose mothers had low levels of education attainment may be at risk not just for low kindergarten-entry socioemotional competence but also low achievement (Reardon & Galindo, 2009; Reardon, 2011; Burchinal et al., 2011, Zill & West, 2001).

Although there seem to be personal and background characteristics that put children at risk of developing lower socioemotional and academic skills by kindergarten

entry, not all hope is lost: there is evidence to suggest that additional supports during the kindergarten transition may be especially beneficial for these students. Specifically, programs designed to facilitate a successful kindergarten transition have had stronger effects for students who are from low-SES backgrounds than for their high-SES peers (Schulting et al., 2005), and the same is true for students with low maternal education (LoCasale-Crouch et al., 2008). These findings indicate that providing extra support for all students across the kindergarten transition may be helpful in reducing gaps in kindergarten readiness, as those students who are at-risk for low kindergarten readiness benefit more from intervention than do their peers.

Chapter Summary

Students' motivation and engagement represent a potential leverage point through which students' academic outcomes can be improved. Research in the k-12 setting has shown that to act on these motivational factors, teachers can support students' needs for relatedness, autonomy, and competence by providing warmth, autonomy support, and structure in their classrooms. However, this research has not been extended to the preschool level, which is surprising given that academic and socioemotional gaps start early, and the preschool setting is a particularly ripe context for intervention.

What research has been conducted at the preschool level has combined motivational factors into a larger construct called Approaches to Learning (ATL), which combines motivation and engagement with other socioemotional approaches to learning such as self-regulation, attention skills, and creativity. ATL at kindergarten entry predicts later achievement; however, it is unclear which components of this construct actively contribute to this pattern. Previous studies have used broad measures of classroom

process quality to predict ATL in preschool, demonstrating that both classroom and child factors play into its development. However, to understand the development of motivation and engagement specifically, it may be helpful to narrow both the ATL outcome and its predictors into variables that are theoretically aligned with Self Determination Theory.

Finally, it is not enough to simply examine the development of motivation and engagement during preschool: to understand how these factors are developed by kindergarten entry, it is also necessary to examine how students maintain high motivation across the kindergarten transition. Furthermore, it is necessary to take into account that the processes through which motivation is developed may not be the same for all children and to closely examine these processes in those students who are at risk for developing low motivation and engagement by kindergarten entry.

Chapter Three: Purpose of the Current Study

The current study examined whether the qualities of students' experiences in preschool contexts can buffer the negative effects of risk in order to support the development of a high sense of motivation and engagement that is sustained across the transition to kindergarten. In order to examine these issues, data from 333 rising kindergarteners and their 98 preschool teachers who participated in a preschool reading intervention were analyzed. The results of this study have the potential to make four contributions to our current understanding of motivation and engagement, each of which is discussed in the following sub-sections.

Motivation and Engagement in Preschool: Moving Beyond Approaches to Learning

One contribution of this study is that it includes more precise measures of students' motivation and engagement than have typically been used with preschool-aged children. Previous studies tend to measure motivation and engagement as part of a host of socio-emotional factors called Approaches to Learning. While these studies have found that both child and contextual factors predict early development of approaches to learning, the broadness of this construct makes it impossible to say whether these findings apply to the specific dimensions of motivation and engagement that are derived from theories. Thus, this study will narrow this construct back to its constituent parts to examine the extent to which child and contextual factors predict these specific components of motivation and engagement.

The CLASS as a Measure of Need-Supportive Classrooms

A second contribution of this study is that it modifies the Classroom Assessment Scoring System (CLASS; Pianta et al., 2008), a very common measure of the quality of

children's interactions in preschool settings, in order to create a measure of need-supportive classrooms that aligns with Self Determination Theory in a classroom environment. While parts of the CLASS were created with Self-Determination Theory in mind (Pianta et al., 2008), the measure is typically used as a comprehensive observation tool that extends beyond assessing the behaviors that are supportive of relatedness, competence, and autonomy. Because of this measure's versatility and widespread use, this study will provide a structure through which this tool can be streamlined to create a measure of need-supportive classrooms, in particular, which can be useful to researchers interested in studying Self Determination Theory across all school years.

Motivational Development across the Kindergarten Transition

The current study will also fill a gap in the research literature regarding motivation and engagement across the kindergarten transition. Although previous studies have examined socio-emotional skills at kindergarten entry as a predictor of later outcomes (Duncan et al., 2007; Claessens et al., 2009; Li-Grining et al., 2010), and other studies have examined the predictors of these approaches to learning in preschool (Dominguez et al., 2010; Dominguez et al., 2011), it remains to be seen how motivational approaches to learning change across the kindergarten transition. This is especially important because while socio-emotional approaches at kindergarten entry are a consistent predictor of later academic achievement, it may be that children's motivation and engagement suffer during the transition to kindergarten (Rimm-Kaufman & Pianta, 2000; Ladd et al., 2000).

For Whom is Need Support Important?

Finally, this study will examine not just the contexts that predict a successful

transition from preschool to kindergarten in supporting children's motivation, but it will also identify the students for whom these contexts are most salient. Because the achievement gap is particularly large for students from low-income families, this study will primarily track children who belong to that demographic, to determine whether the processes suggested by Self Determination Theory apply to children from this background at this age. Additionally, the study will determine whether a need-supportive environment differentially impacts students with differing maternal education levels. Finally, there is some evidence to suggest that students who are younger at kindergarten entry and students who are male may be at risk for low socio-emotional development by kindergarten entry; as such, the impact of need support on students with these characteristics will also be examined.

Research Questions and Hypotheses

Guided by the previous literature review, the following section will outline the research questions and hypotheses of the current study.

Research Question One. How do motivation, engagement, and disaffection change from preschool to Kindergarten?

Hypothesis One. The kindergarten transition is difficult time for many children (Rimm-Kaufman & Pianta, 2000), and there is some evidence to suggest that while children may gain in motivation and engagement during preschool (Dominguez et al., 2010), these attitudes and behaviors may begin to decline upon entering kindergarten (Ladd et al., 2000). It is hypothesized that, on average, children's motivation and engagement will decrease between preschool and kindergarten, while disaffection will increase.

Research Question Two. Does classroom need support in preschool predict students' concurrent levels of motivation, engagement, and disaffection?

Hypothesis Two. Research has shown that classrooms high in warmth, autonomy support, and structure support students' needs for relatedness, autonomy, and competence (Stroet et al, 2013). This, in turn, is expected to lead to high motivation and engagement (Ryan & Deci, 2000). Because of this, it is expected that students in preschools that are highly need supportive will have high motivation and engagement during preschool, while they will have low disaffection.

Research Question Three. Are changes in motivation, engagement, and disaffection across the kindergarten transition more pronounced for children who experience greater levels of social and economic risk?

Hypothesis Three. Researchers have argued that the achievement gap between low-SES children and their high-SES peers is due, in large part, to differential experiences during their time at home (Alexander et al., 2007). While students from all backgrounds have parallel trajectories of achievement during the school year, students from low-SES backgrounds tend to lag behind their high-SES peers in summer learning, and this pattern holds true to a lesser degree for the achievement gap between White students and their Black and Hispanic peers (Burkam, Ready, Lee, and LoGerfo, 2004). It seems that much of the widening of achievement gaps occurs during times when students are not in school. It may be that these processes occur the same way for motivation and engagement as they do for achievement, meaning children from high-risk backgrounds would tend to lose more motivation during times when they are not in school (e.g. the break between preschool and kindergarten). Because of this, it is

hypothesized that students from backgrounds that put them at higher risk for low socioemotional development will tend to lose more motivation and engagement while simultaneously gaining more disaffection across the kindergarten transition.

Research Question Four. Are the levels of relatedness, autonomy, and competence support in preschool classrooms positively associated with children's development of motivation and engagement across the kindergarten transition?

Hypothesis Four. It is expected that students who have been in highly need supportive environments will lose less motivation across the kindergarten transition than those in less need-supportive classrooms. As students' needs for autonomy, competence, and relatedness are fulfilled, they should develop views of themselves as competent, cared for, and in control of their own outcomes. This, in turn, is expected to buffer students from the potentially damaging effects of a stressful kindergarten transition. For this reason, it is expected that high need support will buffer the loss of motivation and engagement across the kindergarten transition.

Research Question Five. Does motivational support during preschool buffer losses in motivation and engagement and reduce gains in disaffection across the kindergarten transition for children with specific demographic risk factors?

Hypothesis Five. Because previous research has shown that extra supports during the kindergarten transition are more beneficial for those students who are at-risk for low kindergarten readiness (Schulting et al., 2005; LoCasale-Crouch et al., 2008), it is predicted that higher levels of need support will be especially protective for students whose personal and background characteristics put them at risk for low socio-emotional development upon kindergarten entry.

Chapter Four: Preliminary Measurement Work

In order to test theoretically attuned models of the development of engagement and disaffection, it was first necessary to adapt existing measures to represent classroom support of psychological needs as well as student engagement and disaffection. The following section details the methods through which these measures were adapted.

The CLASS as a Measure of Need Support

In order to answer research questions pertaining to levels of preschool classroom need support, it was first necessary to determine which dimensions of the CLASS best aligned with Self Determination Theory. To ensure that the final measure of need support was theoretically grounded, a systematic analysis of the content of the CLASS was conducted to align its specific dimensions of the quality of classroom interactions with those dimensions derived from Self Determination Theory that have been identified as supporting students' motivation and engagement.

The CLASS observation procedure requires observers to make ratings about three overall *domains* of classroom quality-- emotional support, classroom organization, and instructional support. Each of these domains is comprised of three or four *dimensions* (e.g. Positive Climate, Behavior Management, and Quality of Feedback) that represent more nuanced types of quality. In order to rate these dimensions, observers pay attention to *indicators* of classroom quality that demonstrate a given dimension within a classroom (e.g. the indicators for the Positive Climate dimension include evidence of relationships, positive affect, positive communication and respect). In order to make judgments about these indicators, observers are trained to recognize teacher and student *behaviors*, which are individual instances of interactions that relate to the indicator. While CLASS ratings

are made only at the dimension level, this rubric represents quality at four different levels, extrapolating from individual behaviors all the way up to the domain level.

Because the dimension level is the most nuanced level at which rating information is available, the current study asked a focus group to use the indicators of each dimension to determine how closely that dimension aligned with Self Determination Theory.

Process. A focus group of two professors and seven graduate students, who have expertise in the theories of motivation and engagement and the measures of teacher behaviors that best support children's needs, was convened to assess which of the dimensions measured by the CLASS best aligns with each component of the motivation and engagement identified in Self Determination Theory. Each participant was provided a copy of the CLASS scoring guide (Pianta et al., 2008), which contains details about all 10 CLASS dimensions (e.g. "positive climate," which measures the overall positivity of the class) and each of four indicators within each dimension (e.g. "positive communication," "positive affect," "relationships," and "respect", each of which represents just one way in which a classroom's climate can be positive).

Before any discussion about the dimensions occurred, participants went through the CLASS scoring guide, independently noting which self-determination need or needs was supported or inhibited by each indicator. Because not all indicators were aligned with the Self Determination framework, participants were encouraged to leave any indicator blank that they felt did not fit the theory. Considering their ratings of the indicators, the participants then noted which psychological need or needs, if any, they felt were supported by each dimension as a whole.

After rating each dimension independently, the group then discussed their ratings

and came to a consensus about each dimension. When compared with the participants' independent ratings, the consensus that the focus group arrived upon reflected the opinions of the majority of the individuals. The results from the focus group are reported in the following subsections. Because not all participants rated each dimension or indicator, some items will not have nine ratings.

Content Analysis.

Positive Climate. All nine participants agreed that three or more of the Positive Climate indicators represented classroom-wide warmth, which supports students' need for relatedness. This is reflected in the "relationships" indicator, on which a high score means that "teacher and students enjoy warm, supportive relationships with one another." It is further reflected in the "positive affect" indicator, in which a high score indicates that there is high level of positive affect between the teacher and/or students. Warmth was also indicated by the "positive communication" indicator, in which a high score means high frequency of positive communications among teachers and students. The participants were split with regards to the final indicator, "respect". Some of the participants felt that respect between teachers and students was most supportive of relatedness, while others felt that respect could also support students' autonomy. Upon discussion, participants agreed that despite this small discrepancy in opinion regarding the respect indicator of Positive Climate, the dimension as a whole represented warmth and supported students' need for relatedness.

Negative Climate. The focus group's consensus regarding the Negative Climate dimension placed this dimension in both the realm of relatedness and autonomy: the behaviors expressed by teachers and students in this dimension represented behaviors

that would create a harsh, coercive environment that would undermine students' development of both needs. The first indicator, “negative affect,” represented irritability, anger, and aggression between teacher and students. Six focus group participants felt this indicator best described an environment of rejection that would undermine students' sense of relatedness, while two participants felt this indicator represented a coercive style that would undermine students' sense of autonomy. This split in opinion continued to the next indicator, “punitive control,” which represents an environment in which a teacher yells or makes threats to establish control over the classroom. Five participants felt this typified a coercive environment that would undermine students' autonomy, while three argued that this again demonstrated an environment of high rejection that would undermine students' relatedness. The next indicator, “sarcasm/disrespect,” which described an environment where there is little respect between teacher and students, also seemed to represent both types of need support: seven participants felt this best aligned with an environment that would hinder relatedness, while two felt it most aligned with the autonomy dimension. The same was found for the final indicator, “severe negativity,” which measured the presence of bullying and victimization in a class. Upon discussion of these ratings, the group agreed that both perspectives were theoretically valid, and it was determined that this dimension represented a mix of rejection and coercion that would undermine students' sense of both relatedness and autonomy.

Teacher Sensitivity. The focus group agreed that the Teacher Sensitivity dimension also contributed to the fulfillment of multiple psychological needs. The behaviors observed in this dimension were both indicative of high classroom warmth and effective structure, which support relatedness and competence, respectively. The first

indicator, “awareness,” represented a classroom in which teachers are aware of which students require special needs and support. Four participants felt this aligned with a well-structured class supportive of students' competence, two felt this represented an environment supportive of relatedness, and two rated this indicator as supportive of both competence and relatedness. The second indicator, “responsiveness,” included behaviors where teachers acknowledge student emotions, provide comfort and assistance, and provide individual support to students. This indicator seemed to include aspects of all three types of need support: four participants felt this represented a well-structured environment that supported competence development, three rated this as an environment high in warmth and supportive of relatedness, and two noted that the individual support was autonomy supportive. The third indicator, “addresses problems,” is rated high when a teacher effectively helps to resolve students' problems. Five participants rated this as representative of a well-structured environment supportive of competence. Two felt this represented teachers' warm responsive behavior that supported students' relatedness, while one left this indicator blank. The final indicator, “student comfort,” described an environment in which students freely seek support from and share ideas with the teacher. Five participants felt this was indicative of a warm environment that is supportive of students' relatedness, while three felt that it represented both relatedness and autonomy support.

