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Contextualizing Classroom Behavior In Low-Income Children With High Behavioral Self-Regulation Relative To Peers

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Abstract

This study investigates the home and classroom environments of a subsample of students (*n*=16) selected from a participant group of 259 low income students within 4 urban schools in the southeast. The subsample consisted of students who, according to a direct performance assessment, had higher behavioral self-regulation skills than their peers yet were reported by teachers as exhibiting undesirable classroom behavior. Examined as potential contributors to the poor classroom behavior of the students were home environment characteristics related to stress and child-parent relationships and classroom environment characteristics which included classroom quality and presence of chaos. Results indicated that children within the subsample experienced stress in their home environment and although caregivers reported close relationships with their children, some also reported relational conflict. In terms of classroom environments, classroom quality ranged from moderate to low, with most teachers reporting the presence of chaos within their classrooms. To glean more information, three students from the subsample were identified for a collective case study. Case study analyses conducted on observational notes and teacher interviews revealed the following themes regarding student classroom behavior: lack of motivation, poor peer relations, inability to control emotions, seeking attention, and instability at home. Discussion focuses on the complex interplay of ecological factors that have the potential to affect child

behavior in the classroom and implications of ecological complexity for teachers and parents.

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Chapter 1

Introduction

Classroom behavior is foundational to academic success in the early years of schooling (Ladd, Birch, & Buhs, 1999; Normandeau & Guay, 1998; Raver & Zigler, 1997). Children learn in social contexts where behavioral self-regulation is exerted, requiring them to pay attention, adapt and comply with given rules and expectations while navigating social and emotional demands placed on them in the school environment. Behavioral regulation is essential for successful school functioning and learning, yet many teachers report that students begin school without this ability (McClelland, Morrison & Holmes, 2000; Rimm-Kaufman, Pianta, & Cox, 2000). Previous research has additionally provided that children living in poverty struggle with behavioral self-regulation in the classroom, acknowledging that poverty-related stressors found in early environments can negatively influence classroom behavior (Fantuzzo, et al., 2005; Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003; McClelland, et al., 2000).

Poverty and Schooling

It is well documented that children from low-socioeconomic backgrounds often enter school less prepared than their more affluent peers, contributing to what is often termed the achievement gap (Lee & Burkham, 2002; Rouse, Brooks-Gunn, & McLanahan, 2005). Research since the mid to late-20th century indicates that

families at the bottom of the economic spectrum encounter disadvantage in a myriad of ways: less employment opportunity, reduced accessibility to quality support services (including daycare), and increased likelihood of living in harsh social environments (Duncan, 1991; Jargowsky, 1994; Shinn & Gillespie, 1994; Zigler, 1994). These environmental factors converge to impact children living in poverty in a host of disadvantageous ways, affecting long-term trajectories by interfering with child development (cognitive, social, emotional), off-setting chances for academic success in the early years, and eventually derailing later academic success leading to academic non-completion and perpetuating a cycle of poverty (McLoyd, 1998).

To illustrate, in a recent report synthesizing data collected from the Early Childhood Longitudinal Study- Kindergarten Cohort (ECLS-K), the National Education Longitudinal Study (NELS), and the Baccalaureate and Beyond Longitudinal Study (B&B), initially high-achieving low-income students were found to be less likely than their more affluent peers in achieving school success, despite scoring within the top 25 percent on nationally-normed assessments (Wyner, Bridgeland, & Dilulio, 2007). Within this report, findings indicate that economic disparities influence the number of low-income, high-achieving students from the earliest start; fewer low-income children perform within the highest echelon than their higher-income peers at the start of formal schooling (2007). As elementary school continues, low-income students struggle to remain as high-achievers and this trend continues through high school (2007). Taken together, research indicates children living in poverty tend to underperform academically compared to affluent peers, even when they exhibit the same academic skills at school

entry. Beyond academic skills, other skills, including behavioral self-regulation are critical to long-term success in classroom learning environments.

Behavioral Self-Regulation and Schooling

Behavioral self-regulation encompasses a set of skills that allows for successful classroom functioning including controlling cognition, emotions, and behavior to comply with the demands of the classroom environment (Baumeister & Vohs, 2004; Shonkoff & Phillips, 2000). Research has provided that self-regulation is connected to academic success; a number of studies have shown that strong self-regulation skills predicted successful classroom behavior and poor self-regulation was associated with maladaptive classroom behavior (Blair, 2002; Bronson, 2000; Fabes, Martin, Hanish, Anders, & Madden-Derdich, 2003; Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003; Shonkoff & Phillips, 2000). Ponitz, McClelland, Matthews, and Morrison (2009) also found that stronger levels of behavioral self-regulation on a direct assessment in the fall of kindergarten year predicted higher levels of teacher-reported classroom behavioral self-regulation.

Underlying behavioral self-regulation is a tripartite of cognitive abilities -working memory, inhibitory control, and attention- that are subsumed within the term *executive function*. Executive function (EF) describes the ability to control, manage, and utilize working memory, inhibition, and attention in order to fulfill a goal (Blair, 2002). Of importance, EF is shown to be particularly influential in aiding early learning in school (Blair & Razza, 2007) as it supports behavioral self-regulation as well as social-emotional competence (McClelland, Cameron, Wanless, & Murray, 2007). Thus, EF is commonly

referenced as the cognitive processes that underlie behavioral self-regulation. In turn, behavioral self-regulation refers to the observable behaviors that are attributed to the cognitive processes incorporated within EF.

Although most research points to a positive relationship between behavioral self-regulation and successful classroom behavior, this study focuses on a subsample of children from low-income backgrounds that display poor classroom behavior despite having high behavioral self-regulation ability relative to peers as evidenced by a direct assessment of student performance on a task requiring self-regulatory ability. The characteristics of the students' home and classroom environments, as assessed through validated measures, provide a context to this antithetical relationship.

Chapter 2

Literature Review

This research finds footing in Bronfenbrenner's (1979) Ecological Systems theory, acknowledging that in order to understand child development and behavior, social and contextual forces affecting the child and his or her family should also be taken into consideration. Bronfenbrenner's (1979) ecology of human development is defined as follows:

> The ecology of human development involves the scientific study of the progressive, mutual accommodation between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by relations between these settings, and by the larger contexts in which the settings are embedded (pg. 22).

Therefore, the present study incorporates the notion that "…development never takes place in a vacuum; it is always embedded and expressed through behavior in a particular environmental context" (pg. 28).

Bronfenbrenner's four environmental systems or structures include the microsystem, the mesosytem, the exosystem, and the macrosystem (Bronfenbrenner, 1979). At its base, the microsystem includes the immediate environments of the child-the home, the classroom, the family. The mesosystem is described as linkages among the microsystems and takes into account the ways in which one microsystem (i.e., the

family) affects the child in a different microsystem (i.e., the classroom; 1979). The exosystem includes environments that the child does not directly experience, but events within it affect the child (for instance, a parent's place of work) (1979). Finally, the macrosystem contains social constructs that are related to grander cultural characteristics. Bronfenbrenner (1994) provides that the macrosystem,

> consists of the overarching pattern of micro-, meso-, and exosystems characteristic of a given culture or subculture, …customs, lifestyles, opportunity structures, hazards, and life course options that are embedded in each of these broader systems. The macrosystem may be thought of as a societal blueprint for a particular culture or subculture (pg. 40).

Therefore, within the macrosystem, beliefs, values, and behavior are passed down that in turn affects functioning within the other systems (1994).

Bronfenbrenner also acknowledges that ecological transitions or changes over time, both normative and nonnormative, affect development (1979). He defines this further: "An ecological transition occurs whenever a person's position in the ecological environment is altered as the result of a change in role, setting, or both" (pg. 27). Examples include gaining a new family member and parental divorce. While this study does not attempt to identify how ecological transitions affect human behavior, it does seek to describe environmental influencers that have the potential to shape behavior, in light of the interconnectedness of the child's environmental structures. Thus, cognitive development and behavior, specifically executive function and behavioral self-

regulation, are potentially affected by characteristics and events within the child's varied environments.

Executive Function, Behavioral Self-Regulation, and Poverty

Executive function (EF) is described as the goal-directed cognitive management of working memory, inhibition, and attention (Blair, 2002) and functions within the frontal lobes of the brain (Bronson, 2000). This cognitive skill develops in accordance with neurobiological development and is shown to be influenced by external factors, including caregiving environments (Blair, 2002; Bronson, 2000). Of importance, EF is shown to be particularly influential in aiding early learning in school (Blair & Razza, 2007) as it contributes to self-regulated classroom behavior (McClelland, Cameron, Wanless, & Murray, 2007).

Research shows that children's cognitive development, including EF, is negatively affected by family income and poverty status (McLoyd, 1998). For example, in a longitudinal study, Raver, Blair, and Willoughby (2013) found that EF was impacted by both the number of years living in poverty (chronic poverty) and by the financial strain associated with living in poverty. EF, in turn, has also been studied as a predictor of academic adjustment in kindergarten and first-grade homeless children (Masten, et al., 2012). Of significance to the present study, EF influences a child's ability to remember relevant information, maintain attention, and inhibit impulses (Raver, et al., 2013); skills that support the learning process by way of influencing behavioral self-regulation within the classroom.

Behavioral self-regulation, the observable display of EF skills within a social learning environment, applies the more cognitive skills of EF including attention, working memory, and inhibitory control to classroom expectations (McClelland, et al., 2014; McClelland, Cameron, Wanless, & Murray, 2007). Two aspects of behavioral self-regulation, engagement and behavioral control, have been found to be necessary for academic success in the early years of schooling (DiPerna, Lei, & Reid, 2007; Fantuzzo, Bulotsky-Shearer, McDermott, McWayne, & Frye, 2007; Grimm, Steele, Mashburn, Burchinal, & Pianta, 2010; Howse, Calkins, Anastopoulos, Keane, & Shelton, 2003; Ladd, Birch, & Buhs, 1999; Sektan, McClelland, Acock, & Morrison, 2010). Children's ability to remain engaged and exert behavioral control in the classroom has additionally been studied as beneficial for achievement throughout elementary school (McClelland, Acock, & Morrison, 2006) and has been shown to predict literacy, vocabulary, and math skills in preschoolers (McClelland, et al., 2007). A look towards potential influencers within the child's varied environments further illustrates how behavioral self-regulations skills can be altered in varying contexts.