Reviewing these ratings in the discussion group, it was clear that this dimension did not represent one pure form of need support. While the first three indicators were most often categorized as supportive of structure, sizable minorities of participants felt these indicators also showed relatedness support. In light of overwhelming agreement

that the fourth indicator represented relatedness support, it was agreed that this dimension as a whole seemed to represent both structure and relatedness. Some participants felt that aspects of the "responsiveness" and "student comfort" indicators seemed supportive of autonomy. However, it was agreed that these components of this dimension were relatively minor in comparison with the overarching theme of competence and relatedness support.

Regard for Student Perspectives. It took less than a minute for the focus group to arrive at a consensus on the Regard for Student Perspectives dimension: each of the four indicators clearly supports students' need for autonomy. There was full agreement on each part of this dimension. The first indicator, "flexibility and student focus," was rated highly when instruction is guided towards students' interests and sensitive to students' ideas, which are both behaviors in line with autonomy support. The "support for autonomy and leadership" indicator was also aligned with autonomy support, as the name suggests. The third indicator is "student expression," and it is rated highly when students have many opportunities for self-expression, which again allows students' school experience to be authentic and meaningful, supporting their autonomy. Finally, the "restriction of movement" indicator is high when students are allowed to move freely during activities, again allowing for some degree of student freedom.

Behavior Management. Eight of the nine participants agreed that the Behavior Management dimension represented mostly structure, with one participant leaving the dimension blank. This consensus was also reflected in further discussion. The first indicator, "clear behavior expectations" refers to the provision of consistent classroom structure, which is supportive of students' competence. The next indicator,

"proactivity," also echoes this. A high score on this indicator represents high teacher proactivity and effective behavioral monitoring in the classroom, which further feeds into competence-supportive structure. Similarly, "redirection of misbehavior" refers to positivity in behavioral management, reflecting the positive encouragement dimension of structure provision. The final indicator, "student behavior," did not reflect structure provision. This indicator reflects the degree to which students comply with classroom expectations. While this indicator does not directly reflect the structure dimension, an environment in which students behave appropriately may demonstrate that teachers' structure provision has been successful.

Productivity. Six of the nine participants agreed that the Productivity dimension also represented a well-structured classroom that was supportive of students' competence, with one participant rating it as autonomy support and two participants leaving the dimension blank. The first indicator, "maximizing learning time," represents a well-paced classroom in which activities run efficiently and disruptions are few. Six participants felt this indicator most closely aligned with competence support, while one felt it represented an autonomy supportive environment. The next indicator, "routines," indicates a classroom in which every student knows what is expected of them. Four participants rated this as indicative of structure, while three also felt that this represented a classroom that is supportive of students' autonomy. The next indicator, "transitions," was rated as high when transitions are quick and efficient. Five participants left this dimension blank, revealing in later discussion that they did not feel this aligned well with any need, while two rated this as supportive of students' competence. Finally, the last dimension, "preparation," represented teachers' level of preparation for classroom

activities. Ratings of this indicator were also mixed, with four participants leaving it blank and three rating it as supportive of competence.

In discussion, it was agreed that while much of the behavior measured by this dimension did not seem to be aligned with Self Determination Theory, on the whole, most of the indicators seemed to represent a well-structured classroom that should support students' competence. While there did seem to be some elements of autonomy support in this dimension, the group's consensus was that this dimension best represented competence support.

Instructional Learning Formats. The Instructional Learning Formats dimension was one of the more complex dimensions of the CLASS in terms of its ties to Self Determination Theory. After rating and lengthy discussion, the focus group agreed that this dimension theoretically aligned with not only all three psychological needs but also with theoretical outcomes of those needs' fulfillment. Seven participants chose not to rate the dimension as a whole, while two rated it as supportive of autonomy. Ratings of each indicator were highly varied; therefore, only the final consensus regarding each indicator will be reported here.

The first indicator, “effective facilitation,” is rated as high when teachers facilitate students' participation and involvement in classroom activities. This indicator was seen as supportive of all three needs: when scores were high, teachers showed that they valued students, which should show warmth and bolster relatedness. In classrooms that scored high on this indicator, teachers used effective questioning and structured activities well, supporting students' competence. Furthermore, providing opportunities for students to actively participate in class is supportive of their autonomy. Finally, this indicator

represents high student engagement, a theoretical outcome of high need support. The second indicator, “variety of modalities and materials”, represented a classroom in which teachers use a variety of methods to effectively interest students and increase participation. This indicator, like the last one, represented an intersection of need support that was well-structured and autonomy-supportive. The next indicator, “student interest,” represented students' active participation. All participants agreed that this seemed to be a pure measure of behavioral engagement. Finally, “clarity of learning objectives” refers to a classroom in which students are aware of the purpose of their activities. The group agreed that this was both a sign of high structure and clarity and also of an autonomy-supportive environment in which students felt that their activities were meaningful. Overall, the group agreed that this dimension did not align with any particular dimension of Self Determination Theory but seemed to be supportive of all three needs.

Concept Development. The consensus of the focus group was that the dimension of Concept Development was most closely aligned with autonomy support, but that this dimension also included a substantial amount of information that was not aligned with any form of need support. The first indicator, “analysis and reasoning,” referred to teachers' use of activities that encourage analysis and reasoning. Six participants left this item blank, indicating that it did not clearly align with any psychological need. Three participants, however, felt that this indicator was indicative of structure and supported competence. The second indicator, “creating,” was rated highly when students often had opportunities to generate their own ideas. Eight participants agreed that this indicator was supportive of students' autonomy, while one participant left the item blank. The next indicator, “integration,” represented the degree to which

teachers link concepts and activities to one another. Seven participants did not rate this indicator. The two participants that felt this item aligned with a psychological need agreed that this item represented autonomy. Finally, the "connections to the real world" indicator, which represents the degree to which concepts are applicable to students' lives, seemed to represent autonomy. Seven participants agreed that this item was indicative of autonomy, while two did not feel that it aligned with Self Determination Theory. Upon further discussion, it was agreed that parts of this dimension represented an autonomy supportive classroom environment, while other parts seemed to not directly align with the theory.

Quality of Feedback. Like the Instructional Learning Formats dimension, the Quality of Feedback dimension seemed to include support for all three psychological needs. While three participants thought that the overall dimension represented structure, others' ratings varied, and in further discussion, the group's consensus was that all three needs were represented by this dimension. Because ratings of each indicator varied considerably, only the final agreement about each indicator will be described here.

The first indicator, "scaffolding," represents a classroom in which teachers scaffold students who are having difficulties. The group agreed that this scaffolding is supportive of both students' sense of competence and autonomy. The next indicator, "feedback loops," describes the frequency of back-and-forth exchanges between teachers and students. This acknowledgment from the teacher may support students' development of relatedness, while quality feedback may also support a sense of competence. Furthermore, this active engagement with students' ideas may bolster their autonomy.

These same processes seem to underlie the ways in which the next indicator, "prompting thought processes," impacts students' fulfillment of their psychological needs. A high score in this indicator indicates that teachers prompt students to think deeply about their answers to questions. It was agreed that this indicator should support competence, autonomy, and relatedness. The next indicator, "providing information," represented the degree to which teachers provide additional information to expand students' understanding of concepts. It was agreed that this indicator represents structure and is supportive of competence. Finally, "encouragement and affirmation" represents the degree to which teachers offer encouragement that increases students' participation. This is another complex indicator: clearly, encouragement and affirmation are warm behaviors that may support students' relatedness. However, through affirming student participation, a teacher may create an environment in which students feel that their participation is meaningful, which would support their need for autonomy.

Language Modeling. In both discussion and ratings, it was agreed that this dimension did not directly align with Self Determination Theory. The classroom characteristics represented in this dimension seemed to be supportive of specific academic development rather than of motivational outcomes. There was near-unanimous agreement on each indicator. The first indicator, "frequent conversations," represented how often conversations occurred in the classroom. The second, "open-ended questions," refers to the degree with which teachers ask open-ended questions instead of closed-ended questions. The next indicator is "repetition and extension," which is rated as high when teachers often repeat and elaborate on student responses. "Self- and Parallel Talk" refers to the degree to which the teacher maps his or her own and student actions using

words. Finally, "advanced language" represents the sophistication of language that teachers use with students. Each of these indicators targets language development specifically, and while some of these behaviors may be supportive of psychological needs, this represents a small amount of the variance that can be expected in scores on this dimension.

Content Analysis- Interpretation. The results of the focus group demonstrated that the majority of the dimensions in the CLASS are theoretically aligned with one or more components of Self Determination Theory. However, many of those dimensions that are aligned with Self Determination Theory do not support a single need but rather are supportive of two or three needs. In deciding how to best use the CLASS to measure need support, two approaches could have been taken.

The first approach that this study might have used would be to include in the final measure of need support every dimension that aligned with Self Determination Theory. While this approach would include the full scope of variance in need support that is reported in the CLASS, it would also run the risk of introducing noise to the data by including indicators that are not well-aligned with the overall theory.

The second approach, which this study will take, is to use in the final measure only those dimensions that are best aligned with relatedness, autonomy, and competence support. While this approach runs the risk of losing some of the information available about psychological need support in the CLASS, it has the advantage of being most closely aligned with the overall theory.

After deciding to use this approach, the next decision addressed the question: which measures most closely align with the three needs? For relatedness and autonomy,

the answer to this question was clear, since only one dimension purely aligned with each of these needs. For relatedness support, this dimension was Positive Climate. For autonomy support, this dimension was Regard for Student Perspectives.

Two dimensions theoretically aligned with competence support--Behavior Management and Productivity. Comparing the results of the focus group regarding each of these dimensions, behavior management emerged as being more closely aligned to the dimension of competence support. In initial ratings, more participants agreed that this dimension represented structure, and this confidence held true in participants' ratings of each sub-dimension. Finally, it was decided that because these dimensions are highly correlated, they would be combined into an overall measure of need support instead of being used individually. A preliminary analysis found that this three-item measure of a need supportive preschool classroom achieved an internal consistency reliability (Cronbach's alpha) of 0.72.

The Learning Behavior Scale as a Measure of Engagement and Disaffection

To answer questions regarding students' engagement and disaffection, it was necessary to adapt the Learning Behavior Scale (McDermott et al., 2002) for use as a measure of engagement. This process was completed in two steps. First, a theory-driven a priori approach was taken, in which items were sorted into categories that align with the dimensions of engagement and disaffection that are observable in older students (Skinner et al., 2009). However, because dimensional analysis of disaffection has been conducted mostly with older students, it is possible that disaffection looks different in younger students. Because of this, a second step used a data-driven exploratory approach to determine whether any new types of disaffection were distinguishable within this young

sample.

Step one: Theory-directed Confirmatory Factor Analyses. Items from the PLBS/LBS were sorted into four different categories, which represent the types of engagement and disaffection that have been observed in older children: engagement, frustrated disaffection, enervated disaffection, and anxious disaffection (Skinner et al., 2009; for definition, see p 11). These four scales were then tested using confirmatory factor analysis and were evaluated using the following criteria: models with non-significant chi square tests of model fit, CFIs above .97, and RMSEAs below .05 were considered well-fitting models. Factor loadings were examined, and items with factor loadings above .3 were considered acceptable. Cronbach's alpha was also calculated for each scale. The results of these analyses are reported in the following section.

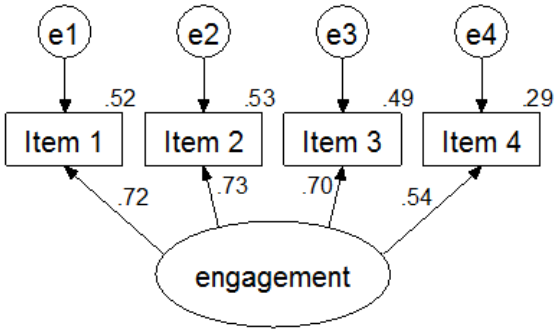
Engagement. Four items were identified that represent engagement: "pays attention to what you say," "sticks to an activity for as long as can be expected," "cooperates in group activities," and "shows a lively interest in activities." A confirmatory factor analysis showed that the proposed measure for engagement fit the data well for both the PLBS ($\chi^2(2)=3.806$, $p=.149$; CFI=.996, RMSEA=.042), and the LBS ($\chi^2(2)=.928$, $p=.629$ CFI>.99, RMSEA<.001). Factor loadings for this scale can be found in Figure 1. Reliability was acceptable for this scale in both the PLBS ($\alpha=.77$) and LBS ($\alpha=.72$).

Frustrated disaffection. Five items were identified as representing frustration: "is unwilling to accept help even when an activity proves too difficult," "bursts into tears when faced with a difficulty," "gets aggressive or hostile when frustrated," "doesn't achieve anything constructive when in a mopey or sulky mood," and

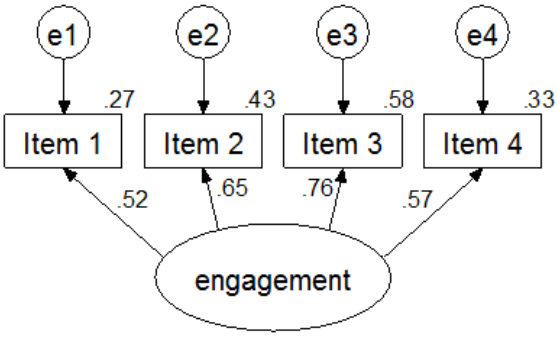
"is willing to accept needed help (reverse)."