Home Environment

Stress related to living in poverty has been shown to have a negative influence on children's ability to regulate their behavior (Fantuzzo, et al., 2005; Howse, et al., 2003; McClelland, Morrison, & Holmes, 2000). Howse and colleagues (2003) found that children from low-income backgrounds had more difficulty regulating their behavior and remaining engaged when compared to their more affluent peers. Shore (1997) indicates that harsh environments, including instances of maternal depression and the

circumstances associated with poverty negatively impact children's cognitive development and behavior. Other stressors including household and residential instability, neighborhood poverty, and crime have also proven to negatively affect children's self-regulation (McCoy & Raver, 2014; McCoy, Raver, & Sharkey, 2014; Raver, et al., 2013).

Stressors associated with living in poverty influence children's development also by way of their influence on parents. Parents that encounter chronic stress related to poverty often exhibit harsher parenting styles (McLoyd, 1990) and are more withdrawn from their children, both of which are harmful for children's socio-emotional and cognitive development (Duncan, Brooks-Gunn, & Klebanov, 1994; McLeod & Shanahan, 1993; McLoyd, Jayaratne, Ceballo, & Borquez, 1994; Nievar, Moske, Johnson, & Chen, 2014). On the other hand, secure parent-child relationships provide an early influence on children's ability to regulate behavior (Waters, Weinfield, & Hamilton, 2000). Of interest, one study found that urban children who encountered multiple stressors were stress-resilient due to more positive parenting variables including positive parent-child relationships (Cowen, Wyman, Work, Parker, 1990). A similar study found that children in nurturing home environments, despite low economic resources, were more prepared for school in terms of cognitive competence (Nievar, et al., 2014).

Classroom Environment

Although a wealth of research has studied classroom quality and its relation to academic outcomes (Hamre & Pianta, 2005; Mashburn, et al., 2008), research has also pointed to classroom quality as having an impact on how well children remain engaged,

attend to tasks and expectations, and generally exhibit successful classroom behavior. Hamre and Pianta (2007) contend that interactions between the teacher and students within the classroom environment provide a lens with which to observe classroom quality. Hamre and Pianta (2005) divide classroom quality into three parts: emotional support, classroom organization, and instructional support. Emotional support assesses the degree to which teachers and students exchange warm and positive social interactions, captures negativity present in the social environment, the degree to which the teacher is sensitive to the needs of the students, and the teacher's efforts in supporting and valuing student perspectives. Classroom organization targets the manner in which behavior is managed within the classroom, how productive the classroom is, and the degree to which the teacher facilitates student interest and engagement within the context. Lastly, instructional support considers how well the teacher promotes higher-order thinking skills, the presence and quality of feedback within the learning environment, and the emphasis placed on language modeling.

Aspects of emotional support have been shown to predict student engagement in the classroom (Bryant, et al., 2002; NICHD ECCRN, 2002, 2005). One study showed that preschool students were more engaged in classrooms with more responsive teachers (McWilliam, Scarborough, & Kim, 2003), whereas another study found that students in classrooms with more controlling teachers were less engaged (de Kruif, McWilliam, Ridley, & Wakely, 2000).

Well-structured and organized classrooms also have the potential to encourage student self-regulation (Pressley, Rankin, & Yokoi, 1996). Rimm-Kaufman, Curby, Grimm,

Nathanson, and Brock (2009) found that classroom organization (productivity, effective and proactive behavior management practices, and teacher facilitation) was effective in eliciting student engagement, as well as behavioral and cognitive control. Alternatively, the presence of classroom chaos and disorganization may contribute to lower levels of behavioral self-regulation as studied in preschool classrooms (Wachs, Gurkas, & Kontos, 2004).

Additionally, aspects of instructional support have also been linked to student engagement in elementary school classrooms. Dolezal, Welsh, Pressley, and Vincent (2003) found that third-grade teachers who encouraged students to think deeply, complete complex and cognitively challenging tasks, promoted student collaboration, and offered feedback had more academically engaged students. Bogner, Raphael, and Pressley (2002) had similar findings in their study of first-grade teachers during literacy activities; those teachers that promoted creative and independent thinking, provided effective feedback and challenging content, and promoted teacher-student and student-student interactions had the most student engagement within their classrooms.

However, data from the National Center for Early Development and Learning's (NCEDL) Multi-State Study of Pre-Kindergarten incorporating 730 kindergarten classrooms and consisting of 50.3% low-income children described kindergarten classroom quality as only moderate (La Paro, et al., 2009). Using an observational tool assessing teacher-student interactions within classroom environments across six states, emotional support and classroom organization were found to be of moderate quality and instructional support was low quality (2009). Additionally, in a separate study of

schools serving mostly low-income children, classrooms were considered to be more negative and the instruction to be focused on rote knowledge within didactic teaching practices compared to national norms (Stipek, 2004). Taken together, previous research evaluating the influence of home (i.e., stress, parent-child relationships) and classroom environment factors (i.e., classroom quality, chaos) on behavioral self-regulation ability, along with findings supporting the importance of behavioral self-regulation ability for successful classroom functioning (e.g., Blair, 2002; Bronson, 2000; Fabes, et al., 2003; Howse, et al., 2003; Ponitz, et al., 2009; Shonkoff & Phillips, 2000), provided the basis for this study.

The Present Study

The present study identifies a sample of children from socio-demographically at-risk backgrounds who have undesirable classroom behavior despite high behavioral self-regulation ability relative to peers and describes potential contributors to their classroom behavior. I examined three initial research questions:

1. Among the larger sample of low income children, what is the prevalence of children who demonstrate high behavioral self-regulation relative to peers in a direct assessment, but display poor classroom behavior?
2. What are the characteristics of the home environment for children exhibiting poor classroom behavior but high behavioral self-regulation?
3. What are the characteristics of the classroom environment for children exhibiting poor classroom behavior but high behavioral self-regulation?

In regards to the home environment context (Q-2), I hypothesized that children identified as having poor classroom behavior, despite high behavioral self-regulation ability relative to peers as evidenced by a direct assessment, encounter multiple stressors at home and experience conflict and minimal closeness with parents. This expected outcome acknowledged previous research showing that stress and child-parent conflict can impact behavior and self-regulation skills (Fantuzzo, et al., 2005; Howse, et al., 2003; McClelland et al., 2000; Waters, Weinfield, & Hamilton, 2000). In regards to the classroom context (Q-3), I predicted that classroom quality would be low and learning environments would often be characterized as chaotic. This expected outcome acknowledged previous research showing that children are more engaged and exert cognitive and behavioral control in classrooms that are warm, well-organized, and academically stimulating (Bogner, Raphael, and Pressley, 2002; McWilliam, Scarborough, & Kim, 2003; Rimm-Kaufman, et al., 2009).

For a subset of the participant sample exhibiting the poorest classroom behavior relative to others in the subsample during a standardized classroom observation later in their first and second grade years (low observed behavioral control and engagement), I looked further into student classroom behavior by posing two additional research questions that afforded a more contextualized view of student-level classroom behavior:

4. What are teacher perceptions of the student's classroom behavior?
5. What specific classroom behaviors does the child engage in?

Research questions in the present study focus on describing the home and classroom environments of a subsample of students that had the unlikely combination of high behavioral self-regulation relative to peers, but poor classroom behavior according to teacher report. This was done in order to illuminate potential contextual influencers that may undermine the expression of behavioral self-regulation skills needed for positive classroom behavior.

Significance of the Present Study

This research study identifies children that display poor classroom behavior despite high behavioral self-regulation ability relative to peers. The findings from it, therefore, provide information about students that lie at behavioral self-regulation extremes and display behavior that is counter to what most research portends in regards to the positive relationship between high behavioral self-regulation skills and subsequent classroom behavior (e.g., Blair, 2003; Ponitz, et al., 2009). The basis for this line of inquiry is supported by Hinde's (1998) contention that within larger samples, subgroups of students that may be special or extreme are misunderstood or even lost. Therefore, studying sub-groups that exhibit behavior that is not typical can contribute information that may, in other studies with larger samples, be obscured or overlooked. In so doing, this study seeks to identify potential influencers that may impede behavioral self-regulation ability in the classroom for a subsample of students who have high behavioral self-regulation ability relative to peers in a direct assessment so that practical measures may be taken to help mitigate these influencers and help ensure successful student classroom behavior.

Chapter 3

Method

This study uses a mixed methods design, incorporating quantitative measures to select the subsample, compare the subsample to other groups of students, describe home environments, and describe classroom environments. This study also uses qualitative measures to focus on three students within the subsample in order to more fully understand student classroom behavior and potential influencers within the natural classroom context. The choice of this study design acknowledges the work of Johnson and Onwuegbuzie (2004) who contend that both quantitative and qualitative research are valid and in combining the two, the strengths of both may be amplified and the weaknesses of both may be lessened.

Participants

Participants were 259 kindergarten students who were recruited for a larger study evaluating the effectiveness of an after-school program that promotes social and emotional learning for at-risk elementary school children. The participants attended four elementary schools and were within two cohorts. Each child within the larger study was assigned a condition at kindergarten entry (i.e., treatment, control) and all students, regardless of condition, were eligible to participate in this research study. Out of those selected for the subsample to answer research question 1, five students (31%) received treatment during their kindergarten year within the afterschool intervention.

All study participants (*N*=259) attended public Title I elementary schools in the southeast during the 2012-2013 and 2013-2014 school years. Most of the children were girls (53.5%) and were between 4.82 and 6.38 years of age at kindergarten entry. Nearly all of the children had attended preschool before the kindergarten year (89.7%).

In terms of parental education, 93 reported having a high school diploma or equivalent, 48 had some college without a degree, and 47 had some high school, but did not have a diploma. Most caregivers were African American (87.65%). Forty-nine teachers participated in the larger study. Teachers on average had 12.5 years of teaching experience (range = 0-49 years). Most teachers were white (77.6%) and 20.4% were African American. Twenty-four (49%) of the teachers had received a master's degree and 15 (30.6%) had received a bachelor's degree at the time of the study.

Subsample participants (*n*=16) selected from the larger sample of students consisted of 13 girls and 3 boys and were between 4.90 and 5.55 years of age at kindergarten entry. Fifteen of the subsample participants had attended preschool prior to the start of kindergarten. Parents or primary caregivers of the subsample children were mostly African American (*n*=15). In terms of parental education, 5 reported having some high school without a diploma, 5 had received a high school diploma or equivalent, 4 had some college without a degree, 1 had a high school diploma plus technical training, and 1 had an Associate's or two-year degree. Teachers of the subsample students (*n*=7) had on average 9.6 years of teaching experience (range= 2-30 years), were mostly white (*n*=6), and held either a Master's (*n*=4) or Bachelor's (*n*=2)

degree; one subsample teacher had received one year of coursework beyond a Bachelor's degree.

Three students from the subsample were selected for more detailed analysis as case study participants. They were selected based upon observed low behavioral control and engagement observational scores (.5 standard deviation below subsample peers) and were assessed later in their first and second grade years during the 2014-2015 school year (first grade, *n*=1; second grade, *n*=2). All case study participants were female and all were African American.

School Context

All four elementary schools are within one district in a state in the southeast. The district covers a large expanse of land (approximately 1,000 square miles) and incorporates a blend of urban, suburban, and rural areas. On the most recent district report card, the district received an overall rating of *excellent*, the highest rating it had received to date (S.C. Annual Report Card, 2014).

The district is geographically divided into four zones: North, Central, East, and Southwest. Two of the elementary schools in the study are within the North Zone of the district in an area with 23% of the population living below the poverty line (U.S. Census, 2013); this is higher than regional (county (18%), state (19%)) and national percentages (15%). The other two schools are in a neighboring city, within the Central Zone of the district; this area has 20% of residents living in poverty (2013).

School 1 is a Title I school with 98% of the student population living in poverty (S.C. Department of Education, 2014). School 1 has historically scored below par on

state assessments and on the most recent school report card, the school had an absolute rating of *below average* with an Elementary and Secondary Education Act (ESEA) index score well below that of state expectations (29.1 (F); S.C. Annual School Report Card, 2014d). School 1 is also considered a Title I Priority School which designates it as one of the lowest performing Title I schools (2014d).

School 2 is also located in the north area of the district and had an absolute rating of *below average* on the 2014 state report card with an ESEA index score slightly higher than that of School 1, but still considered below state expectations (52.8 (F); S.C. Annual School Report Card, 2014a). School 2 also has a very high percentage of students living in poverty (99%; S.C. Department of Education, 2014).

School 3 is located within the Central Zone of the district with 93% of the student population living in poverty (S.C. Department of Education, 2014). The most recent report card also gave school 3 an absolute rating of *below average* with an ESEA score of 64.2 (D), indicating that the school's performance did not meet state standards (S.C. Annual School Report Card, 2014c).

School 4 is also located within the Central Zone of the district. On the most recent school report card, school 4 received an absolute rating of *below average*, with an *at-risk* growth rating, and received an ESEA score of 55.3 (F)(S.C. Annual School Report Card, 2014b). This school, however, has the lowest percentage of students living in poverty in comparison to the other three schools in this study (79%; S.C. Department of Education, 2014).

Procedures

To identify children with high behavioral self-regulation ability relative to peers, researchers administered an often-used assessment of behavioral self-regulation ability, the Head-Toes-Knees-Shoulders (HTKS) direct assessment, to study participants during the summer of 2013 (prior to first grade for cohort 1, prior to kindergarten for cohort 2). Teachers assessed children's classroom behavior using a combined questionnaire, the Child Behavior Rating Scale (CBRS) and the Social Skills Improvement System-Rating Scales (SSIS-RS), in the spring of the students' kindergarten year (spring 2013 for cohort 1, spring 2014 for cohort 2). Researchers also observed children's behavior within the classroom environment using the Individualized Classroom Assessment Scoring System (inCLASS) during the spring of their kindergarten year. This observation focused on the child's behavior and consisted of two observations, on differing days, lasting approximately one hour per observation.

In order to capture home environment characteristics, parents or primary caregivers completed two portions of a quantitative interview, the Holmes-Rahe Life Stress Inventory and the Child Parent Relationship Scale (CPRS), in the summer of 2013 (summer before first grade for cohort 1, summer before kindergarten for cohort 2).

To assess classroom characteristics, researchers observed kindergarten classrooms during the spring (spring 2013 for cohort 1, spring 2014 for cohort 2) using the Classroom Assessment Scoring System (CLASS). Classrooms were observed two times by certified observers; each observation period lasted approximately one hour. Additionally, teachers assessed the level of chaos present in their classrooms using the

Life in Early Childhood Programs (LECP) questionnaire during the fall of the participants' kindergarten year (fall 2012 for cohort 1, fall 2013 for cohort 2).

Students within the subsample (those with high behavioral-self regulation relative to peers and poor classroom behavior) who had not relocated out of the study schools by the spring of the 2014-2015 school year were observed by researchers in their classrooms again using the inCLASS observational tool (second grade for cohort 1, first grade for cohort 2). This observation focused on the child's behavior and consisted of two observations, on differing days, lasting approximately an hour per observation.

Out of the inCLASS student behavior observations during the 2014-2015 school year, three case study participants were selected for further qualitative analysis based on scores assigned for behavior control and engagement (.5 standard deviation below subsample scores). After standardizing engagement and behavior control dimension scores, three students had scores that fell half a standard deviation below other subsample students on both dimensions. For those three students, observational notes taken during student observations were coded and teachers of the case study participants were interviewed using structured interview protocols lasting approximately thirty minutes per interview.

Measures

Students' behavioral self-regulation ability was assessed using a direct assessment of observed performance on a task and teachers reported children's kindergarten classroom behavior through a questionnaire. Children's classroom behavior was also assessed using an observational measure. The home environment

was assessed by a parent quantitative interview and the classroom environment was assessed with an observational measure and a teacher questionnaire. Case study participants were selected based on observed classroom behavior. Case study participants were further evaluated using qualitative observational notes and teacher interviews.

The Head, Toes, Knees, Shoulders task. The Head, Toes, Knees, Shoulders (HTKS)- Form B Extended task is a game-like assessment for children aged four to eight years old and requires the student to touch his or her head, toes, knees, and shoulders when given an opposite command (Cameron & McClelland, 2011). For example, the student must touch his or her toes when *told* to touch his or her head and vice versa; the student must touch his or her shoulders when *told* to touch his or her knees and vice versa. In the final stage of the activity, the student must continue to do the opposite of what is commanded according to a *new* set of rules, adding complexity to the task (touch your knees when told to touch your head, touch your shoulders when told to touch your toes, etc.).

The assessment has a total of 30 commands and the highest score possible is 60. If the child does not produce the instructed response he/she receives 0 points, if the child self-corrects his response, he/she receives 1 point, and if the child correctly responds (meaning touches his toes when *told* to touch his head), he/she receives 2 points. The alpha coefficient for the present study was .890.

Behavioral self-regulation skills are required to complete this task successfully, engaging the child's working memory, inhibition, and cognitive flexibility as he or she

attends to changing rules and inhibits impulses to produce the desired response (Cameron Ponitz, et al., 2008). In a recent study, the HTKS measure was found to be significantly related to measures of cognitive flexibility, working memory, and inhibitory control for young children (kindergarten and pre-kindergarten) (McClelland, et al., 2014). Through this study, the HTKS measure had convergent validity with the Dimensional Change Card Sort (DCCS) measuring cognitive flexibility, the Auditory Working Memory test within the Woodcock-Johnson III- Tests of Cognitive Abilities measuring working memory, and two tests of inhibitory control (Day-Night Stroop task, Simon Says task); all showing significance at =.001 (2014).

Teacher questionnaire. The teacher questionnaire consisted of a scale that determined student classroom behavior. This questionnaire was a combination of the Social Skills Improvement System-Rating Scales (SSIS-RS; Gresham & Elliott, 2008) and the Child Behavior Rating Scale (CBRS; Bronson, Goodson, Layzer, & Love, 1990) and assessed the child regarding his or her social competence and problem behaviors in the classroom.

The SSIS-RS is an updated version of the Social Skills Rating System (SSRS) and is considered a psychometrically sound measure in assessing student behavior and skills (Gresham & Elliott, 2008). Gresham and colleagues (2011) have found high internal consistency within subscales on the SSIS-RS (self-control (α = .90); problem behavior composites (internalizing, externalizing, and hyperactivity; α = .95)) from elementary school teacher reports in addition to significant correlations with its predecessor (SSRS). Additionally, previous research has reported strong reliability and validity for the CBRS

measure (Bronson, Tivnan, & Seppanen, 1995; Matthews, Cameron Ponitz, & Morrison, 2009; McClelland et al., 2007). Bronson (1994) also reports significant positive correlations with teacher reports of student self-control (r = 0.43).

The combined SSIS-RS and CBRS measure consists of 48 questions that the teacher must answer using a range of responses indicating how often a particular behavior occurs (1=never, 2= seldom, 3=often, and 4=almost always). Example items include, “Returns to unfinished tasks after interruption,” “Responds to instructions and then begins an appropriate task without being reminded,” “Has temper tantrums,” and “Disobeys rules or requests.” Items within the combined measure were aggregated into seven behavior subscales: self-control (α = .952), engagement (α = .940), internalizing problem behavior (α = .844), externalizing problem behavior (α = .949), bullying (α = .917), hyperactivity/inattention (α = .898), and self-regulation (α = .964).

Individualized Classroom Assessment Scoring System. The Individualized Classroom Assessment Scoring System (inCLASS; Downer, Booren, Hamre, Pianta, & Williford, 2011) is an observational measure focused on individual students within the classroom setting and targets the child’s interactions with agents (teachers, peers, task) within the environment. Downer and colleagues (2010) report small to moderate correlations with a number of other validated teacher report measures.

The inCLASS is organized into four domains: teacher interactions (α = .931), peer interactions (α = .978), task orientation (α = .822), and negative engagement (α =.995). Within the teacher interactions domain, two dimensions guide the observation: positive engagement and communication. Within the peer interactions domain, three

dimensions structure the observation: sociability, communication, and assertiveness. Within the task orientation domain, the child is assessed on his or her level of involvement with the task at hand through the dimensions of engagement and self-reliance. Finally, the negative engagement domain incorporates three dimensions: teacher conflict, peer conflict, and behavior control. Students are assessed on a scale of 1 to 7; a score of 1 provides that the behavioral indicators for a given dimension are rarely observed and a score of 7 provides that the behavioral indicators are often and consistently observed throughout the observational cycle. Observational cycles lasted for fifteen minutes, and consisted of four ten-minute observational cycles followed by five minutes for coding.