Figure 1. Factor Loadings: Engagement

PLBS



LBS



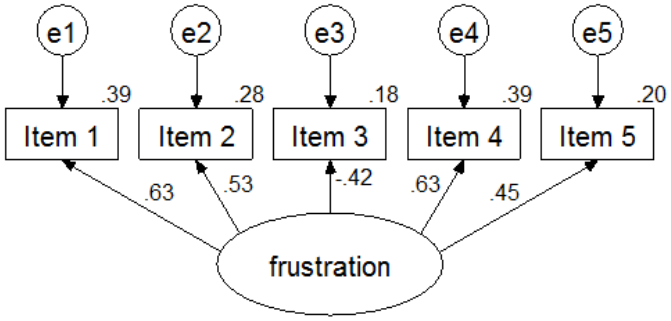
Item 1: Pays attention to what you say
Item 2: Sticks to an activity as long as can be expected for a child of this age
Item 3: Cooperates in group activities
Item 4: Shows a lively interest in the activities

A confirmatory factor analysis showed that the proposed measure for frustration did not fit the data well in the PLBS ($\chi^2(5)=23.985$, $p<.001$; CFI=.931; RMSEA=.087). However, the structure did seem to fit the data well in the LBS ($\chi^2(5)=6.22$, $p=.285$; CFI=.993; RMSEA=.022). Factor loadings for these analyses can be found in Figure 2. Reliability of this measure in the PLBS was lower than acceptable ($\alpha=.66$), while the

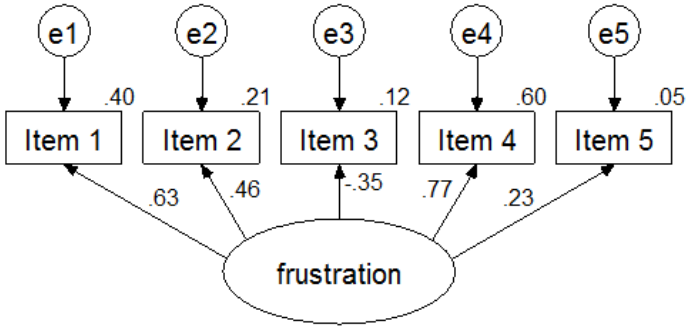
reliability of this measure in the LBS was extremely low (α=.58).

Figure 2. Factor Loadings: Frustration Model One

PLBS



LBS



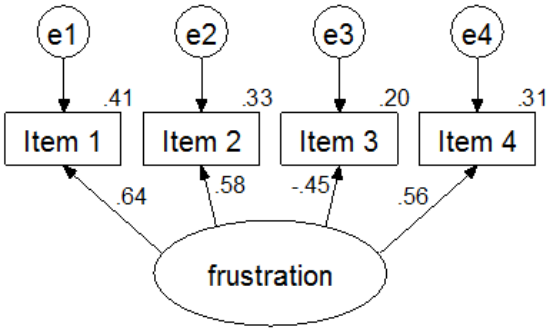
Item 1: Gets aggressive or hostile when frustrated
Item 2: Is unwilling to accept help even when an activity proves too difficult
Item 3: Is willing to be helped
Item 4: Doesn't achieve anything constructive when in a mopey or sulky mood
Item 5: Bursts into tears when faced with a difficulty

An analysis of the factor loadings showed that the item "bursts into tears when faced with a difficulty" had a particularly low factor loading (.23) in the LBS. The results of the reliability analysis also indicated that this item was not highly correlated with the rest of the items in the scale and reliability would improve if this item were deleted. From this examination, it was concluded that this item likely should be excluded

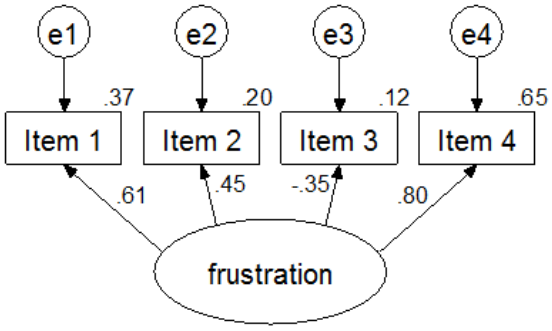
from the scale.

Figure 3. Factor Loadings: Frustration Model Two

PLBS



LBS



Item 1: Gets aggressive or hostile when frustrated
Item 2: Is unwilling to accept help even when an activity proves too difficult
Item 3: Is willing to be helped
Item 4: Doesn't achieve anything constructive when in a mopey or sulky mood

A new confirmatory factor analysis was performed on this scale including only the items "is unwilling to accept help even when an activity proves too difficult," "is willing to be helped," gets aggressive or hostile when frustrated," and "doesn't achieve anything constructive when in a mopey or sulky mood." The results of this analysis showed improved model fit (PLBS: $\chi^2(2)=6.520$, $p=.038$; CFI=.978, RMSEA=.067; LBS:

$\chi^2(2)=.071$, $p=.965$, CFI>.99, RMSEA<.001). These results showed that the fit of this measure in the PLBS was marginal, while the fit in the LBS was excellent. Factor loadings for this measure can be found in Figure 3.

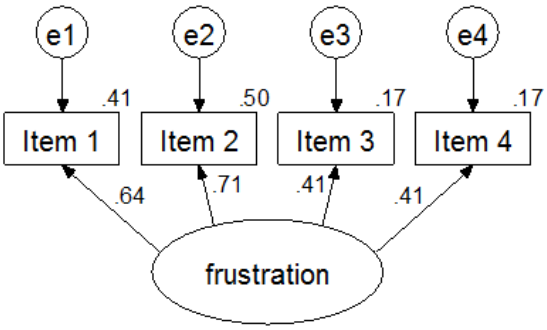
Reliability analyses were conducted indicating that reliability of this scale was lower than would be desired (PLBS: α=.64; LBS: α=.63). Despite this, this scale was included in further analyses, because the construct of emotional disaffection through frustration is theoretically interesting, and fit and reliability of this measure were close to acceptable.

Anxious disaffection. Four items were identified that represented anxiety: "is reluctant to tackle a new activity," "seems to take refuge in helplessness," "uses headaches or other pains as a means of avoiding participation," and "bursts into tears when faced with a difficulty." Confirmatory factor analysis showed that the fit of this scale was marginal in the PLBS ($\chi^2(2)=9.159$, $p=.010$; CFI=.964, RMSEA=.084) and good in the LBS ($\chi^2(2)=2.801$, $p=.246$; CFI=.993; RMSEA=.028). Factor loadings can be found in Figure 4. An examination of the factor loadings show that the factor loading for "bursts into tears when faced with a difficulty" is unacceptably low in the LBS. Reliability was low in both the PLBS (α=.605) and the LBS (α=.517).

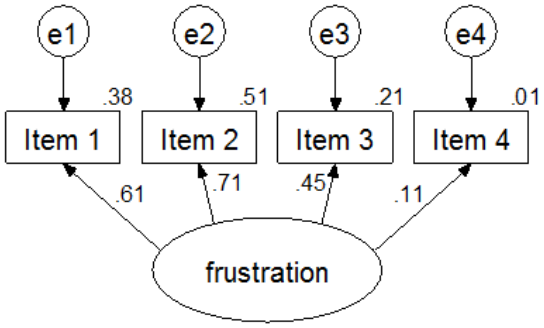
An examination of inter-item correlations and factor loadings indicated that removing the item "bursts into tears when faced with a difficulty" would improve the reliability of the LBS; however, it would reduce the reliability of the PLBS. Because fit and reliability for this scale were poor and could not be improved, it was not included in further analyses.

Figure 4. Factor Loadings: Anxious Disaffection

PLBS



LBS



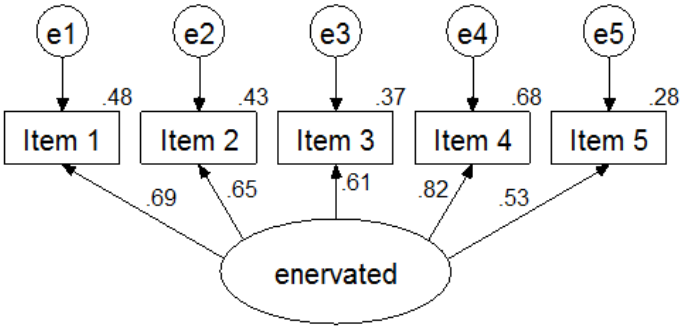
Item 1: Is reluctant to tackle a new activity
Item 2: Seems to take refuge in helplessness
Item 3: Uses headaches or other pains as a means of avoiding participation
Item 4: Bursts into tears when faced with a difficulty

Enervated disaffection. Five items were identified that might represent enervated disaffection: "says task is too hard without making much effort to attempt it," "adopts a don't care attitude to success or failure," "shows little desire to please you," "shows little determination to complete an activity, gives up easily," and "is too lacking in energy to be interested in anything or to make much effort". Confirmatory factor analysis indicated that this model did not fit the data well in the PLBS ($\chi^2(5)=32.012$,

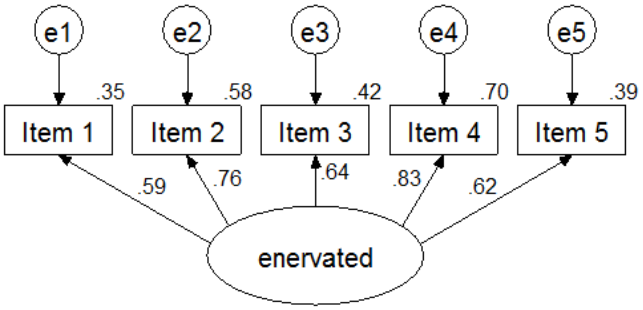
p<.001; CFI=.957; RMSEA=.103) or the LBS (χ^2(5)=43.099, p<.001; CFI=.934; RMSEA=.123). Factor loadings were all acceptable and are reported in Figure 5. Reliability was high in both the PLBS (α=.796) and the LBS (α=.811).

Figure 5. Factor Loadings: Enervated Disaffection

PLBS



LBS



Item 1: Says task is too hard without making much effort to attempt it
Item 2: Adopts a don't care attitude to success or failure
Item 3: Shows little desire to please you
Item 4: Shows little determination to complete an activity, gives up easily
Item 5: Is too lacking in energy to be interested in anything or to make much effort

Examination of inter-item correlations and factor loadings did not identify any item that clearly did not fit with this scale. Because of this, the scale was not modified but was excluded from further analyses.

Step Two: Principal Components Analysis. Because preschool and kindergarten-aged children may have patterns of disaffection that are qualitatively distinct from those seen in older children, a principal components analysis was conducted on the disaffection items that either did not theoretically align with frustrated, enervated, or anxious disaffection or that were in those a priori scales that failed to meet CFA and reliability criteria for inclusion in further analyses.

Item selection for analysis. First, all items that were included in the engagement and frustration scales were eliminated from the pool of items that represent disaffection. Furthermore, the item "bursts into tears when faced with a difficulty" was excluded because it had low correlations with most other disaffection items, with the exception of those included in the frustration scale. Eleven items that might represent disaffection were left: "says task is too hard without making much effort to attempt it"; "is reluctant to tackle a new activity"; "adopts a don't care attitude to success or failure"; "seems to take refuge in helplessness"; "shows little desire to please you"; "is distracted too easily by what is going on in the room, or seeks distractions"; "is very hesitant in talking about his or her activity"; "shows little determination to complete an activity, gives up easily"; "uses headaches or other pains as a means of avoiding participation"; "is too lacking in energy to be interested in anything or to make much effort"; and "tries hard but concentration soon fades and performance deteriorates."

Principal Components Analysis. A Principal Components Analysis was conducted with an oblique rotation on both the PLBS and the LBS for these eleven items. The results of this analysis can be found in Table 1 (PLBS) and Table 2(LBS).

An examination of the results of this analysis revealed that ten items grouped

consistently across both datasets, while one did not. Each analysis showed a two-factor data structure.

Factor One. Five of the items that consistently grouped together across both datasets were "says task is too hard without making much effort to attempt it"; "is distracted too easily by what is going on in the room, or seeks distractions"; "shows little determination to complete an activity, gives up easily"; "tries hard but concentration soon fades and performance deteriorates," and "is reluctant to tackle a new activity." In the PLBS, these items were joined by "does not care about success vs. failure."

Table 1. PLBS Principal Components Analysis

	Loadings		
Item	Factor One	Factor Two	Communality
	Factor One		
Tries but concentration fades	*.90*	-.25	.68
Distracted easily or seeks distraction	*.84*	-.13	.61
Says task is too hard without effort	*.75*	.16	.60
Gives up easily	*.69*	.30	.72
Reluctant to tackle new activity	*.56*	.23	.46
Does not care about success vs failure	*.46*	*.40*	.53
	Factor Two		
Headaches & pains to avoid learning	-.24	*.83*	.70
Too unenergetic for interest/effort	.13	*.63*	.47
Hesitant talking about new activity	.33	*.50*	.23
Takes refuge in helplessness	.36	*.48*	.49
Shows little desire to please you	.33	*.47*	.46
Does not care about success vs failure	.46	*.40*	.53

Factor Two. Five items consistently grouped together in a different factor: "adopts a don't care attitude to success or failure"; "shows little desire to please you"; "uses headaches or other pains as a means of avoiding participation"; "takes refuge in helplessness," and "is too lacking in energy to be interested in anything or to make much effort." In the LBS, these items were joined by "gives up easily." In the PLBS, these items were joined by "hesitant talking about new activity."

Table 2. LBS Principle Components Analysis

	Loadings		
Item	Factor One	Factor Two	Communality
	Factor One		
Tries but concentration fades	*.91*	-.24	.70
Distracted easily or seeks distraction	*.73*	.12	.59
Says task is too hard without effort	*.69*	.13	.57
Reluctant to tackle new activity	*.62*	.31	.66
Gives up easily	*.51*	*.49*	.72
Hesitant talking about new activity	.35	.30	.31
	Factor Two		
Shows little desire to please you	.03	*.72*	.52
Takes refuge in helplessness	*.09*	*.72*	.58
Too unenergetic for interest/effort	.07	*.71*	.54
Headaches & pains to avoid learning	-.15	*.66*	.37
Does not care about success vs failure	.28	*.64*	.62
Gives up easily	*.51*	*.49*	.72

Interpretation. The patterns revealed by this analysis showed some insight into how these two factors might be distinguishable in the data. The first set of factors seem to represent a state of disaffection that is best characterized by trying but giving up, or depersistence, while the second set of factors seem to mostly represent a state of apathy or not caring.