The Holmes-Rahe Life Stress Inventory. The Holmes-Rahe Life Stress Inventory (Holmes & Rahe, 1967) is a 37-item list of statements that the parent must acknowledge with a *yes* or *no* regarding whether or not a given personal life event occurred within the past year. Example items include, “Major personal injury or illness,” “Major change in the health or behavior of a family member,” “Detention in jail or other institution,” and “Eviction.” This measure acted as a checklist for caregivers to denote which, if any, stressful life events occurred so that frequencies could be aggregated.

The Child-Parent Relationships Scale. The Child-Parent Relationship Scale (CPRS; Pianta, 1992) is a 15-item scale that focuses on the quality of relationship between the primary caregiver and the child. Pianta (1992) reports high alpha coefficients for its closeness (α = .72) and conflict subscales (α = .83). Example items on the measure include, “I share an affectionate, warm relationship with my child,” “My child easily

becomes angry with me," "Dealing with my child drains my energy," and "My child spontaneously shares information about himself/herself." The caregiver may respond to statements in seven ways (1: Definitely does not apply, 2: Not really, 3: Neutral: Not sure, 4: Applies somewhat, 5: Definitely applies, Don't know, and Prefer not to answer (refuse)). Items within the CPRS measure for the present study were aggregated into two subscales: conflict (α = .749) and closeness (α = .511).

Classroom Assessment Scoring System. Classroom environments were assessed using the Classroom Assessment Scoring System (CLASS, K-3; Pianta, La Paro, & Hamre, 2008). The CLASS is an often-used and psychometrically-valid measure that assesses classroom quality using three domains: emotional support, classroom organization, and instructional support. CLASS scores have been associated with another measure of classroom quality, the Early Childhood Environment Rating Scale (ECERS), with a particularly strong association between the CLASS domain of emotional support and the ECERS interactions factor (2008).

The CLASS focuses on the three domains to provide a wealth of information regarding the nature of interactions within the learning environment. The emotional support domain (α = .855) encompasses the following dimensions: positive climate, negative climate, teacher sensitivity, and regard for student perspectives. The classroom organization domain (α = .796) targets the management and organizational characteristics of the classroom environment. Dimensions within this domain include: behavior management, productivity, and instructional learning formats. Finally, the instructional support domain (α = .754) addresses how the teacher facilitates the

learning process. The dimensions within the instructional support domain include: concept development, quality of feedback, and language modeling. Dimensions are coded between 1 and 7. Low (1,2), mid (3,4,5), and high (6,7) codes reflect the presence, frequency, and consistency of the observed indicators, with high scores representing high quality. Given behavioral indicators support the dimensions within each of the three domains.

Life in Early Childhood Programs Questionnaire. In addition to the CLASS observational measure, teachers reported the level of chaos they felt characterized their classroom using the Life in Early Childhood Programs questionnaire (LECP (Chaos); Kontos & Wachs, 2000; Wachs, Gurkas, & Kontos, 2004). This classroom chaos measure is a revised version of the Confusion, Hubbub, and Order Scale used for assessing *home* environmental chaos (Matheny, Wachs, Ludwig, and Phillips, 1995). Ponitz and colleagues (2009) have previously used the measure alongside the CLASS domain of classroom organization to predict gains in student literacy within first grade classrooms.

This 16-item questionnaire consists of statements to which the teacher replies with a *yes* or *no* indicating his or her agreement with the given statement. Example items include, "No matter how hard we try, we always seem to be running late," "There is often fuss going on in our classroom," and "You can't hear yourself think in our classroom." The alpha coefficient for the chaos measure was .631.

Case study participant observation notes. For all participants, observational notes were taken in order to code behaviors on the inCLASS measure protocol. However, for case study participants, these hand-written, qualitative notes were

analyzed and coded in order to provide a more thorough description of student behavior.

Case study teacher interviews. For case study participants, structured interviews were conducted to understand teacher perceptions regarding individual student behavior in the classroom. The interview was conducted at the school, after school hours and consisted of 16 questions. Example questions included, "When thinking about the student in the classroom, how would you describe his/her ability to attend (pay attention to, stay engaged) to activities throughout the day?" and "What classroom/school circumstances affect his/her ability to be patient, follow expectations, and respect other students' personal space?" Appendix A provides a summary of the research questions, measures, and procedures.

Data Analysis

Analyses identified children who had behavioral self-regulation ability and poor classroom behavior (subsample participants), compared subsample participants to other groups of students with dissimilar scores on the direct assessment and teacher-report measure of classroom behavior, assessed individual classroom behavior, as well as provided an overall picture of the subsample's home and classroom environments. All statistics were computed with the Statistical Package for the Social Sciences 22 (SPSS). Qualitative analyses were conducted to target individual classroom behavior as well as teacher perceptions of child behavior for the three case study participants selected from the subsample.

Out of the larger pool of participants (*N*=259), direct assessment scores (HTKS) and teacher report measures of classroom behavior (CBRS/SSIS-RS) were first analyzed for research question 1. This research question focused on identifying the number of students out of the larger sample that had high behavioral self-regulation ability relative to peers as well as undesirable classroom behavior. Direct assessment raw scores were used to determine behavioral self-regulation ability (sum points out of 60). Those scores were standardized to determine the highest performing students in terms of behavioral self-regulation ability among their peers. Participant scores on the subscales within the CBRS and SSIS-RS were standardized and combined to create a behavior composite score. Standardized scores were used to identify participants with the poorest classroom behavior among their peers according to teacher report. Subscales included self-control, engagement, internalizing behavior, externalizing behavior, bullying, hyperactivity, and classroom self-regulation. Participants whose scores were approximately half a standard deviation *above* others on the direct assessment of behavioral self-regulation (HTKS) as well as a half a standard deviation *below* others on the teacher reported student classroom behavior measure (CBRS/SSIS-RS) were identified for research question one; those identified were the subsample of interest and analyses done on the home and classroom environments focused on this subsample of students.

By converting students' raw scores to standardized scores, I was able to compare students' performance on the behavioral self-regulation task (HTKS) and teacher report scores regarding student classroom behavior (CBRS/SSIS-RS) with their peers, resulting

in a selection of participants that outperformed approximately 70% of their peers on the direct assessment and had poorer classroom behavior than approximately 70% of their peers assessed by teacher report (Fraenkel & Wallen, 2009). Previous studies have used this technique in identifying students considered above average (.5 standard deviation or higher) and below average (.5 standard deviation or lower; see Irvin, 2012; Farmer, et al., 2002).

To compare the subsample students to other students in terms of observed classroom behavior, individual behavior in the kindergarten context was assessed using an observational measure (inCLASS); dimension codes taken from both days of observation were averaged to provide a picture of individual classroom behavior for the targeted participants. Data collected on the inCLASS during the participants' kindergarten year represents 81% of the subsample participants; three of those selected for subsample analyses had relocated out of the study schools by the spring of their kindergarten year.

In order to evaluate the uniqueness of the subsample of students that were of primary interest in this study (those with high behavioral self-regulation relative to peers and poor classroom behavior), the subsample's scores on the inCLASS observational dimensions of engagement and behavior control derived from student observations during the kindergarten year were compared to the scores of three other groups of students: (a) students who had high behavioral self-regulation relative to peers and positive classroom behavior, (b) students who had low behavioral self-regulation relative to peers and poor classroom behavior, and (c) students with low

behavioral self-regulation relative to peers and positive classroom behavior. These additional groups were selected in the same manner as the primary subsample using the HTKS task to evaluate behavioral self-regulation ability and the teacher questionnaire of student classroom behavior assessed by the combined CBRS/SSIS-RS. To be selected for the comparison groups, students with high behavioral self-regulation ability relative to peers were those that had standardized scores on the HTKS that were half a standard deviation above others or greater; students with low behavioral self-regulation ability relative to peers were those that had standardized scores on the HTKS that were half a standard deviation or lower below others. Students who had positive classroom behavior relative to peers had behavior composite standardized scores derived from the teacher-reported measure (CBRS/SSIS-RS) that were half a standard deviation or more above others; students with poor classroom behavior relative to peers had behavior composite standardized scores that were half a standard deviation or lower below others. In order to compare group scores on the inCLASS dimensions of engagement and behavior control, a one-way analysis of variance (ANOVA) was used.

To describe the characteristics of the home environment (Q-2), the subscales of conflict and closeness within the parent report CPRS measure were averaged for subsample participants selected from research question one (those with high behavioral self-regulation ability relative to peers and poor classroom behavior). Additionally, frequencies and means were aggregated for the responses on the Holmes-Rahe Life Stress Inventory measure.

To describe the characteristics of the classroom environment (Q-3), classroom quality was assessed by examining dimension codes taken from both days of observation for classrooms that contained the subsample participants using the CLASS; codes were averaged to provide information regarding the classroom environment during the kindergarten year. In order to measure teacher-reported chaos in the classroom, sums were aggregated per teacher for the teacher-report LECP (Chaos) measure. Positive codes were reverse-coded so that higher sums represented higher levels of classroom chaos.

Classroom-level data were collected on those teachers with subsample participants in their classrooms. This consisted of 7 teachers, however one teacher had subsample students from both cohorts and therefore was observed in two consecutive years. Therefore, the analyses of classroom environments focused on 8 classrooms but with only 7 teachers.

To select case study participants within the subsample, individual behavior was again observed and assessed using the inCLASS during the 2014-2015 school year. The dimension codes taken from both days of observation were averaged to provide a current picture of classroom behavior. Dimension averages were then standardized to identify those participants with the poorest classroom behavior as evidenced by their scores on engagement and behavior control dimensions within the inCLASS observational measure (out of those remaining in the study schools during the 2014-2015 school year; *n*=10). Participants that scored a half a standard deviation *below* their

peers on the engagement and behavior control dimensions were selected for further study (*n*=3).

To analyze teacher perceptions of case study participants' classroom behavior and specific classroom behaviors the case study participants engage in (Q-4, Q-5), qualitative analyses were conducted on interviews with the teachers of the case study participants and on participant observation notes in line with what Stake (2000) identified as cross-case analysis within a collective case study. After interviews were recorded, the text was transcribed. Interview transcripts and hand-written observational notes were read and re-read to develop initial codes, categories, and themes based on the data and in consideration of the research questions (Glesne, 1999). Initial codes included on- and off-task behavior, interaction with peers (positive, negative), individual characteristics (motivation, academic ability, emotional regulation, behavior control), interactions with the teacher (positive, negative), and family/home life. Themes were then created based on the codes and related data across the case study participants to reveal insights into case study participant classroom behavior.

Chapter 4

Results

Students with Behavioral Regulation Ability and Poor Classroom Behavior

By comparing students' direct assessment scores with teacher-reported accounts of student classroom behavior, 16 kindergarten students were identified as having poor classroom behavior despite exhibiting high behavioral self-regulation skills relative to peers in a direct assessment. This represents 6% of students from the larger sample. Table 4.1 shows means and standard deviations of the raw scores on both measures. These raw scores show that there was variation in the direct assessment scores (*M*=43, min=29, max=55, *SD*= 8.43) with a mean reflecting moderate to moderate-high performance on the task.

Table 4.1 also shows raw scores per subscale on the teacher-reported measure of child behavior (CBRS/SSIS-RS) during the students' kindergarten year. The means for self-control (*M*=2.10), engagement (*M*=2.65), and self-regulation (*M*= 2.58) all remain below a 3, reflecting inconsistency in classroom behavior with regards to these targeted aspects (1= never; 2= seldom; 3=often; 4= almost always). Raw means for problem behavior subscales (internalizing (*M*= 1.74), externalizing (*M*= 2.41), bullying (*M*= 2.15), hyperactivity/inattention (*M*= 2.685)) show that hyperactivity and inattention are the most noted problem behaviors.

Table 4.1 Means and standard deviations of HTKS and CBRS/SSIS-RS subscale scores.

	n	Min	Max	*M*	*SD*
HTKS	16	29	55	43	8.43
Self-Control	16	1.14	2.85	2.10	0.49
Engagement	16	1.14	3.42	2.65	0.53
Internalizing	16	1.28	2.42	1.74	0.34
Externalizing	16	1.75	3.42	2.41	0.54
Bullying	16	1.00	3.40	2.15	0.73
Hyperactivity/Inattention	16	1.85	3.71	2.68	0.60
Self-Regulation	16	1.00	3.60	2.58	0.69

Table 4.2 shows the subsample standardized scores derived from the direct assessment of behavioral self-regulation (HTKS) and the teacher-reported measure of student classroom behavior (CBRS/SSIS-RS). The direct assessment (HTKS) *z* scores ranged from half a standard deviation above the mean (*z*= .523) to nearly two standard deviations above the mean (*z*= 1.721). The behavior composite *z* scores from the teacher-reported measure assessing student classroom behavior (CBRS/SSIS-RS) ranged from nearly 3 standard deviations below the mean (*z*= -2.82) to half a standard deviation below the mean (*z*= -.50).

Table 4.2 Subsample standardized scores for the HTKS and CBRS/SSIS-RS measures.

Participant ID	*Behavior Composite Z Score*	*HTKS Z Score*
Min	-2.82	0.52
Max	-0.50	1.72
1	-1.39	0.95
2	-2.82	0.71
3	-2.26	1.25
4	-0.77	1.25
5	-1.75	0.52
6	-1.10	1.37
7	-0.50	1.32
8	-0.62	0.65
9	-2.17	0.59
10	-0.50	1.04
11	-0.61	1.27
12	-1.02	1.66
13	-0.54	1.72
14	-0.60	1.27
15	-1.01	0.59
16	-0.92	1.66

Participants' kindergarten inCLASS scores are shown in Table 4.3. These scores are an average of the codes attributed to each observational cycle across the two observation days for each participant. By the spring of the participants' kindergarten year, 3 students had relocated to different schools, therefore only 13 participant observations were available for inCLASS analyses.

Table 4.3 shows the engagement dimension mean of 4.09. This indicates that participants' level of engagement throughout the observations was inconsistent. Mid codes (3, 4, 5) on the inCLASS for the engagement dimension provide that the observed

child was only occasionally able to sustain attention and be engaged with the learning activities over the course of the observational cycle. This can be compared to a high range code (6,7) that indicates the child was able to *consistently* sustain attention and focus on the activities for the majority of the observational cycle. The range of means for that dimension (min= 2.63, max= 5.25) also shows that the majority of codes were within the low to mid-range. Of interest, the behavior control dimension mean is in the mid-high range (*M*= 5.70). This indicates that the participants were observed as having control over their body with respect to the learning environment and others within it most of the time.

Table 4.3 Subsample inCLASS dimension means and standard deviations.

Dimension	*n*	Min	Max	*M*	*SD*
Positive Eng.	13	1.13	3.75	2.37	0.84
Communication	13	1.00	2.88	1.67	0.54
Conflict	13	6.00	7.00	6.81	0.29
Sociability	13	2.00	4.13	2.93	0.79
Communication	13	1.25	3.25	2.43	0.59
Assertiveness	13	1.25	3.38	2.15	0.76
Conflict	13	5.75	7.00	6.67	0.38
Engagement	13	2.63	5.25	4.09	0.76
Self-Reliance	13	1.13	4.38	2.61	1.24
Behavior Cont.	13	4.13	6.63	5.70	0.67

To evaluate the uniqueness of the subsample students in terms of behavioral self-regulation ability and subsequent classroom behavior, three additional groups of students were selected for comparison. Table 4.4 provides descriptions of these additional groups (groups 1, 2, and 4). Group 1 had standardized scores on the behavioral self-regulation direct assessment task (HTKS) half a standard deviation higher

than peers and also had teacher-reported classroom behavior scores (CBRS/SSIS-RS) half a standard deviation above others (high behavioral self-regulation and high classroom behavior). Group 2 had standardized scores on the behavioral self-regulation direct assessment task (HTKS) half a standard deviation or greater below others as well as teacher-reported classroom behavior scores (CBRS/SSIS-RS) half a standard deviation below others (low behavioral self-regulation and low classroom behavior). Group 3 is the subsample and primary group of interest for this study and, as mentioned previously, had standardized scores on the behavioral self-regulation direct assessment task (HTKS) half a standard deviation or greater above others as well as teacher-reported classroom behavior scores (CBRS/SSIS-RS) half a standard deviation below others (high behavioral self-regulation and low classroom behavior). Finally, group 4 had standardized scores on the behavioral self-regulation direct assessment task (HTKS) half a standard deviation below others as well as teacher-reported classroom behavior scores (CBRS/SSIS-RS) half a standard deviation above others (low behavioral self-regulation and high classroom behavior). Table 4.4 also shows the inCLASS engagement and behavior control dimension averages per group. The engagement dimension averages range from 4.09 to 4.74; the behavior control dimension averages range from 5.52 to 6.52.

Table 4.4 Comparison group descriptions and inCLASS means.

Group	Beh. Self-Reg. (HTKS)	Beh. Composite (CBRS/SSIS-RS)	*n*	Engagement *M*	Beh. Control *M*
1	High	High	39	4.74	6.52
2	Low	Low	28	4.09	5.52
3*	High	Low	16	4.09	5.70
4	Low	High	20	4.63	6.50

**Group 3 is the subsample and the primary group of interest for the study.*

Table 4.5 shows ANOVA comparisons of observed student behavior within the inCLASS dimension of engagement. ANOVA comparisons show a significant difference between groups at the $p < .05$ level in observable student behavior with regard to the inCLASS dimension of engagement [F (3,86)=7.37, p=0.00]. In post hoc comparisons, (see Table 4.6) group 3 (high-low) was significantly different from group 1 (high-high), scoring lower in observed engagement ($p < .05$). Interestingly, group 3 (high-low) was not significantly different from group 4 (low-high) in observed engagement, however, there was a trend towards significance (p =. 106). Additionally, there was no significant difference between group 3 (high-low) and group 2 (low-low) on observed engagement indicating that those that performed poorly on the direct assessment measure of behavioral self-regulation (HTKS) had observed engagement scores on the inCLASS that were commensurate with those in group 3 (high-low) that performed highly on the behavioral self-regulation measure.

Table 4.5 ANOVA comparisons of classroom behavior on the inCLASS engagement dimension.

	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Between Groups	8.39	3	2.79	7.37	0.00*
Within Groups	32.63	86	0.37		
Total	41.02	89			

*Significant at the $p<.05$ level.

Table 4.6 Tukey HSD comparisons of classroom behavior on the inCLASS engagement dimension.

					95% Confidence Interval	
(I) Group	*(J) Group*	*Mean Difference (I-J)*	*Std. Error*	*Sig.*	*Lower Bound*	*Upper Bound*
3	1	-0.64*	0.198	0.009*	-1.16	-0.12
	2	-0.00	0.210	1.000	-0.55	0.54
	4	-0.53	0.233	0.106	-1.14	0.07

*Significant at the $p<.05$ level.

Table 4.7 shows ANOVA comparisons between groups of observed student behavior within the inCLASS dimension of behavior control. ANOVA comparisons show a significant difference between groups at the $p<.05$ level in observed student behavior with regard to the inCLASS dimension of behavior control [F (3,86)=16.0, p=0.00]. In post hoc comparisons, Table 4.8 shows that group 3 (high-low) scored lower on observed behavior control than groups 1 (high-high) and 4 (low-high). In other words, group 3 (high-low) was significantly different from groups 1 (high-high) and 4 (low-high) in terms of observed classroom behavior control ($p<.05$). However, group 3 (high-low) was not significantly different than group 2 (low-low; p=0.831), again indicating that those that performed poorly on the direct assessment measure of behavioral self-regulation (HTKS)

had observed behavior control scores on the inCLASS that were commensurate with those in group 3 (high-low) that performed highly on the behavioral self-regulation measure.

Table 4.7 ANOVA comparisons of classroom behavior using the inCLASS behavior control dimension.

	Sum of Squares	*Df*	*Mean Square*	*F*	*Sig.*
Between Groups	19.35	3	6.45	16.00	0.00*
Within Groups	34.65	86	0.40		
Total	54.00	89			

*Significant at the $p<.05$ level.

Table 4.8 Tukey HSD comparisons of groups using the inCLASS dimension of behavior control.

					95% Conf. Interval	
(I) Group	*(J) Group*	*Mean Difference (I-J)*	*Std. Error*	*Sig.*	*Lower Bound*	*Upper Bound*
3	1	-0.81*	0.204	0.001*	-1.35	-0.27
	2	0.18	0.217	0.831	-0.38	0.75
	4	-.80*	0.24	0.007*	-1.43	-0.17

*Significant at the $p<.05$ level.