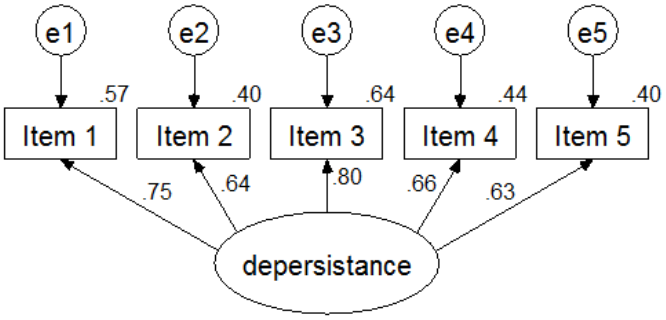
Step Three: Confirmatory Factor Analysis. Confirmatory factor analyses were conducted to assess how well these two new scales fit the data.

Depersistence. A confirmatory factor analysis was performed with the five items proposed in the depersistence scale. This analysis showed that the proposed structure did not fit the data well in either the PLBS ($\chi^2(5)=100.355$, $p<.001$, CFI=.882, RMSEA=.194) or the LBS ($\chi^2(5)=39.149$, $p<.001$, CFI=.947, RMSEA=.116). Factor loadings for this proposed scale can be found in Figure 6.

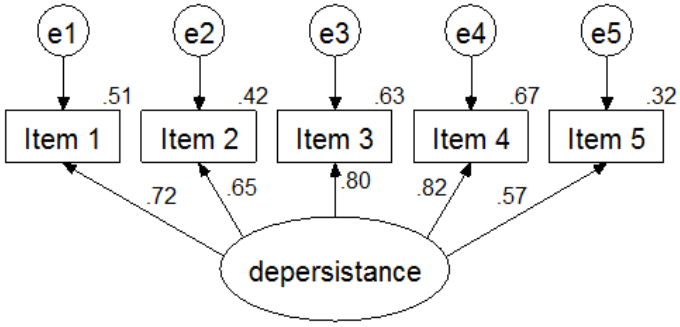
Reliability analysis was performed for this scale, indicating that reliability was high for both the PLBS (α=.821) and the LBS (α=.838).

Figure 6. Factor Loadings: Depersistance Model One

PLBS



LBS

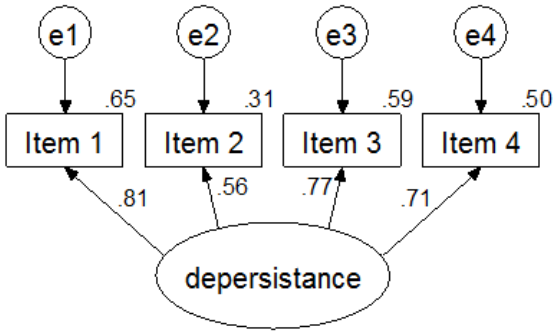


Item 1: Says task is too hard without making much effort to attempt it
Item 2: Is distracted too easily by what is going on in the room, or seeks distractions
Item 3: Shows little determination to complete an activity, gives up easily
Item 4: Is reluctant to tackle a new activity
Item 5: Tries hard but concentration soon fades and performance deteriorates

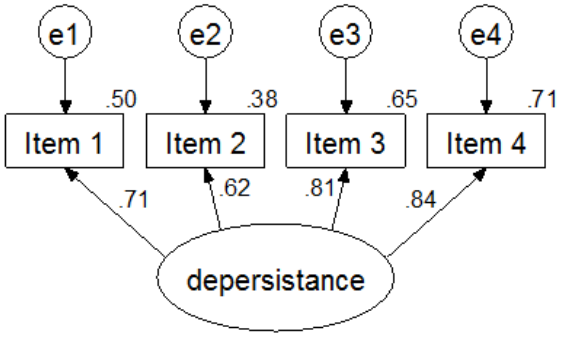
An examination of the factor loadings showed that the item "tries hard but concentration soon fades and performance deteriorates" had the lowest factor loading of all five items and the least amount of variance explained by the overall "giving up" factor across both the PLBS and the LBS. Theoretically, this item may act in a double-barreled way and also may represent issues with attention rather than emotional disaffection. Because of this, this item was excluded from the scale.

Figure 7. Factor Loadings: Depersistence Model Two

PLBS



LBS



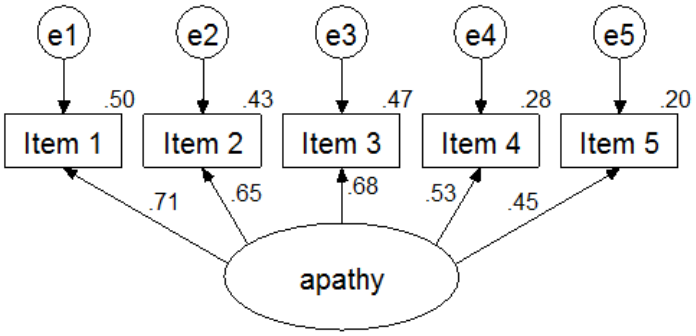
Item 1: Says task is too hard without making much effort to attempt it
Item 2: Is distracted too easily by what is going on in the room, or seeks distractions
Item 3: Shows little determination to complete an activity, gives up easily
Item 4: Is reluctant to tackle a new activity

A confirmatory factor analysis was conducted with the new proposed scale, including only the items "says task is too hard without making much effort to attempt it"; "is distracted too easily by what is going on in the room, or seeks distractions"; "shows little determination to complete an activity, gives up easily"; and "is reluctant to tackle a new activity." The fit of this new scale was improved but still marginal in the PLBS ($\chi^2(2)=12.773$, $p=.002$; CFI=.981; RMSEA=.103) and good in the LBS ($\chi^2(2)=2.961$,

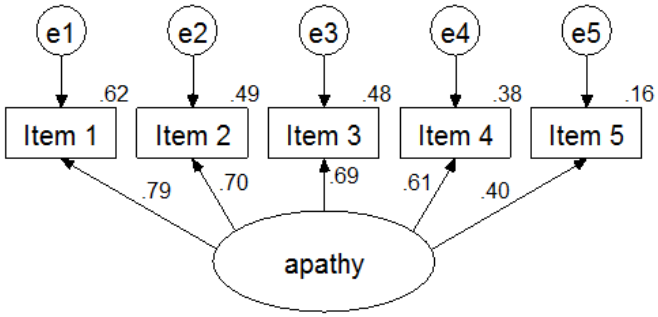
p=.228; CFI=.998; RMSEA=.031). Reliability was high for both scales (PLBS: α=.792; LBS: α=.83). Factor loadings for this scale can be found in Figure 7. Despite its marginal fit in the PLBS, this scale was included in further analyses.

Figure 8. Factor Loadings: Apathy Model One

PLBS



LBS



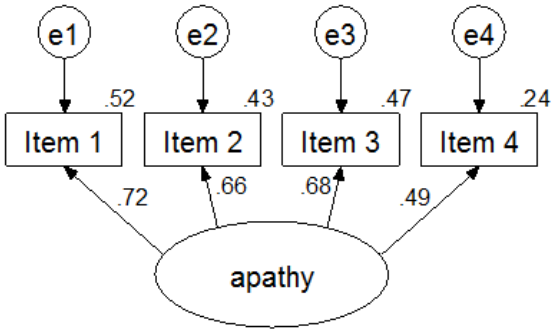
Item 1: Adopts a don't care attitude to success or failure
Item 2: Seems to take refuge in helplessness
Item 3: Shows little desire to please you
Item 4: Is too lacking in energy to be interested in anything or to make much effort
Item 5: Uses headaches or other pains as a means of avoiding participation

Apathy. A confirmatory factor analysis was performed to determine how well the proposed structure of the apathy scale fit the data. The results of this analysis indicated that fit was marginal in both the PLBS ($\chi^2(5)= 21.106$, p=.001; CFI=.963;

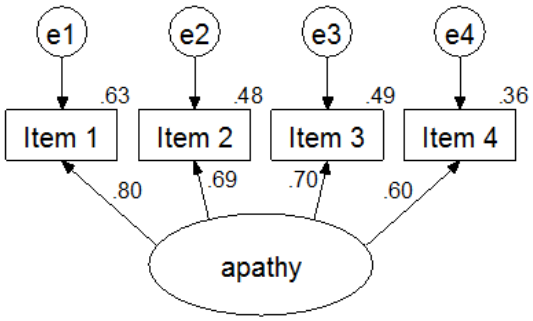
RMSEA=.080) and the LBS ($\chi^2(5)=12.793$, $p=.025$; CFI=.982; RMSEA=.056). Factor loadings of this scale can be found in Figure 8. Reliability analyses indicated that reliability for both scales was acceptable (PLBS: α=.742; LBS: α=.779).

Figure 9. Factor Loadings: Apathy Model Two

PLBS



LBS



Item 1: Adopts a don't care attitude to success or failure
Item 2: Seems to take refuge in helplessness
Item 3: Shows little desire to please you
Item 4: Is too lacking in energy to be interested in anything or to make much effort

Factor loadings and interitem correlations were examined to see whether any item seemed to not fit well with the scale. Across both the PLBS and the LBS, the item "uses headaches or other pains as a means of avoiding participation" had the lowest factor loadings and very low amounts of variance explained by the overall apathy factor. This

item also had comparatively lower inter-item correlations with the other items on this proposed scale. Theoretically, this item involves two distinct components: "uses headaches or other pains" and "avoids participation", which may explain why it was not well aligned with the other items. Because of this, the item was removed from the scale.

A confirmatory factor analysis was performed using only the items "adopts a don't care attitude to success or failure"; "seems to take refuge in helplessness"; "shows little desire to please you"; and "is too lacking in energy to be interested in anything or to make much effort." The results of this analysis indicated improved but still marginal fit in the PLBS ($\chi^2(2)=7.223$, $p=.027$; CFI=.985; RMSEA=.072), while fit was good in the LBS ($\chi^2(2)=4.520$, $p=.104$; CFI=.993; RMSEA=.050). Reliability was good for both scales (PLBS: $\alpha=.733$; LBS: $\alpha=.790$). Factor loadings for this scale can be found in Figure 9. Despite its marginal fit in the PLBS, this scale was included in further analyses.

Summary. A total of four measures were adapted from the PLBS/LBS to assess students' engagement and disaffection. The first measure, *engagement*, consists of items pertaining to students' on-task behavior, cooperation, and interest in class activities. The second measure represents *frustrated disaffection* and consists of items pertaining to hostility, moodiness, and help-seeking. The third measure, *depersistence*, refers to students who may try in school but quickly give up. This scale contains items relating to students' reluctance to attempt new tasks, lack of determination in activities, and distraction-seeking. Finally, a last measure, *apathy*, represents students who have low interest in class. This scale consists of items regarding students' attitude towards learning and lack of energy.

Chapter Five: Method

Data for this project were taken from the Read it Again impact study, which evaluated the efficacy of the Read It Again language and literacy intervention program for low-income, rural preschoolers. The original study used a cluster randomized trial, in which schools were assigned randomly into one of three treatment conditions, to assess the impacts of this program children's development of literacy and language skills.

Participants

Participants in the Read It Again impact study were 506 preschool students and their 104 teachers. These students and teachers were members of preschool classrooms that served 4-year-old students in rural counties in Ohio, Virginia, and West Virginia. All classrooms were located within the geographic and cultural region of the eastern United States called Appalachia.

To recruit participants, research staff approached district or regional program directors of preschool programs to introduce them to the study. Those who were interested in participating were then given more detail as to the demands, benefits, and requirements of the study. From the programs that agreed to participate in the study, classrooms were identified that met key eligibility requirements. To participate in the study, classrooms needed to serve at least 75% of students from low-income households, expect at least six students to enroll who would be eligible to enroll in kindergarten the following year, and needed to have high stability as measured by high attendance, low rates of student mobility, and low rates of staff turnover.

The lead teachers of the classrooms that met these criteria were approached over the phone or through email. Those who were interested in participating in the program

met with research staff to discuss the program in detail. Teachers who agreed to participate filled out consent forms. In total, 104 teachers agreed to participate in the study.

Following teacher recruitment, students were recruited to the study at the beginning of the school year. At this time, lead teachers sent students home with a description of the study, a demographic questionnaire, and a consent form. An average of 13.7 students per classroom attained parental consent. To be eligible for the study, students had to be expected to enroll in kindergarten the following year, have no known disability, and speak English as a primary language. From the pool of students that met the eligibility criteria and had parental consent, five students per classroom were randomly selected to participate in the study.

Of these students, only those students who had complete kindergarten data were included. This left 333 kindergarten students (46% male) and their 98 preschool teachers.

The children were largely white (90%), and many came from low-income backgrounds. The average family income was $28,912 (SD=$2,365), and around half of the sample came from families whose income was lower than $20,000 a year (47.2%). On average, children were 53.1 months of age upon preschool entry (SD=3.22).

Procedures

Three cohorts of students and teachers participated in this study during three consecutive school years (2008-09; 2009-10; and 2010-11). These students were followed from the fall of their final preschool year to fall of their kindergarten year. Preschool classroom quality was assessed three times during the year, in fall, winter, and spring. Student motivational outcomes were measured during the winter of their final

preschool year and again during the fall of kindergarten.

Measures

Engagement and disaffection. Engagement and disaffection were measured using and adaptation of the Learning Behaviors Scale/Preschool Learning Behaviors Scale. The LBS/PLBS is a 29-item teacher-report measure of children's observable classroom learning behaviors. In this scale, teachers responded to a series of questions about children's classroom behavior. For each item, teachers reported how often students display the given behavior on a 3 point Likert-type scale (2 = Most often applies, 1 = Sometimes applies, 0 = Does not apply). Students' preschool teachers completed the PLBS during the winter of the preschool year. Students' Kindergarten teachers completed the LBS during the fall of the Kindergarten year.

Students' *motivation* was assessed with the competence motivation scale of the LBS/PLBS, which represents the degree to which children approach learning activities and try new tasks in the face of challenge. Sample items for this scale include "Is reluctant to tackle a new activity," and "Says task is too hard without making much effort to attempt it." Previous studies have shown that internal consistency for this measure is high (PLBS: α=.85, McDermott, Leigh, & Perry, 2002; LBS: α=.86, Worrell, Vandiver, & Watkins, 2001).

Students' *engagement*, *frustration*, *depersistence*, and *apathy* were assessed using four-item scales, as described in Chapter Four. The items and reliabilities for each of these scales is presented in Table 3.