The Home Environment

Data collected from the parent report measures regarding the home environment of the subsample participants (those with high behavioral self-regulation relative to peers and low classroom behavior) are shown in Table 4.9. The Holmes-Rahe data shows that participants' experiences vary greatly. The range of reported stressful life events (min= 3; max= 13; SD= 4.02) shows this variability, however, out of the 16 participants, 8 parents/caregivers reported having more than 10 stressful life events within the past year.

Data collected on the Child-Parent Relationship Scale (CPRS) subscales of conflict and closeness are also presented in Table 4.9. Reports of relational conflict (M= 1.96; SD= .770) between the caregiver and child show greater variability than reports of closeness (M= 4.83; SD= .181). These data indicate that while most parents or primary caregivers report having a close relationship with their child, some do report the presence of conflict within their relationship.

Table 4.9 Holmes-Rahe Life Stress Inventory and CPRS subscale data.

	Holmes-Rahe	*CPRS Conflict*	*CPRS Closeness*
n	16	16	16
Min	3.00	1.00	4.42
Max	13.00	3.62	5.00
M	8.31	1.96	4.83
SD	4.02	0.77	0.181

The Classroom Environment

Table 4.10 shows the CLASS dimension scores for the subsample kindergarten classrooms. Note, this data reflects the classroom environments of 7 teachers, but one of those teachers taught study participants in both cohort 1 and cohort 2, resulting in two observations for that same teacher (1 observation per year). Thus, the observation count reflects the number of teachers observed plus an additional observation for the teacher that taught cohort 2 study participants.

With regard to the CLASS domain *emotional support*, Table 4.10 shows that the positive climate dimension mean (*M*=4.86, *SD*= .970) is within the mid-range of codes. Mid-range scores within this dimension provide that there are *some* indications of warmth among the teacher and students. High-range codes for positive climate point to

consistent and ample evidence of warm, supportive teacher-student relationships. The negative climate dimension mean (*M*=5.86, *SD*=.975) provides that at times, the classroom environment contained expressed negativity including irritability, anger, and harshness. Codes within this dimension were reverse-coded so that higher scores were more desirable and reflected the absence of negativity (i.e., a code of 7 indicates *no* instances of observed negativity). The teacher sensitivity mean (*M*=4.29, *SD*= .857) is within the mid-range of codes and provides that on average, teachers were *sometimes* aware of students' needs and were inconsistent in their responsiveness to students. The mean for the regard for student perspectives dimension (*M*=3.67, S*D*= .454) is also within the mid-range of codes, indicating that the teachers only *sometimes* placed an emphasis on students' interests and perspectives and supported and encouraged student responsibility and autonomy within the classroom.

Within the classroom organization domain, the behavior management mean (*M*=5.09, *SD*=.749) falls within the mid-range of codes. In this range, there is inconsistency in how behavior is managed, the teacher uses both proactive and reactive techniques to control behavior, and the teacher is sometimes effective in dealing with misbehavior. The productivity mean (*M*=5.17, *SD*=.639) is also within the mid-range of codes and indicates that during observations, teachers were mostly productive and efficient and classroom routines were evident, but at times, learning time was interrupted or transitions took too long. The instructional learning formats dimension mean (*M*=4.25, *SD*=.652) also falls within the mid-range. This indicates that at times, the teachers actively encouraged student participation and involvement and provided

interesting and varied materials for instruction, however the teachers were not consistent in maximizing student interest and engagement.

Finally, within the instructional support domain, the concept development dimension mean (*M*=2.43, *SD*=.626) falls within the low-range of codes. This indicates that teachers rarely placed an emphasis on supporting and promoting students' higher-order thinking skills. The quality of feedback mean (*M*=2.91, *SD*=.660) falls within the low-range. This average provides that teacher feedback was often missing or minimal and feedback was used to expand student learning and understanding inconsistently. The language modeling average (*M*=2.59, *SD*=.396) also falls within the low-range of codes and indicates classroom environments that contain minimal conversations and teachers rarely make use of language-stimulation techniques.

Table 4.10 CLASS dimension means and standard deviations.

CLASS Dimension	*n*	*Min*	*Max*	*M*	*SD*
Positive Climate	8	3.06	6.25	4.86	0.97
Negative Climate	8	4.12	6.75	5.86	0.97
Teacher Sensitivity	8	3.06	5.62	4.29	0.85
Regard for St. Persp.	8	3.00	4.37	3.67	0.45
Behavior Mgmt.	8	3.81	5.87	5.09	0.74
Productivity	8	4.37	5.93	5.17	0.63
Inst. Learning Formats	8	3.56	5.31	4.25	0.65
Concept Development	8	1.70	3.75	2.43	0.62
Quality of Feedback	8	2.25	4.12	2.91	0.66
Language Modeling	8	2.08	3.12	2.59	0.39

The results for the teacher-reported LECP (Chaos) measure are provided in Table 4.11. Nearly every teacher report indicated that the classroom environments are at times chaotic. At most, one teacher provided that he/she agreed with 8 of the 16 statements on the questionnaire. Five teachers indicated that they agreed with 5 or less of the statements.

Table 4.11 Life in Early Childhood Programs (Chaos) data.

Teacher ID	*M*	*Sum of Items*
1	0.38	6
2	0.33	5
3	0.19	3
1	0.38	6
4	0.06	1
5	0.25	4
6	0.00	0
7	0.50	8

Individual Cases in Context

After observing subsample participants who had not relocated out of the study schools by the 2014-2015 school year (*n*=10), three students were identified for a collective case study based on data collected on the inCLASS dimensions of engagement and behavior control. Two of those students were in the second grade and one was in the first grade. Table 4.12 shows the inCLASS dimension codes attributed to their observed behavior (engagement and behavior control) and standardized scores indicate the students' observed behavior scores relative to peers. Three students met the criteria of having engagement and behavior control inCLASS dimension averages half a standard deviation lower than peers on both dimensions. Themes that emerged from analysis of

teacher interviews and participant observations regarding case study participants' classroom behavior included: lack of motivation, poor peer relations, inability to control emotions, seeking attention, and instability at home.

Table 4.12 Case study participants' inCLASS engagement and behavior control scores.

Student	*Engagement*	*Z score*	*Behavior Control*	*Z score*
1	3.75	-1.15	5.25	-0.63
2	3.62	-1.37	5.25	-0.63
3	4.12	-0.50	4.87	-1.46

Lack of Motivation

In interviews, teachers mentioned a lack of motivation in case study participants. One teacher provided, "[Student 2] can show characteristics of laziness throughout the day, such as laying her head down on her desk and complaining when asked to participate or finish an assignment." The teacher of student 1 had similar comments regarding her ability to stay on task during the school day,

> She needs from the teacher and the assistant, she needs a little bit of a push, more so than I'd say the average child…She easily gets off task or she has a tendency…to wander or go wander by her friends with no purposeful movement.

During observations, student 1 struggled to remain engaged during individual tasks and would often be passively off-task. For instance, she would often stare out the window, play with her pencil, play with her hair, and walk around the classroom to find supplies not needed for the task. Her engagement during whole group activities was

typically better, and she would attend to the teacher and assistant teacher when approached during independent work.

In the classroom, student 2 was observed to exhibit a mixture of off and on-task behavior. She was most engaged during independent seat work, although at points she would need repeated scaffolding from the teacher in order to complete the task. During the morning observation, she was often observed lying on the desk with her eyes closed while sucking her thumb.

Poor Peer Relations

Teachers also discussed difficulties for case study children when getting along with peers in the classroom. The teacher of student 2 provided, "[Student 2] is very emotional, she can be very kind and sweet to others. Yet when she is upset she is very mean and hurtful to others who have not caused her any harm." During observations, student 2 had both positive and negative interactions with peers. For instance, during an observational cycle, student 2 was observed getting along with others and smiling with peers during a card game. Some negative interactions with peers were not verbal and included rolling her eyes and sucking her teeth. At one point, student 2 intentionally ran into a peer and tried to hit him with a meter stick. The teacher of student 2 additionally provided, "Whole group and small group situations can be most difficult for her because she can have difficulty getting along with others…When she has conflict with others she does not show good conflict resolution."

Although the teacher of student 3 discussed how social and friendly the student was, when asked what frustrates student 3 the most in the classroom, her teacher

indicated that it is getting along with peers. She extended this notion: “Sometimes [student 3] will think that a student is imitating what she’s doing…even if it’s an assignment that’s not necessarily an independent assignment where they can work together or work on their own.”

The teacher of student 3 added that sometimes her attention on classroom activities is compromised when interactions with peers have frustrated her. She provided, “…so if she has some frustration mixed in, then that’s when I see her getting off task.” During observations, student 3 mostly had positive interactions with peers, with only one negative instance involving shared materials. However, it was observed that her constant interactions with peers distracted her from classroom tasks.

Inability to Control Emotions

Teacher interviews indicated that participants had difficulty controlling emotions within the classroom. For student 2, this is seen within her interactions with the teacher and classroom peers and interferes with her academic engagement. The teacher of student 2 added, “[Student 2] sucks her thumb often as a comfort/security. [She] will yell at others and say comments like, ‘Stop looking at me with your ugly self’ or ‘Stop bothering me’ when she becomes upset.” Once student 2 is upset, her ability to participate in classroom activities is compromised. Her teacher additionally provided,

> If [student 2] is happy and in a positive mood, she will stay on task and participate. Yet when she is asked to finish doing something she becomes upset. Recently, she threw a stack of papers and hit a student in the face with them and

stomped out of the room when she was asked to work on a writing assignment she had not finished.

The teacher of student 3 also talked about the student's difficulty in controlling emotions in the classroom, albeit to a slightly lesser degree than student 2. The teacher of student 3 provided,

> [Student 3] can kind of get bummed out sometimes by, if she's really upset about something or really frustrated with a task, but usually it takes some self-reflection and or a one-on-one conference with me and then she's back on track.

The teacher goes on to mention that this happens regularly in the classroom and to a greater extent during afterschool hours. She extended, "I've seen her in other areas, like afterschool, I know she has complete emotional meltdowns, she's never had one of those in here. She'll kind of just be mad and tense up her body, but not screaming."

Seeking Attention

Two of the teachers indicated that participants seek attention from others within the classroom and this compromises classroom behavior. For student 2, this is done in more negative ways. Her teacher provided,

> [Student 2] believes that she can act out to get attention or that it will get her way. However, I have also observed that [student 2] has not been taught other positive ways to resolve conflict and express her emotions. At home, she is allowed to get upset and act similar to the way she does in class, but instead she is in her room.

The teacher of student 1 indicated that she also seeks attention from others, but is more affectionate in her attempts. Here her teacher added, "[Student 1] likes to be close to me, physically, she likes to have a spot that she can turn around and I can give her some immediate praise." Her teacher additionally provided that student 1 seeks attention from peers when she stated, "[Student 1] is very sweet, she's very motherly…she does like helping others. And it's to a point and [she's] not getting [her] work done because [she's] so busy helping a younger student."

During observations, student 1 would get distracted from tasks as she interacted with peers. This occurred during independent work time and during whole group. For instance, in an observation cycle during whole group, she was very affectionate with a male classmate to the point that she was entirely distracted from the teacher.

Instability at Home

All three teachers indicated that participants had encountered changes at home. The teacher of student 2 indicated that the student's parents no longer live together and student 2 expresses that she misses her father. The teacher of student 3 indicated that in years past, the student's parents were known to fight a lot and "she would have major meltdowns." The teacher of student 1 added that the student's mother had a new baby girl and "now she's not the only girl in the family." She extended this look into the turbulent home life of student 1 when she added,

[Her] mom is in and out of the picture…Normally granny and grandfather are raising her and her three brothers. I think [the mom] does step in and does it, and then steps back out, so it causes some tension between the grandparents and the Mom and the student have told me that they've gotten in fights about it.

Chapter 5

Discussion

This study examined the prevalence of students who exhibited high behavioral self-regulation skills relative to peers in a direct assessment but were also assessed through teacher report as having poor classroom behavior. Out of the larger sample of low income students (*N*=259), 16 students met the criteria of having a direct assessment score (HTKS) half a standard deviation above others as well as a teacher-reported assessment of poor classroom behavior (CBRS/SSIS-RS) as evidenced by a score that was half a standard deviation below others. A comparison of the subsample participants' scores on observed classroom behavior provided through the inCLASS dimensions of engagement and behavior control to other groups of students showed that the subsample differed in terms of observed classroom behavior.

For this subsample, an examination of the presence of stress in their home lives (Holmes-Rahe Life Stress Inventory) showed that half of the students' caregivers reported having more than 10 stressful life events within the past year. Additionally, although caregivers reported that they have close relationships with their children, some did report the presence of relational conflict garnered from the Child Parent Relationship Scale (CPRS).

An examination of classroom characteristics of the subsample also revealed that in terms of classroom quality as evidenced by an observational measure capturing the

nature of social interactions present in the learning environment (CLASS), emotional support and classroom organization were of moderate quality, while instructional strategies employed were low quality. The teacher-reported measure assessing the existence of chaos in the classroom (LECP (Chaos)) showed that nearly all of the teacher reports indicated the presence of chaos in the learning environments.

For the final two research questions, three students were identified from the subsample for a collective case study analysis based on data collected from an observational measure (inCLASS) that assessed individual behavior in the classroom. Out of the subsample that had remained in the study schools by the 2014-2015 school year, three students were selected based on engagement and behavior control scores that were half a standard deviation below others in the subsample. Qualitative analyses conducted on teacher interviews and observational notes of classroom behavior revealed common themes among the case study participants in regards to their classroom behavior: lack of motivation, poor peer relations, inability to control emotions, seeking attention, and instability at home.

Taken together, the findings offer perspective into the varied ecological factors that potentially influence child development and behavior. In particular, findings help illuminate aspects of the home life and classroom characteristics that potentially undermine behavioral self-regulation in the classroom. Further, findings have implications for supports and interventions seeking to ameliorate the effects of socioeconomic disadvantage while boosting behavioral self-regulation skills needed for

academic success. Discussion also focuses on practical implications for teachers and parents.

Self-Regulation in Context

This study found that 16 children who scored highly on a task of behavioral self-regulation performance in a lab setting were not perceived by teachers as having such skills in the classroom setting. This finding extends the notion that the presence of behavioral self-regulation skills can be present in a direct assessment, but such performance does not directly imply the presence of such skills outside of the lab environment.

This view is supported by Morrison, Ponitz, and McClelland (2010), who contend that successful self-regulating depends on environmental influencers. Bronfenbrenner (1979) also cautions that "different kinds of settings give rise to distinctive patterns of role, activity, and relation for persons who become participants in these settings" (pg. 109). In direct assessments, students undergoing self-regulation tasks have fewer influencers as the student interacts only with the test administrator (Morrison, Ponitz, & McClelland, 2010). However, in the classroom, students must regulate their behavior in reaction to demands placed on them by the teacher in terms of *task-related behavior* and by the teacher and peers in terms of regulating emotional behavior influenced by agents present in the social learning environment (2010). In other words, direct assessments are emotionally-neutral contexts and classroom environments are emotionally-laden (2010). Hence, the unique contribution of emotion regulation to classroom behavior doesn't get captured in the lab assessment.

Moderate correlations between EF and behavioral self-regulation performance on direct assessments and behavioral outcomes in the classroom provide further evidence for this notion (Blair, 2003; Lan & Morrison, 2008). To this end, Morrison, Ponitz, and McClelland (2010) urge for further understanding and assessing behavioral regulation in a meaningful way across contexts.

Blair (2002) and Calkins (2007) find that children who express stronger negative responses in classroom learning environments may have a harder time regulating their behavior in accordance with task-related demands. Yet other studies find that students with strong attention skills, an aspect of behavioral regulation, and strong negative reactions have the ability to overcome the negative results of negative emotionality by being able to direct their attention elsewhere (Henderson & Fox, 1998; Rothbart, Posner, & Kieras, 2006). Relatedly, children from low socio-economic backgrounds have been found to have a harder time regulating attention in direct assessment tasks than peers from more affluent backgrounds (Howse, et al., 2003).

Zelazo and Carlson (2012) offer further insight in their contention that measures assessing EF typically tap “cool” EF- tasks that are decontextualized and are more emotionally- neutral. This is in contrast to tasks that tap “hot” EF that include motivational and emotional influencers (2012). Thus, measures that tap into “hot” EF gauge cognitive skills that are closer to that experienced in daily decision-making (2012). Calkins and Marcovitch (2010) concur that interactional contexts require control over both cognitive and emotional skills when facing academic and social goals.

Comparisons between the subsample and other groups in terms of observed classroom behavior showed that those students with high behavioral self-regulation skills and teacher-reported poor classroom behavior compared to peers also were unique, especially in terms of observed behavior control. However, the subsample was not different in terms of observed engagement and behavior control when compared to students who had low behavioral self-regulation ability and low teacher-reported classroom behavior (group 2). This suggests that performance on the direct assessment of behavioral self-regulation (HTKS) was not indicative of classroom behavior; instead, the teacher-reported assessment of student classroom behavior (CBRS/SSIS-RS) was more closely aligned with observed classroom behavior. This finding is counter to previous research regarding the nature of behavioral self-regulation ability and its relationship to subsequent successful classroom behavioral functioning (e.g., Blair, 2002; Bronson, 2000; Fabes, et al., 2003; Howse, et al., 2003; Ponitz, et al., 2009; Shonkoff & Phillips, 2000).

Home Environment Factors

The present study found that children within the subsample experienced stress at home as evidenced by caregivers' responses to a questionnaire noting changes that occurred within the family life of the student. Additionally, parents reported relational closeness, but also the presence of some parent-child relational conflict. Existing research supports the notion that experiencing stress related to socioeconomic disadvantage has a negative effect on behavior. Shonkoff and Phillips (2000) contend that stressful early environments have the potential to shape behavior and brain

functioning. Others find that exposure to *chronic* ecological stressors has an impact not only on higher cognitive skills and behavior, but also on emotion regulation (Blair, et al., 2011; Evans & English, 2002). Morales and Guerra (2006) further illustrate that stressors related to socioeconomic disadvantage found in early environments, such as volatile parenting, constant moving and changes in caregivers, and exposure to violence, have the potential to affect child development. In addition to home environment factors, classroom environment factors also potentially influence the presence of behavioral self-regulation in the classroom.

Classroom Environment Factors

In the present study, an assessment of classroom learning environments revealed that at the domain level, emotional support and classroom organization were of moderate quality and instructional support was low quality. Findings regarding classroom quality fit with previous research, most notably that children considered socio-demographically at-risk for school failure tend to be in lower-quality classrooms (Stuhlman & Pianta, 2009). A look towards previous research provides that classrooms that offer strong emotional support tend to have children with greater behavioral self-regulation. For instance, Merritt and colleagues (2012) found that strong emotional support related to children's higher behavioral control in a sample of at-risk rural first graders. Additionally, classrooms offering stronger emotional support were found to have students with greater teacher-reported self-control than in classrooms offering low emotional support (Wilson, Pianta, & Stuhlman, 2007). Emotional support in the

classroom has also been shown to potentially mitigate risk factors associated with socioeconomic disadvantage (Brody, Dorsey, Forehand, & Armistead, 2002).

Additionally, strong classroom organization is important in promoting children's self-control (Rimm-Kaufman, et al., 2009). Rimm-Kaufman and colleagues (2009) found that students within classrooms with higher quality classroom management had higher behavioral self-control, cognitive self-control, and were more engaged compared to students within classrooms with lower quality classroom management. Relatedly, the presence of environmental chaos has been associated with weakened cognitive performance, as well as attention and motivation (Wachs, 1992; Wachs & Corapci, 2003).

In terms of instructional support, Hamre and Pianta (2005) found that children considered at-risk on the basis of demographic characteristics as well as on teacher reports of behavioral and social problems, fared better in terms of student-teacher relationships and academic achievement in classrooms that provided strong emotional and instructional support than at-risk kindergartners placed in less supportive classrooms. A similar study found that at-risk third graders fared better in terms of behavioral engagement in classrooms with higher classroom quality offering stronger instructional support (Downer, Rimm-Kaufman, & Pianta, 2007). Further, in an additional study of at-risk third graders, those within higher quality classrooms that offered more demanding instruction were more likely to be engaged (Dolezal, et al., 2003). Hence, characteristics found in home and learning environment contexts have

the potential to shape student behavior in the classroom, providing support to study development and behavior in light of the complexity of the child's varied environments.