Need support. The level of relatedness, autonomy, and competence support provided in the preschool classroom context were assessed using dimensions of the

CLASS. A content analysis of the CLASS (as described in Chapter Four) informed the development of a measure of a need supportive classroom. Procedures for conducting the observations were as follows. Observers entered classrooms and rated all dimensions on a 1-7 Likert-type scale, in which 1-2 represents low levels, 3-5 represents moderate levels, and 6-7 represents high levels of the given classroom behavior. The CLASS was assessed at three points during the pre-Kindergarten year, during the Fall, Winter, and Spring. For the purposes of this study, scores were averaged across these three time points to give a full representation of the overall level of contextual need support over the course of the year.

Scores from the dimensions of positive climate (warmth), regard for student perspectives (autonomy support), and behavior management (structure) were averaged together to create an overall measure of need support. Reliability analysis indicated that this measure had adequate internal consistency (alpha=.72).

Child characteristics. Parents completed a brief demographic survey at the beginning of students' pre-Kindergarten year in which they reported on child and family characteristics. Students' *age* was reported in months (M=52.9, SD=3.18). *Gender* was reported (48% of participants were male). Finally, parents reported on *maternal education* in years of schooling.

Table 3. Items and Reliability for Engagement and Disaffection Scales

Items	PLBS α	LBS α
Engagement	.77	.72
1. Pays attention to what you say		
2. Sticks to an activity for as long as can be expected		
3. Cooperates in group activities		
4. Shows a lively interest in activities		
Frustration	.64	.63
1. Is unwilling to accept help even when an activity proves too difficult		
2. Is willing to be helped		
3. Gets aggressive or hostile when frustrated		
4. Doesn't achieve anything constructive when in a mopey or sulky mood		
Depersistence	.79	.83
1. Says task is too hard without making much effort to attempt it		
2. Is distracted too easily by what is going on in the room, or seeks distractions		
3. Shows little determination to complete an activity, gives up easily		
4. Is reluctant to tackle a new activity		
Apathy	.73	.79
1. Adopts a don't care attitude to success or failure		
2. Seems to take refuge in helplessness		
3. Shows little desire to please you		
4. Is too lacking in energy to be interested in anything or to make much effort.		

Chapter Six: Results

Preliminary Analyses

All data analysis was performed using SPSS statistical analysis software.

One hundred seventy-three students were missing teacher reports at kindergarten. Logistic regression indicated that this missingness met MAR (missing at random) assumptions, since whether or not a child had a missing LBS at kindergarten was not dependent on any other variable in the dataset, including preschool score on the PLBS. However, because this represented 34% of the dataset, listwise deletion was used for these students due to concerns about imputing such a large number of datapoints. No other variable was missing such a substantive number of datapoints, and so all of these missing data were imputed using Full Information Maximum Likelihood estimation.

Additionally, because data were obtained from a study that included two intervention conditions, ANOVAs were conducted to determine whether any child or classroom characteristics or outcomes differed across study condition. The results indicated that there was no difference between children and classrooms across conditions for any variable included in the analyses, including child characteristics, need support, and preschool and kindergarten motivation, engagement, and disaffection. Because of this, classrooms from different conditions were collapsed and analyzed together. A summary of all research hypotheses and results can be found in Appendix A.

Descriptive Analyses

Mean levels were computed for all variables of interest. Descriptive statistics for the child level variables can be found in Table 4. These showed that in general, children were highly engaged and had high competence motivation both in preschool and

kindergarten. Further examination of these variables indicated that there was a ceiling effect for engagement in that 43.3% of students were rated at the top anchor of the engagement scale in preschool; however, by kindergarten, this had dropped to 27.7%. A substantive proportion of children were also rated above a 1.75 on competence motivation in both preschool (38.1%) and in kindergarten (39.1%).

Table 4. Child Characteristics

	N	Mean	SD
Demographic			
Mother's Education (years)	308	12.94	1.61
Family Income ($)	301	28,912	2,365
Age (Months)	333	53.06	3.22
Competence Motivation			
Preschool	320	1.62	.336
Kindergarten	330	1.61	.338
Difference Score	317	.004	.391
Engagement			
Preschool	321	1.64	.41
Kindergarten	332	1.46	.47
Difference Score	320	-.18	.50
Frustration			
Preschool	321	.32	.38
Kindergarten	333	.25	.33
Difference Score	321	-.06	.55
Depersistence			
Preschool	321	.56	.50
Kindergarten	333	.51	.53
Difference Score	321	-.07	.43
Apathy			
Preschool	320	.29	.38
Kindergarten	332	.24	.39
Difference Score	319	-.05	.44

Similarly, levels of all three types of disaffection were fairly low in both preschool and kindergarten. In preschool, 28.3% of children were rated at the bottom

anchor of the depersistence scale, with 39.9% at the lowest anchor of frustration and 50.6% at the lowest anchor of apathy. There was slightly more of a floor effect at kindergarten, with 33.9% of students rated at the bottom anchor of depersistence, 50.5% at the bottom anchor of frustration, and 60.2% at the bottom anchor of apathy.

In addition to preschool and kindergarten scores on motivation and engagement variables, difference scores were computed to represent the degree to which each individual child increased or decreased in motivation, engagement and disaffection across the kindergarten transition. To do this, each individual child's preschool score was subtracted from his or her kindergarten score for each outcome variable. In general, these scores were slightly negative for all engagement and disaffection variables, and there were no floor or ceiling effects found. The average difference score for competence motivation was very close to zero.

In general, classroom levels of need support were fairly high (M=5.05); however, there were no ceiling effects in this variable. The standard deviation for this variable was fairly low (SD=.50), however, indicating that there was not much variance in classroom levels of need support. Further descriptive analysis of this variable showed that the scale had a range of 3.87-6.56: in fact, only one classroom had a need support score under 4, which was the midpoint of the need support scale.

In addition to means, correlations were computed between child variables. These correlations are reported in Table 5. These correlations indicate that levels of motivation, engagement and disaffection remained moderately linked between preschool and kindergarten (motivation: r=.325, p<.001; engagement: r=.370, p<.001; depersistence: r=.412, p<.001; frustration: r=.269, p<.001; apathy: r=.338, p<.001). Motivation,

engagement and disaffection outcomes were also highly interrelated. These correlations were extracted from the larger table and can be found in Table 6.

Table 5. Correlations between Child Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Gender	-														
2. Maternal Education	-.028	-													
3. Age	.046	-.043	-												
4. Preschool Engagement	-.182**	.230**	.010	-											
5. KG Engagement	-.132*	.273**	.003	.370**	-										
6. Engagement Diff.	.043	.064	-.016	-.479**	.638**	-									
7. Preschool Depersist.	.228**	-.220**	.043	-.640**	-.407**	.147**	-								
8. KG Depersistence	.172**	-.221**	-.073	-.424**	-.669**	-.268**	.412**	-							
9. Depersistence Diff.	-.065	-.004	-.092	.176**	-.256**	-.385**	-.512**	.572**	-						
10. Preschool Frustration	.100	-.158**	.134*	-.496**	-.246**	.179**	.472**	.210**	-.227**	-					
11. KG Frustration	.081	-.089	.050	-.270**	-.462**	-.205**	.274**	.434**	.164**	.269**	-				
12. Frustration Difference	-.030	.064	-.066	.233**	-.127*	-.314**	-.208**	.147**	.325**	-.680**	.524**	-			
13. Preschool Apathy	.159**	-.187**	.004	-.683**	-.271**	.309**	.710**	.370**	-.290**	.523**	.243**	-.277**	-		
14. KG Apathy	.102	-.240**	-.055	-.392**	-.541**	-.182**	.346**	.667**	.310**	.160**	.425**	.181**	.338**	-	
15. Apathy Difference	-.054	-.054	-.035	.243**	-.237**	-.424**	-.308**	.257**	.520**	-.308**	.167**	.398**	-.564**	.586**	-

Table 6. Intercorrelations between Engagement Variables

	Engagement	Depersistence	Frustration	Apathy	Comp. Mot.
Engagement	.370**	-.669**	-.462**	-.541**	.669**
Depersistence	-.640**	.412**	.434**	.667**	-.871**
Frustration	-.496**	.472**	.269**	.425**	-.469**
Apathy	-.683**	.710**	.523**	.338**	-.750**
Comp. Mot.	.644**	-.836**	-.566**	-.780**	.325**

Note: correlations in the top half of the graph represent kindergarten; those on the bottom half represent preschool. The center line represents the correlation between preschool and kindergarten outcomes.

These analyses also show that male gender was associated with lower engagement in both preschool and kindergarten (preschool: r=-.182, p=.001; kindergarten: r=-.132, p=.016), while simultaneous being associated with higher depersistence in preschool and kindergarten (preschool: r=.228, p<.001; kindergarten: r=.172, p=.002) and higher levels of apathy in preschool (r=.159; p=.004). Male gender was also correlated with lower competence motivation in preschool (r=-.186, p=.001).

Maternal education also showed expected patterns. High levels of maternal education were associated with higher engagement at both preschool and kindergarten (preschool: r=.230, p<.001; kindergarten: r=.273, p<.001), lower levels of depersistence at both timepoints (preschool: r=-.220, p<.001; kindergarten: r=-.221, p<.001), lower levels of frustration in preschool (r=-.158, p=.006), and lower levels of apathy in both preschool and kindergarten (preschool: r=-.187, p=.001; kindergarten: r=-.240, p<.001). Maternal education was associated with higher competence motivation in both preschool and kindergarten (preschool: r=.170, p=.003; kindergarten: r=.232, p<.001).

Finally, while age was mostly uncorrelated with children's engagement, it was significantly correlated with preschool levels of frustration in that older students tended to be more highly frustrated (r=.134, p=.017). Additionally, it was associated with

competence motivation difference score, indicating that older students tended to have higher gain scores in competence motivation between preschool and kindergarten (r=.121, p=.032).

Preliminary Hierarchical Linear Modeling Steps

Because participants were nested within classrooms, and both individual and setting-level variables were evaluated, hierarchical linear modeling was used to analyze some research questions. Hierarchical linear modeling is a statistical technique that accounts for group dependency in data. It allows for the inclusion of both individual-level (Level One) variables and setting-level (Level Two) variables in the same model. Because the outcome of primary interest to this study is students' changes in competence motivation, engagement, and disaffection, preliminary analyses were conducted on students' difference scores between preschool and kindergarten.

These preliminary tests were run to determine how much variance in difference scores was predicted by preschool class membership. First, one-way ANOVAs were run to determine whether there were significant differences across groups in motivation and engagement outcomes. Next, intercepts-only models were run. From these, intraclass correlation coefficients (ICCs) were computed, which show how much variance in outcome is due to group membership. In general, ICCs of greater than .1 indicate that there is enough group dependency in the data to make multi-level modeling necessary.

Competence motivation. An ANOVA was conducted to determine whether there were significant differences in competence motivation difference scores across children from different preschool classrooms. This revealed that there were significant differences in students' competence motivation difference scores across classrooms (F(95)=1.601,

p=.002). An intercepts-only model was run, which showed that the ICC for difference in engagement was .227. This indicates that 22.7% of variance in children's competence motivation difference scores was attributable to their preschool classroom membership, representing a substantive enough amount of group dependence to require hierarchical linear modeling as an analysis strategy.

Engagement. An ANOVA was run to determine whether there were significant differences in engagement difference scores across children from different preschool classrooms. This revealed that there were significant differences in students' engagement difference scores across classrooms ($F(95)=1.648$, $p=.001$). An intercepts-only model was run, which showed that the ICC for difference in engagement was .171. This indicates that 17.1% of variance in children's engagement difference scores was attributable to their preschool classroom membership, representing a substantive enough amount of group dependence to require hierarchical linear modeling as an analysis strategy.

Depersistence. An ANOVA was run to determine whether there were significant differences in depersistence difference scores across children from different preschool classrooms. This ANOVA revealed that there were significant differences in students' depersistence difference scores across classrooms ($F(95)=1.646$, $p=.001$). An intercepts-only model was run, which showed that the ICC for difference in giving up was .145. This indicates that 14.5% of variance in children's depersistence difference scores was attributable to their preschool classroom membership, representing a substantive enough amount of group dependence to require hierarchical linear modeling as an analysis strategy.

Frustration. An ANOVA was run to determine whether there were significant differences in frustration difference scores across children from different preschool classrooms. This revealed that there were significant differences in students' frustration difference scores across classrooms ($F(95)=1.590$, $p=.003$). An intercepts-only model was run, which showed that the ICC for difference in frustration was .124. This indicates that 12.4% of variance in children's frustration difference scores was attributable to their preschool classroom membership, representing a substantive enough amount of group dependence to require hierarchical linear modeling as an analysis strategy.

Apathy. An ANOVA was run to determine whether there were significant differences in apathy difference scores across children from different preschool classrooms. This revealed that there were significant differences in students' apathy difference scores across classrooms ($F(95)=1.623$, $p=.002$). An intercepts-only model was run, which showed that the ICC for difference in apathy was .142. This indicates that 14.2% of variance in children's apathy difference scores was attributable to their preschool classroom membership, representing a substantive enough amount of group dependence to require hierarchical linear modeling as an analysis strategy.

Research question one: How do motivation, engagement, and disaffection change from preschool to Kindergarten?

It was expected that competence motivation and engagement would decrease between preschool and kindergarten, while disaffection would increase.

This question was analyzed in three different ways. First, students' difference scores were examined to look at students' patterns of change descriptively. The number and percentage of students that decreased, exactly maintained, or increased their

competence motivation, engagement and disaffection are reported in Table 7. Next, paired sample t-tests were performed to determine whether there was a significant difference between students' competence motivation, engagement and disaffection during preschool and during kindergarten. Finally, because it was expected that students' changes in competence motivation, engagement and disaffection between preschool and kindergarten are linked to their preschool experiences, it was determined that this individual-level analysis may not be sufficient to reveal true differences. To account for the effects of this nesting, intercepts-only models were run using students' difference scores as the outcome variables. The intercept of this model was examined: a significant, negative intercept indicated that, controlling for preschool classroom membership, students tended to lose engagement or disaffection across the kindergarten transition.

Table 7. Difference Score Frequencies

	Total N	% Decrease (N)	%Maintain (N)	%Increase (N)
Competence Mot.	317	43.5% (138)	9.5% (30)	47.0% (149)
Engagement	320	50.6% (162)	25.3% (81)	12.5% (77)
Frustration	321	38.9% (125)	36.1% (116)	12.8% (80)
Depersistence	321	43.3% (139)	24.9% (80)	20.2% (102)
Apathy	319	33.5% (107)	43.9% (140)	12.5% (72)

Competence Motivation.

Difference scores. As shown in Table 7, similar numbers of students increased (47.0%) and decreased (43.5%) in competence motivation between preschool and kindergarten, while approximately 10% maintained a steady level of competence motivation across the transition.

Paired sample t-test. A paired-sample t-test between students' preschool and kindergarten competence motivation showed that there was no significant difference

between competence motivation during preschool (M=1.62, SD=.336) and kindergarten (M=1.61, SD=.338), t(316)=-.180, p=.858.

Intercepts-only model. An intercepts-only model was conducted to predict students' competence motivation difference score controlling for preschool class membership. The intercept of this model was slightly less than zero but was not statistically significant (b=-.001, p=.987), indicating that, controlling for class membership, there was no significant difference in competence motivation across the kindergarten transition.

Engagement.

Difference scores. As shown in Table 7, approximately half of the students decreased in engagement between preschool and kindergarten, while approximately a quarter maintained a steady level of engagement. Only 12.5% of students increased in engagement across the kindergarten transition.

Paired sample t-test. A paired sample t-test between students' preschool and kindergarten engagement showed that engagement decreased between preschool (M=1.64, SD=.41) and kindergarten (M=1.46, SD=.47), t(319)=6.481, p<.001.

Intercepts-only model. An intercepts-only model was run with students' engagement difference score as a level-one outcome. The intercept of this model was significantly negative (b=-.180, p<.001), indicating that, controlling for class membership, students decreased in engagement.

Depersistence.

Difference scores. As shown in Table 7, 43.3% of students decreased in depersistence across the kindergarten transition. About a quarter of students maintained

the same level of depersistence, and 20.2% increased across the transition.

Paired sample t-test. A paired sample t-test between students' preschool and kindergarten depersistence showed that there was not a significant difference between depersistence in preschool (M=.56, SD=.50) and kindergarten (M=.50, SD=.53), t(320)=1.803, p=.072.

Intercepts-only model. An intercepts-only model was run with students' depersistence difference score as a level-one outcome. The intercept of this model was -.059 indicating that, controlling for class membership, students slightly decreased in depersistence; however, this difference was not significant (p=.111).

Frustration.

Difference scores. As shown in Table 7, a similar number of students decreased and maintained frustration across the kindergarten transition (decreased: 38.9%; maintained: 36.1%). Only 12.8% of students increased in frustration between preschool and kindergarten.

Paired sample t-test. A paired sample t-test between students' preschool and kindergarten frustration showed that frustration decreased between preschool (M=.33, SD=.38) and kindergarten (M=.26, SD=.33), t(320)=2.883, p=.004.

Intercepts-only model. An intercepts-only model was run with students' frustration difference score as a level-one outcome. The intercept of this model was significantly negative (b=.073, p=.010), indicating that, controlling for class membership, students decreased in frustration.

Apathy.

Difference scores. As shown in Table 7, the greatest number of students

maintained the same level of apathy between preschool and kindergarten (43.9%). The next most common pattern of change was a decrease, with 33.5% of students decreasing in reported apathy across the transition. Finally, only 12.5% of students increased in apathy between preschool and kindergarten.

Paired sample t-test. A paired sample t-test between students' preschool and kindergarten apathy showed that apathy decreased between preschool (*M*=.28, *SD*=.38) and kindergarten (*M*=.24, *SD*=.38); however, this difference only approached significance ($t(318)=1.958$, $p=.051$).

Intercepts-only model. An intercepts-only model was run with students' apathy difference score as a level-one outcome. The intercept of this model was -.054, indicating that, controlling for class membership, students slightly decreased in anxiety/boredom; however, this difference only approached significance ($p=.063$).

Research Question Two: Does classroom need support in preschool predict students' concurrent levels of motivation, engagement, and disaffection?

It was expected that classroom level of need support would positively predict students' engagement in preschool and would negatively predict students' disaffection at this timepoint. To evaluate this hypothesis, hierarchical linear models were run, using preschool engagement and disaffection as level-one outcome variables and classroom need support as a level-two predictor. All continuous predictor variables were centered in this analysis for ease of interpretation.

Competence motivation. Preliminary hierarchichal analysis showed that there were significant differences in children's levels of competence motivation across classrooms ($F(95)=1.469$, $p=.011$), with ICC=.192. Because this ICC indicated that the

amount of variance in preschool competence motivation was substantively dependent on class membership, a hierarchical linear model was used to determine whether preschool need support predicted preschool competence motivation. The results of this analysis indicated that controlling for child characteristics and classroom membership, preschool classroom need support did not predict concurrent competence motivation (*b*=.049, *p*=.419).

Engagement. Preliminary hierarchical analysis showed that there were significant differences in children's levels of engagement across classrooms (*F*(95)=1.335, *p*=.043), with ICC=.088. Because this ICC indicated that the amount of variance in preschool engagement was not substantively dependent on class membership, a simple linear regression model was used to determine whether preschool need support predicted preschool engagement. This model indicated that controlling for child characteristics, there was not a significant association between need support and engagement at this timepoint (*b*=.102, *p*=.098).

Depersistence. Preliminary hierarchical analysis showed that there were significant differences in children's levels of depersistence across classrooms (*F*(95)=1.342, *p*=.040), with ICC=.040. Because this ICC indicated that the amount of variance in preschool depersistence was not substantively dependent on class membership, a simple linear regression model was used to determine whether preschool need support predicted preschool depersistence. This model indicated that, controlling for child characteristics, there was not a significant association between need support and depersistence at this timepoint (*b*=-.025, *p*=.679).

Frustration. Preliminary hierarchical analysis showed that there were significant

differences in children's levels of frustration across classrooms ($F(95)=1.850$, $p<.001$), with ICC=.200. Because this ICC indicated that the amount of variance in preschool frustration was substantively dependent on class membership, a hierarchical linear model was run to determine whether preschool need support predicted preschool frustration. This model indicated that controlling for class membership and child characteristics, there was not a significant association between need support and frustration at this timepoint ($b= -.080$, $p=.247$).

Apathy. Preliminary hierarchical analysis showed that there were significant differences in children's levels of apathy across classrooms ($F(95)=1.847$, $p<.001$), with ICC=.183. Because this ICC indicated that the amount of variance in preschool apathy was substantively dependent on class membership, a hierarchical linear model was run to determine whether preschool need support predicted preschool apathy. This model indicated that controlling for class membership and child characteristics, preschool need support was not significantly associated with apathy at this timepoint ($b=-.084$, $p=.227$).

Research Question Three: Are changes in motivation, engagement, and disaffection across the kindergarten transition more pronounced for children who experience greater levels of social and economic risk?

It was expected that students who are younger, are male, and whose mothers have lower levels of education would experience greater motivational decreases between preschool and kindergarten than their peers. Hierarchical linear modeling was used to test this hypothesis, to account for the fact that participants were nested in preschool classrooms. A series of models were tested, to determine the relationships between child characteristics (age, gender, and maternal education) and each outcome variable

(competence motivation, engagement, frustration, depersistence, or apathy). These models included child characteristics as level-one predictors, with motivation, engagement or disaffection as a level-one outcome. All continuous predictor variables were centered in this analysis for ease of interpretation.

Competence motivation. The results for this analysis can be found in Table 8, Model One (p 92). When controlling for preschool competence motivation (b=.318, p<.001) and all other child characteristics, maternal education and student age significantly positively predicted kindergarten competence motivation (maternal education: b=.035, p=.010; age: b=.012, p=.045). Gender did not uniquely predict kindergarten competence motivation (b=-.023, p=573).

Engagement. The results for this analysis can be found in Table 9, Model One (p 93). When controlling for preschool engagement (b=.359, p<.001) and all other child characteristics, maternal education significantly positively predicted kindergarten engagement (b= .061, p<.001). Neither student age (b= .007, p=.419) nor gender (b=-.077, p=.167) were significant predictors of kindergarten engagement, when controlling for preschool engagement and all other child characteristics.

Depersistence. The results for this analysis can be found in Table 10, Model One (p 93). When controlling for preschool depersistence (b=.353, p<.001) and all other child characteristics, maternal education significantly negatively predicted kindergarten depersistence (b= -.044, p=.023). Neither student age (b= -.015, p=.105) nor gender (b=-.074, p=.231) were significant predictors of kindergarten depersistence, when controlling for preschool depersistence and all other child characteristics.

Frustration. The results for this analysis can be found in Table 11, Model One (p 94). When controlling for preschool frustration (*b*=.241, *p*<.001) and all other child characteristics, no child characteristic significantly predicted kindergarten frustration (gender: *b*=.023, *p*=.574; maternal education: *b*=-.009, *p*=.469; age: *b*=.005, *p*=.474).

Apathy. The results for this analysis can be found in Table 12, Model One (p 94). When controlling for preschool apathy (*b*=.362, *p*<.001), maternal education significantly negatively predicted kindergarten apathy (*b*= -.040, *p*=.007). Neither student age (*b*= -.006, *p*=.398) nor gender (*b*= .042, *p*=.372) were significant predictors of kindergarten apathy, when controlling for preschool apathy.

Table 8. Competence Motivation: Multi-Step Model

Model predictor	Model 1	Model 2	Model 3
Fixed Effects			
Level 1 variables			
Preschool Comp. Mot.	.318***	.317***	.313***
Gender	-.023	-.021	-.022
Age	.012*	.012*	.012
Maternal Education	.035**	.035***	.037***
Level 2 variable			
Need Support		.040	.045
Cross-level Interactions			
Gender x Need Support			.234*
Age x Need Support			-.010
Maternal Ed x Need Support			-.020
Random Effects			
Intercept	.012	.013	.010
Residual	.084***	.084***	.085***

Table 9. Engagement: Multi-Step Model

Model predictor	Model 1	Model 2	Model 3
Fixed Effects			
Level 1 variables			
Preschool engagement	.359***	.354***	.365***
Gender	-.077	-.075	-.071
Age	.007	.007	.006
Maternal Ed.	.061***	.062***	.061***
Level 2 variable			
Need Support		.054	.060
Cross-level Interactions			
Gender x Need Support			.115
Age x Need Support			-.026
Maternal Ed x Need Support			-.046
Random Effects			
Intercept	.020	.013	.012
Residual	.158***	.168***	.166***

Table 10. Depersistence: Multi-Step Model

Model predictor	Model 1	Model 2	Model 3
Fixed Effects			
Level 1 variables			
Preschool depersist.	.353***	.350***	.348***
Gender	.074	.071	.074
Age	-.015	-.015	-.014
Maternal Ed.	-.044*	-.045*	-.046*
Level 2 variable			
Need Support		-.071	-.085
Cross-level Interactions			
Gender x Need Support			-.388**
Age x Need Support			-.007
Maternal Ed x Need Support			.026
Random Effects			
Intercept	.016	.015	.010
Residual	.205***	.204***	.201***

Table 11. Frustration: Multi-Step Model

Model predictor	Model 1	Model 2	Model 3
Fixed Effects			
Level 1 variables			
Preschool frustration	.241***	.232***	.231***
Gender	.023	.019	.018
Age	.005	.005	.006
Maternal Ed.	-.009	-.010	-.014
Level 2 variable			
Need Support		-.102*	-.107*
Cross-level Interactions			
Gender x Need Support			-.061
Age x Need Support			-.021
Maternal Ed x Need Support			.039
Random Effects			
Intercept	.006	.005	.005
Residual	.092***	.091***	.090***

Table 12. Apathy: Multi-Step Model

Model predictor	Model 1	Model 2	Model 3
Fixed Effects			
Level 1 variables			
Preschool anxiety	.363***	.359***	.361***
Gender	.042	.041	.040
Age	-.006	-.006	-.005
Maternal Ed.	-.040**	-.041**	-.042**
Level 2 variable			
Need Support		-.040	-.048
Cross-level Interactions			
Gender x Need Support			-.180+
Age x Need Support			.005
Maternal Ed x Need Support			.039
Random Effects			
Intercept	.008	.008	.007
Residual	.126***	.126***	.124***

Research Question Four: Are the levels of relatedness, autonomy, and competence support in preschool classrooms positively associated with children's development of motivation and engagement across the kindergarten transition?

It was predicted that high preschool need support would buffer the loss of engagement across the kindergarten transition. Hierarchical linear modeling was used to assess this hypothesis. To do this, a series of models were run, in which the level-two variable of preschool need support was added to the models run to explore research question three, which predicted engagement and disaffection outcomes using level-one child characteristics. All continuous predictor variables were centered in this analysis for ease of interpretation.

The results of these analyses can be found in Tables 9-13 (competence motivation: Table 8, Model 2, p 92; engagement: Table 9, Model 2, p 93; depersistence: Table 10, Model 2, p 93; frustration: Table 11, p 94, Model 2; apathy: Table 12, Model 2, p 94). Controlling for child characteristics and preschool frustration, preschool need support significantly negatively predicted kindergarten frustration (b= -.102, p=.045). Need support was not a unique predictor of any other kindergarten outcome, however (competence motivation: b= .040, p=.457; engagement: b= .054, p=.433; depersistence: b= -.071, p=.349; apathy: b= -.040, p=.499).

Research Question Five: Does motivational support during preschool buffer losses in motivation and engagement and reduce gains in disaffection across the kindergarten transition for children with specific demographic characteristics?

It was predicted that high levels of need support would be more beneficial for students from high-risk backgrounds. This hypothesis was, again, assessed using

hierarchical linear modeling. In these models, cross-level interaction terms (gender x need support, age x need support, and maternal education x need support) were added to the previous models. All continuous predictor variables were centered in these analyses.

Competence motivation. The results for this analysis can be found in Table 8, Model Three (p 92). Controlling for child characteristics, need support, and students' preschool competence motivation, a significant interaction was found between male gender and need support, *b*= .234, *p*=.012. This interaction shows that the boys in highly supportive classrooms tended to have more positive trajectories of change while their female peers had slightly negative trajectories of change. This is illustrated in the following equations, which demonstrate the relationship between need support and kindergarten competence motivation for boys and girls respectively, controlling for other child characteristics. A graphical representation of this relationship at average preschool competence motivation can be found in Figure 10.

Boys (at average maternal education and age):

Kindergarten comp. mot. = (1.102+.313(pre-K comp. mot.)) + .173(need support)

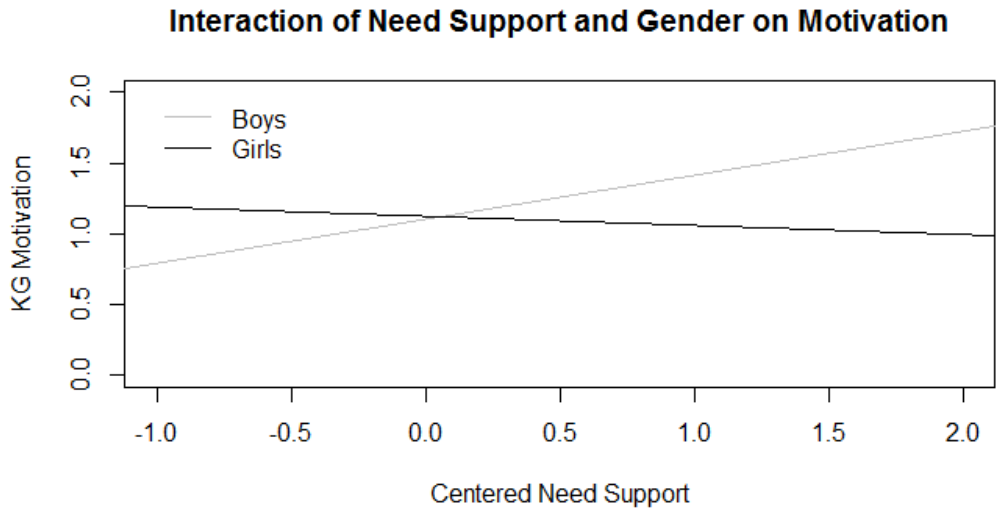
Girls (at average pre-K competence motivation, maternal education and age):

Kindergarten comp. mot. = (1.122+.313(pre-K comp. mot.)) - .064(need support)

Controlling for child characteristics, need support, and students' preschool behavioral disaffection, no other cross-level interactions between child characteristics and need support were found (age x need support: *b*=-.010, *p*=.528; maternal education x need support: *b*=-.020, *p*=.544).

Engagement. The results for this analysis can be found in Table 9, Model Three, p 93. Controlling for child characteristics, need support, and students' preschool engagement, no cross-level interactions between child characteristics and need support were found (gender x need support: *b*= .116, *p*=.364; age x need support: *b*= -.026, *p*=.221; maternal education x need support: *b*= -.046, *p*=.274).

Figure 10. Need Support x Gender Interaction on Kindergarten Competence Motivation



Depersistence. The results for this analysis can be found in Table 10, Model Three (p 93). Controlling for child characteristics, need support, and students' preschool depersistence, a significant interaction was found between male gender and need support, *b*= -.388, *p*=.006. This interaction shows that the boys in highly supportive classrooms had more pronounced decreases in depersistence across the kindergarten transition than girls whose preschool classrooms were highly supportive. This is illustrated in the following equations, which demonstrate the relationship between need support and kindergarten depersistence for boys and girls respectively, controlling for other child characteristics. A graphical representation of this interaction at mean preschool

depersistence can be found in Figure 11.

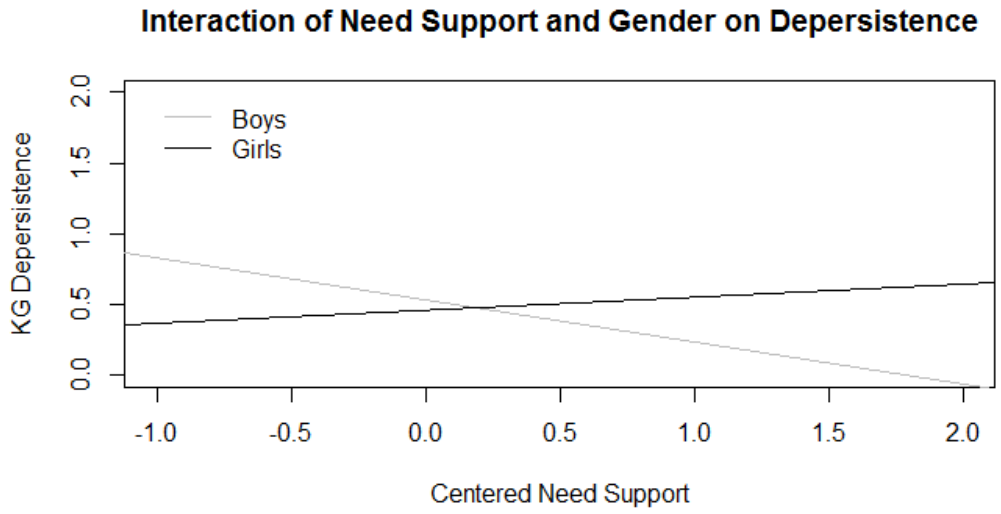
Boys (at average maternal education and age):

Kindergarten depersistence = (.5323+.348(pre-K depersistence)) - .294(need support)

Girls (at average maternal education and age):

Kindergarten depersistence = (.4593+.348(pre-K depersistence)) + .092(need support)

Figure 11. Need Support x Gender Interaction on Kindergarten Depersistence



Controlling for child characteristics, need support, and students' preschool depersistence, no other cross-level interactions between child characteristics and need support were found (age x need support: b= -.007, p=.759; maternal education x need support: b=.026, p=.575).

Frustration. The results for this analysis can be found in Table 11, Model Three

(p 94). Controlling for child characteristics, need support, and students' preschool frustration, no cross-level interactions between child characteristics and need support were found (gender x need support: *b*= -.061, *p*=.513; age x need support: *b*= -.021, *p*=.169; maternal education x need support: *b*= .039, *p*=.209).

Apathy. The results for this analysis can be found in Table 12, Model Three (p 94). Controlling for child characteristics, need support, and students' preschool apathy, no cross-level interactions between child characteristics and need support were found for age (*b*= .005, *p*=.802) or maternal education (*b*= .039, *p*=.287). While an interaction between gender and need support was not significant (*b*= -.180, *p*=.091), this interaction did approach significance. This interaction, though non-significant, showed that the boys in highly supportive classrooms had more pronounced decreases in apathy across the kindergarten transition than girls whose preschool classrooms were highly supportive. This is illustrated in the following equations, which demonstrate the relationship between need support and kindergarten apathy for boys and girls respectively, controlling for other child characteristics. A graphical representation of this interaction at average preschool apathy can be found in Figure 12.

Boys (at average maternal education and age):

Kindergarten apathy = (.2739+.361(pre-K apathy)) - .144(need support)

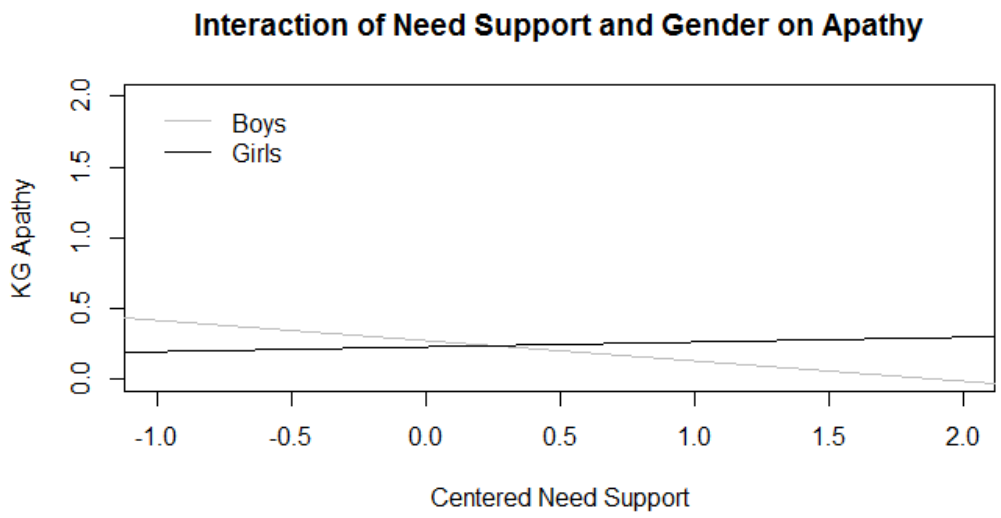
Girls (at average maternal education and age):

Kindergarten apathy = (.2349+.361(pre-K apathy)) + .034(need support)

A summary comparing research hypotheses to results can be found in Appendix

A.

Figure 12. Need Support x Gender Interaction on Kindergarten Apathy



Follow Up Analyses: Relatedness, Autonomy, and Competence

Follow-up analyses were conducted in which need support was broken down into its component pieces to determine whether significant effects of need support were due to the construct as a whole or due to warmth, autonomy support, and/or structure specifically. Each component of need support was entered separately from the others, due to the theoretical issues that arise when examining one type of need support while controlling for the others (e.g. what does it mean to have high structure while controlling for warmth?).

Competence motivation: gender x need support interaction. Controlling for class membership, child characteristics, positive climate, and the interaction between positive climate and all other child characteristics, there was an interaction between

warmth and gender, in that warmth was more beneficial for boys than for girls (*b*=.238, *p*=.01). This same pattern was not significant for either autonomy support (*b*=.103, *p*=.071) or structure (*b*=.121, *p*=.124).

Depersistence: gender x need support interaction. Controlling for class membership, child characteristics, positive climate, and the interaction between positive climate and all other child characteristics, there was an interaction between warmth and gender, in that warmth led to greater declines in depersistence across the transition for boys than for girls (*b*=-.372, *p*=.009). The same pattern was also true for autonomy support to a lesser degree (*b*=-.194, *p*=.026) but was not true for structure (*b*=-.161, *p*=.174).

Frustration: main effects of need support. Controlling for class membership and child characteristics, structure significantly predicted decreases in frustration across the kindergarten transition (*b*=-.101, *p*=.021). This pattern was not significant for positive climate (*b*=-.091, *p*=.077) or regard for student perspectives (*b*=-.030, *p*=.354).

Apathy: gender x need support interaction. Controlling for class membership, child characteristics, positive climate, and the interaction between positive climate and all other child characteristics, there was an interaction between warmth and gender, in that warmth was more beneficial for boys than for girls (*b*=-.289, *p*=.009). This same pattern was not significant for either autonomy support (*b*=-.088, *p*=.196) or structure (*b*=-.003, *p*=.975).

Chapter Seven: Discussion

Summary of Findings

The following section will describe the current study's key findings. A summary of all hypotheses and results can be found in Appendix A.

Patterns of motivation, engagement and disaffection. It was predicted that in general, students' engagement would decrease across the kindergarten transition, while their disaffection would increase. This prediction was partially confirmed and partially contradicted. While students did generally decrease in engagement across the kindergarten transition, as indicated by difference scores, paired sample t-tests, and a nested intercepts-only model, disaffection also tended to decline or be maintained across this transition. In contrast, competence motivation did not change significantly across the kindergarten transition.

Maternal education and motivation, engagement and disaffection. Maternal education was the only consistent child characteristic to predict changes in motivation, engagement and disaffection across the kindergarten transition. For motivation and engagement, high maternal education was positively related to change across the transition, while maternal education predicted decreases in both depersistence and apathy across the transition. Maternal education was also consistently correlated with motivation, engagement and disaffection in both preschool and kindergarten.

This indicates that students whose mothers had low education levels not only tended to be lower in motivation and engagement and higher in disaffection than their peers at the end of preschool, these gaps may have widened across the kindergarten transition, as these students were also more likely to lose engagement and gain

disaffection across these gaps.

Boys and motivation, engagement, and disaffection. Male gender was also consistently correlated with motivation, engagement and disaffection during preschool and kindergarten; however, gender did not predict changes in engagement and disaffection across the kindergarten transition. This indicates that while boys seem to have lower mean levels of engagement than girls, they do not seem to be changing at a different rate.

There was an interaction between gender and need support for changes in motivation and disaffection, in that boys who received high levels of need support in preschool experienced lesser declines in motivation and greater decreases in certain types of disaffection across the kindergarten transition. This was shown in a significant interaction between gender and need support on changes in motivation and depersistence across the transition and in an interaction that approached significance on changes in apathy across this transition. Follow-up analyses indicated that these interactions were most consistently driven by classroom warmth in preschool, as measured by the "positive climate" dimension of the CLASS.

Need support and motivation, engagement and disaffection. There was no consistent pattern in the association between need support and children's motivation, engagement and disaffection. Classroom levels of need support did not predict students' concurrent motivation, engagement and disaffection during preschool. Additionally, for the most part, higher levels of preschool need support did not predict changes in students' motivation, engagement and disaffection across the kindergarten transition. There was one exception, however: classroom level preschool need support significantly predicted

decreases in frustration across the kindergarten transition. Follow-up analyses indicated that this was primarily driven by classroom structure, as measured with the "behavior management" dimension of the CLASS.

Additionally, preschool need support seemed to be beneficial for boys, as it predicted decreases in boys' disaffection for both giving up and apathy across the kindergarten transition.

Implications

The patterns of change of engagement and disaffection across the kindergarten transition may have implications on our understanding of students' early development. The fact that children generally decline in engagement across this transition is consistent with expectations and is in line with the idea that kindergarten may be a context that can be challenging for students' maintenance of enthusiastic participation in the classroom (Rimm-Kaufman & Pianta, 2000). This result is also in line with previous studies that have found that students' liking for school begins to decline at kindergarten entry (Ladd et al., 2000).

However, students' disaffection changed in the opposite direction as was predicted, as most forms of disaffection also declined across the kindergarten transition. This indicates that disaffection and engagement may not be bipolar, which supports previous findings that demonstrate that these two dimensions are distinguishable from each other and are not perfectly negatively correlated (Skinner et al., 2009). If engagement and disaffection both decline across the kindergarten transition, this opens new questions about the development of disaffection and whether it should be studied separately from engagement.

Taken together, the decline of both of these constructs across the kindergarten transition suggests that as students move into kindergarten, they may become more subdued in both positive and negative emotions and behaviors.

Findings regarding the association between child characteristics and motivation, engagement, and disaffection are largely in line with previous findings. Both maternal education and gender were associated with students' motivation, engagement and disaffection during preschool and kindergarten in the expected directions. This adds further support to previous findings that students who are male and whose mothers have low levels of education are at risk for low socioemotional development by kindergarten entry (Zill & West, 2001).

However, the data did not support previous findings about students' age, which have indicated that students who are comparatively younger at kindergarten entry are at risk for low socioemotional development (Zill & West, 2001). Age was mostly uncorrelated with engagement or disaffection at any time point, with the exception of a positive correlation between age and preschool levels of frustration. This correlation was in the opposite direction from the study's expectation, indicating that older students experienced more frustration during preschool. The paucity of findings regarding age in this study may indicate that young age is not a consistent risk factor for students' early socioemotional development. It is worth noting that nearly all students in this sample came from low-SES, Caucasian families in rural Appalachia: it may be that age at kindergarten entry is less salient in this population than in the United States as a whole.

Of the child risk factors, only maternal education consistently predicted changes in motivation, engagement and disaffection across the kindergarten transition. One

potential interpretation of this finding is that maternal education represents something about students' experiences outside the classroom, while both age and gender are characteristics of the child. One argument for why achievement gaps tend to expand during the times students are not in the classroom is that students from different backgrounds have home experiences that are differentially supportive of their academic growth (Alexander et al., 2007). If maternal education represents something about children's home experiences, it may be that declines in students' engagement and disaffection over the summer are partially explainable by students' experiences at home.

In contrast, while male gender predicted lower levels of engagement and higher levels of disaffection in both preschool and kindergarten, it was not predictive of change over time in these outcomes. This finding was particularly interesting when taken in combination with previous findings that girls tend to gain in Approaches to Learning more than boys over the course of the school year (Dominguez et al., 2010). It may be that gaps in socioemotional skill between boys and girls tend to get more pronounced during the school year and are maintained over the summer-- the opposite pattern as is found with SES-related achievement gaps, which grow over the summer and are maintained during the school year. If this is true, then it seems that it may be students' differential classroom experiences based on their genders that are driving early gaps in engagement and disaffection. However, a great deal more research is needed to investigate this possibility.

While gender itself did not predict changes in engagement and disaffection across the kindergarten transition, there was a pattern regarding changes in boys' disaffection related to preschool levels of need support. Boys in classes with high levels of need

support experienced declines in depersistence and in apathy across the kindergarten transition. It seems that for boys, high quality, motivationally supportive preschool experiences enhance declines in disaffection across the kindergarten transition.

There are several different potential theoretical interpretations of this interaction. It may be that the development of early disaffection operates differently for boys and girls and what is beneficial to one group may not be similarly beneficial to the other. This interpretation, however, does not align with Self Determination Theory and does not match findings in older students (Ryan & Deci, 2000).

It may be that although supporting students' needs is beneficial both for boys and for girls, boys are struggling more, and so they benefit more from support. This matches previous findings that students who are most at risk for development of low socioemotional skills by kindergarten entry tend to benefit more from support across the kindergarten transition (LoCasale-Crouch et al., 2008). However, this interaction was not found between need support and maternal education in this sample, indicating that only certain students who were struggling benefited from highly supportive preschool classrooms.

A final potential interpretation of these findings is that the experience of being a boy in a highly supportive preschool classroom may be qualitatively different than the experience of being a girl in that same classroom. It may be that while support of students' needs for relatedness, competence, and autonomy is the mechanism through which their disaffection is reduced, preschool-aged boys and girls have different avenues through which these needs can be met. However, this possibility was not explicitly explored in this study and would require further research.

Interestingly, there were not clear patterns in the association between preschool classroom need support and students' motivation, engagement and disaffection. The fact that classroom need support was not related to students' concurrent engagement and disaffection is contrary to what Self Determination Theory would suggest (Ryan & Deci, 2000). However, there is a major caveat to this: there was not a great deal of variance in need support across the classrooms in the study. The lowest level of need support in any classroom was around the midpoint of the overall scale, with the majority of classrooms being strongly positive. It seems that students' needs for relatedness, autonomy, and competence may have been mostly met in every classroom in the study. Because of this, this lack of findings may not be indicative that Self Determination Theory does not apply to the development of engagement and disaffection in preschool.

However, this does invite the question of whether the relationship between the support of students' needs and their development of engagement and disaffection is strictly linear. Does going from a five to a seven on a scale of need support have the same impact as going from a three to a five, or a one to a three? Is there a cutoff point beyond which increasing need support does not lead to greater gains in engagement? Without a wider variance in classroom need support, it is impossible to answer these questions. If this is the case, however, and our sample is largely above that cutoff point, this may partially explain the lack of consistent significant associations between need support and motivation, engagement and disaffection.

Despite this limitation, there was a significant main effect of need support on students' development of frustration across the kindergarten transition. Students whose classrooms were highly need supportive tended to experience greater decreases in

frustration between preschool and kindergarten. This indicates that support of students' relatedness, autonomy, and competence may be important in their development of disaffection, which is consistent with Self Determination Theory (Ryan & Deci, 2000).

This was not the only difference between frustration and the other two disaffection outcomes. While maternal education predicted changes in all other outcomes, it did not predict changes in students' frustration. Furthermore, while it seemed that warmth was the key ingredient in improvements in motivation, depersistence, and apathy for boys, structure seemed to be key for improvements in frustration across the kindergarten transition. This suggests that there may be some different processes underlying students' frustration than underlie other forms of disaffection. Practically, this means that not only might future research need to examine engagement and disaffection separately from each other, different forms of disaffection may also take different developmental courses.

Finally, the fact that the same types of disaffection that are observable in older students did not consistently emerge in the PLBS indicates that disaffection may look different in younger children than older students. While this may be due to the fact that the PLBS was not designed to measure disaffection and so many of the items may not have been well-aligned with theories of disaffection, it may be that there are qualitative differences in what it means to be a disaffected kindergartner as opposed to a disaffected middle school student. Future developmental studies of disaffection might be able to investigate this further.

Strengths and Limitations

The following section will detail the theoretical, design-related, and analysis-

related strengths and limitations of the current study.

Theory. A major strength of the current study is that it extends a well-developed theory of motivation to a younger age group. This helped to illuminate early predictors of motivation, engagement and disaffection and also helped to determine how well Self Determination Theory applies in the preschool context.

Bringing this theory to the preschool level also helped to tease apart some of the variance in the Approaches to Learning variable. Studies of ATL in preschool have traditionally lumped a variety of socioemotional skills together. Separating this variable down to some of its component parts allowed for a more nuanced view of how children develop socioemotionally during this time, revealing different patterns of change in motivation, engagement, and disaffection. The fact that separate components of the ATL construct did seem to operate distinctly from each other supported the study's suggestion that future research should look at students' socioemotional skills separately from each other. This may contribute valuable nuance to our current understanding of the skills children need at kindergarten entry.

Theoretically, the study is based on a launch assumption that the experiences students have in preschool will stay with them and set them on certain trajectories of change as they transition into kindergarten. However, this may not be the most accurate model for the development of early motivation and engagement. A more theoretically-attuned model might include studying both preschool and kindergarten contexts to understand how students' experiences over time contribute to their growth.

Sample. Another strength of the current study is its sample. The students who participated in the Read it Again study represent a population with a high level of social

and economic risks. Most notably, half of the students came from families whose yearly incomes were less than $20,000, and the average family income for the sample was $26,922. Low-income students are increasingly at risk for achievement gaps at kindergarten entry (Reardon, 2011), and as such, it is critically important to understand the development of the factors that can lead to these students' later academic achievement. Because of this, this was an ideal sample for this study.

However, the sample also has limitations. 89% of students were white, which meant that there was not enough variance in race and ethnicity to be able to get a good picture of how these motivational processes might vary between these groups. Students who are Hispanic (Reardon & Gallindo, 2009) or African-American (Burchinal et al., 2011) are also at risk for low achievement at kindergarten entry. However, these gaps are not expanding as drastically as are the gaps between low-income students and their higher-income peers, so for the purposes of this study, the tradeoff was considered acceptable.

Measures. There were both strengths and limitations in the study's measures. One strength, the narrowing of both Approaches to Learning and CLASS constructs, ties into the theoretical strengths of the study. Using only those dimensions of the PLBS and the CLASS that are aligned with motivational theories allowed the current study to examine specific relationships between classroom motivational support and students' development of motivation, engagement, and disaffection. Because subdimensions of the CLASS were identified that aligned with warmth, autonomy support, and structure, the study was able to determine which type of motivational support was most influential on students' outcomes.

Another measurement strength was in the comprehensive measurement of the CLASS. This measure of classroom climate was taken at three different times during the school day in Fall, Winter, and Spring. This breadth of measurement times makes it more likely that the measure of classroom quality is an accurate representation of classroom quality across the school year.

However, there were also shortcomings associated with the current measure of need support. The three dimensions of the CLASS that were used to represent warmth, structure, and autonomy support were chosen because they were the three dimensions that best represented each need. However, these dimensions were not the only dimensions to include behaviors that were theoretically supportive of the three Self Determination Theory needs. A more comprehensive measure of need support might have included all dimensions that were supportive of relatedness, autonomy, and competence; however, including more dimensions into the final need support measure risked including sub-dimensions that were not as aligned with the theory. In the end, it was decided that a more conservative approach would be the most theoretically sound; however, this approach may have missed a substantive amount of variance in the actual level of need support in the classroom.

On the other end of the analysis, there was also a measurement problem in the scales used to represent disaffection in this study. It was not possible to isolate measures of disaffection that were structurally sound and highly reliable in both preschool and kindergarten. In general, the disaffection scale models fit the data well in kindergarten but had only marginal fit in preschool. This is not necessarily surprising, since the original scale was not designed to measure engagement and disaffection; however, it

casts some doubt onto whether these scales are truly meaningful ways through which to interpret children's disaffection. There is a need for a well-constructed and validated measure of early disaffection—this may be a direction for future research.

Finally, there may be important control variables missing from the study that partially account for variance in engagement and disaffection. One possible third variable might be students' activity level. Highly active students may appear both more highly engaged and more highly disaffected. It may be that students become less active across the kindergarten transition, which may be partially accounting in reductions in both engagement and disaffection.

Design. A strength of the study's design is its longitudinal nature. Often, studies of early childhood development focus on either the preschool or k-12 school system. The fact that the study spanned the kindergarten transition and included both pre-K and kindergarten measurement points made it possible to study children as they moved between these two school systems.

However, a limitation in this design is the lack of a need support measure in kindergarten. Part of the study's hypothesis rests on the theory that in general, preschools may be a more motivationally supportive environment than formal classrooms. However, this may not always be true. A more detailed study might consider the level of need support in kindergarten in addition to that in preschool. It is easy to imagine a scenario in which a student moves from a highly need-supportive preschool to a much less optimal kindergarten classroom. A student like this may actually lose more motivation than a student who transfers from one sub-optimal environment to another. Being able to examine how this change in context is associated with change in motivational outcomes

would allow for better understanding of how need support plays into students' motivational development.

Additionally, the measurement times of the preschool and kindergarten motivation assessments may be too far apart to truly tell whether any differences are attributable to the kindergarten transition. The preschool measurement point is in January, which is well before the end of a typical school year, while the kindergarten measurement point is in November. The kindergarten measurement point was set a few months after the beginning of the school year to ensure that teachers were familiar enough with their students to make accurate assessments. However, this may mean that kindergarten-level contexts are what truly support kindergarten motivation, and this measurement does not precisely represent "kindergarten readiness" in the most pure sense of the word. However, because attitudes towards learning tend to grow over the preschool year (Dominguez et al., 2010), it is likely that having a January measurement point reduced the magnitude of decreases in engagement across the kindergarten transition. It is therefore likely that the effects found were actually fairly conservative estimations of declines across the kindergarten transition.

Finally, there were several design decisions that limited the generalizability of the study. If the students who were hardest to reach in kindergarten were those who might be struggling most, then list-wise deletion may have eliminated from the study a group of students with particular challenges in the school system. Additionally, the schools and classrooms who participated in this study were all interested in a reading intervention. It may be that this sampling procedure only identified a certain set of classrooms, which may not be fully representative of Appalachian schools. The same issue was true for the

sampling procedure for children in classrooms. Only five children were sampled from each classroom, and only those whose parents consented to research were included. Again, this may have missed those students whose parents were hardest to reach.

Analyses. The multi-level modeling of the research questions is a strength of the study. This type of analysis allowed for the separation of student-level and class-level sources of variance, which is most appropriate for this set of research questions. However, there is also a potential limitation in the current set of analyses. Because students are from small, rural towns, it is likely that students who were nested together within the same preschool classroom were also nested in the same kindergarten classroom. This means that class-level variance may be partially attributable to children's kindergarten experiences and not their preschool experiences. However, this similarity in nesting is not likely to be systematic in any way; nor was it expected to affect a majority of the students.

Future Directions

There is a great deal more to understand about the development of students' early motivation, engagement and disaffection, especially in regards to the classroom processes through which teachers can boost students' early motivation and engagement and reduce their early disaffection. Because variance in psychological need support did not consistently explain a significant amount of variance in children's preschool engagement and disaffection, the question remains: what contexts support the development of these emotions and behaviors at this age?

Furthermore, the results of this study indicate that engagement and disaffection may not develop as flip sides of the same coin: instead, they may have distinct

trajectories. Because much of the work on the developmental trajectory of engagement has treated disaffection as the direct opposite of engagement, it may be that this work has missed important nuances in the development of both. Even beyond this, it seems that different types of disaffection may behave in different ways. Unpacking the current concept of engagement may be an important next step to understanding students' development.

Finally, further examination of the processes underlying gender differences in the impacts of need support on disaffection would also be another potential avenue for future research. While there was a consistent pattern of findings regarding this interaction, there are multiple competing explanations for why this association exists.

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Appendix A

Summary of Hypotheses and Findings

Research Question	Comp Mot.		Engagement		Frustration		Depersist.		Apathy		Supported?
RQ 1: Describe Pre-K to KG change	Expect.	Obs.	Expect.	Obs.	Expect.	Obs.	Expect.	Obs.	Expect.	Obs	
Descriptive	-	.	-	-	+	-	+	-	+	.	partially supported,
Paired sample	-	.	-	-	+	-	+	-*	+	-*	partially
HLM	-	.	-	-	+	-	+	.	+	-*	contradicted
RQ2: Need support effects in pre-K	-	.	-	.	+	.	+	.	+	.	not supported
RQ3: Child character. effects in KG											partially
Male gender	-	.	-	.	+	.	+	.	+	.	supported
Age	+	+	+	.	-	.	-	.	-	.	
Maternal ed.	+	+	+	+	-	.	-	-	-	-	
RQ4: Need support effects in KG	+	.	+	.	-	-	-	.	-	.	partially supported
RQ5: Interactions											
Male gender: need support	+	+	+	.	-	.	-	-	-	-*	partially
Age: need support	-	.	-	.	+	.	+	.	+	.	supported
Maternal ed.: need support	-	.	-	.	+	.	+	.	+	.	

*p<.10