Complex Interplay of Ecological Factors

In case study interviews and observations, five themes emerged from qualitative analyses regarding student classroom behavior: lack of motivation, poor peer relations, inability to control emotions, seeking attention, and instability at home. Themes that emerged from analyses of teacher perceptions of student behavior alongside contextually-relevant observations allowed for a micro-level understanding of student behavior for the three case study participants. Findings from the qualitative analyses reiterated the notion that children's classroom behavior is potentially affected by a complex interplay of ecological factors. From the qualitative interviews and observations, ecological factors that emerged were related to individual factors (i.e., inability to control emotions, lack of motivation), home factors (i.e., instability), and factors within the social learning environment (i.e., poor peer relations). Morrison, Ponitz, and McClelland (2010) argue that multiple factors, including individual, parenting, and classroom characteristics, should all be considered when seeking to understand behavioral self-regulation skills.

Hence, Bronfenbrenner's (1979) Ecological Systems theory lends a pertinent perspective not only to the qualitative analyses, but also to the subsample descriptive analyses, in that the behavior of the child within the classroom is potentially affected by a host of factors present in the varied environments in which the child develops. Thus, the nature of the parent-child relationship, as well as stress encountered by the child

are factors within the home microsystem that can ultimately influence development and behaviors within other environments. Additionally, the nature and quality of interactions within the classroom microsystem also have the potential to affect child development and behavior.

Limitations

A number of limitations warrant discussion. This study focused on a small sample of students that were selected based on differing assessments of behavioral self-regulation skills. As such, descriptions of home lives and classroom environments were focused on a small number of students, families, and contexts. Therefore, although findings offer perspective into potential factors that may influence behavior, descriptions provided herein cannot be generalized to the larger population.

Additionally, as mentioned previously, findings are descriptive and do not offer causal interpretations in evaluating factors that influence behavioral self-regulation. The present study also focused on children that were socioeconomically disadvantaged; although this is a strength of the study in illuminating environmental factors that potentially undermine child development, it also limits any generalization to the larger population.

With regard to the larger intervention study, the subsample consisted of five students that received treatment within their kindergarten year by way of attendance in the after-school intervention program. However, early unpublished reports of the impact of the intervention program show no significant treatment on treated (TOT) effects even after two years of dosage (Grissmer & Mashburn, 2015).

The final limitations offered relate to the measures used within the study. The selection of the subsample relied on both a direct assessment and a teacher-reported measure of classroom behavior. As Morrison, Ponitz, and McClelland (2010) contend, direct assessments in a lab setting often do not include environmental influencers found in the classroom that have the potential to alter behavioral self-regulation skills. Additionally, Mashburn, Hamre, Downer, and Pianta (2006) suggest that teacher reports of child behavior potentially are influenced by teacher bias and therefore are not always objective. These two points provide the impetus to find measures that assess behavioral self-regulation in ways that are both context-relevant as well as objective in nature.

Measures used to gauge the students' home lives (Holmes-Rahe Life Stress Inventory and CPRS) lacked precision and hindered interpretation of findings. Although the Holmes-Rahe Life Stress Inventory afforded clear data regarding the number and types of stressful life events the caregivers encountered, the measure did not capture whether or not each event was considered positive or negative by the caregiver. For example, it is not known whether a life event encountered by the caregiver (e.g. divorce) was perceived as being a positive or negative change.

Additionally, the CPRS closeness scale had little variability with a questionable alpha coefficient for the closeness subscale. This highlights the potential for caregivers to answer questions related to the parent-child relationships that are more positive in accordance with what is socially acceptable. In other words, it is possible that a caregiver is not accurate in his or her characterization of the parent-child relationship because it is not socially desirable to report minimal closeness. Additionally, a low alpha

coefficient may be attributable to item confusion related to the language used in the measure and may not be an adequate measure for this population. In order to get a more accurate interpretation of home lives, in-depth interviews with caregivers would have been beneficial for describing the nature and effects of life events as well as capturing greater insight into parent-child relationships.

In measuring classroom characteristics, the Life in Early Childhood Programs (LECP (Chaos)) measure also had a low alpha coefficient. This may have been due to the dichotomous nature of the responses and the wording of the questions. Teacher qualitative interviews would have been beneficial for a more thorough understanding of the chaotic nature of their learning environments.

Implications

The present study adds an extended need to further study how behavioral self-regulation develops and is assessed within at-risk student populations. Measures seeking to assess behavioral self-regulation should incorporate influencers present in the classroom environment so that an accurate assessment of behavior may be made. Additionally, our understanding of behavioral self-regulation and its relationship to classroom behavior may be more fully understood by studying subsamples of students with unique behavior as was done in this study.

Therefore, findings from this study provide further support to consider the varied contextual factors present in the home and learning environments that have the potential to affect behavior in the classroom. Future research would benefit from this holistic view of child development, especially when studying student populations at-risk

for school failure. Future research on this student population may illuminate how behavioral self-regulation skills are expressed in varying environments and allow for a clearer understanding of how to boost these necessary learning-related skills.

Therefore, interventions focusing on these factors- family supports and classroom quality supports- have the potential to mitigate the effects of socioeconomic disadvantage. Early interventions, in particular, would be ideal, given the Duncan and Brooks-Gunn (1997) finding that effects of socioeconomic disadvantage on child outcomes tend to be more evident during early childhood.

Implications for Practitioners and Parents

This study suggests that home and classroom environmental characteristics have the potential to undermine students' ability to self-regulate behavior in accordance with classroom expectations. Teachers wishing to promote student self-regulation in the classroom should provide warm learning environments that are well-organized and managed efficiently in addition to supporting students' thinking and understanding that goes beyond rote memorization. Previous research supports the notion that higher classroom quality in terms of emotional support, classroom organization, and instructional support are necessary for successful classroom behavior (e.g., Bogner, Raphael, and Pressley, 2002; McWilliam, Scarborough, & Kim, 2003; Rimm-Kaufman, et al., 2009).

In terms of the home environment, parents may be able to support their children's ability to self-regulate by trying to minimize instability (household instability, residential instability) and guard children from stressors associated with living in

poverty. Additionally, parents should try to minimize parent-child conflict while promoting supportive, caring relationships with their children. This is supported by research showing the negative influence poverty-related stressors and conflict within parent-child relationships can have on children's ability to self-regulate (e.g., Fantuzzo, et al., 2005; Howse, et al., 2003; McClelland et al., 2000; Waters, Weinfield, & Hamilton, 2000). In these efforts, academic success may be more attainable for those struggling with behavioral self-regulation skills in the classroom; skills that are necessary for successful school functioning.

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Appendix A
Summary of Research Questions and Procedures

Research Question	*Measures and Procedures*
1	(1) **Direct Assessment**: Head, Toes, Knees, Shoulders: Children assessed summer of 2013 (summer before first grade for cohort 1, summer before kindergarten for cohort 2) (2) **Teacher Report**: Child Behavior Rating Scale & Social Skills Improvement System-Rating Scales: Teachers completed questionnaires during the spring of the participants' kindergarten year (spring 2013 for cohort 1, spring 2014 for cohort 2) (3) **Student Observations:** inCLASS: 4 cycles (10 minutes each) per day for 2 days in the spring of kindergarten year (spring 2013 for cohort 1, spring 2014 for cohort 2); 1 hour per day; 2 days per participant
2	(1) **Parent Quantitative Interview:** (i) Holmes-Rahe Life Stress Inventory, (ii) Child-Parent Relationship Scale: One interview per family conducted during the summer of 2013 (summer prior to first grade for cohort 1, summer prior to kindergarten for cohort 2)
3	(1) **Classroom Observations:** CLASS: 4 cycles (15 minutes each) per day for 2 days per classroom in the spring of kindergarten year (spring 2013 for cohort 1, spring 2014 for cohort 2); 1 hour/day; 2 days per classroom (2) **Teacher Questionnaire**: Life in Early Childhood Programs (Chaos) Measure: Collected in the fall of the kindergarten year (fall 2012 for cohort 1, fall 2013 for cohort 2)
4	(1) **Teacher qualitative interviews**: Conducted during the spring of 2015 (second grade for cohort 1, first grade for cohort 2); approximately 30 minutes in length
5	(1) **Observational notes:** Observed during the spring of 2015 (second grade for cohort 1, first grade for cohort 2); 1 hour per day, 2 days per participant

Appendix B
HTKS Partial Protocol

Child ID: _____

PART I: INTRODUCTION

Now we're going to play a game. The game has two parts. First, copy what I do. Touch your knees.

Touch your knees; wait for the child to touch his/her knees.

Good! Now touch your shoulders.

Touch your shoulders; wait for the child to touch his/her shoulders.
Repeat the two commands with motions again, or until the child imitates you correctly.

PART I: PRACTICE

Now we're going to be a little silly and do the OPPOSITE of what I say. When I say to touch your KNEES, INSTEAD of touching your knees, you touch your SHOULDERS. When I say to touch your SHOULDERS, you touch your KNEES. So you're doing something DIFFERENT from what I say.

If the child responds correctly: Provide positive feedback on each practice item where the child responds correctly.

***If the child responds incorrectly* at any point during the practice portion, provide additional explanations up to 3 times before beginning the test portion:

Remember, when I say to touch your ____, instead of touching your ____, you touch your ____. Do the OPPOSITE of what I say.

→ Number of additional explanations given: 0 1 2 3

	Incorrect	*self-correct*	*correct*
A1. **What do you do if I say "touch your knees"?**	0 (other than shoulders)	1	2 (shoulders)
A2. **What do you do if I say "touch your shoulders"?**	0 (other than knees)	1	2 (knees)

If the child responds verbally: "can you show me? "

Ok, let's practice a few more.

	Incorrect	*self-correct*	*correct*
B1. **Touch your knees**	0 (other than shoulders)	1	2 (shoulders)
B2. **Touch your shoulders**	0 (other than knees)	1	2 (knees)
B3. **Touch your knees**	0 (other than shoulders)	1	2 (shoulders)
B4. **Touch your shoulders**	0 (other than knees)	1	2 (knees)

Proceed to Part I test section. Do not explain any parts of the task again. Do not provide feedback during the test portion.

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Appendix C

CBRS and SSIS-RS Sample Questions

	Never	Seldom	Often	Almost always
1. Observes rules and follows directions without repeated reminders.	1	2	3	4
2. Interacts well with other children.	1	2	3	4
3. Returns to unfinished tasks after interruption.	1	2	3	4
4. Completes learning tasks involving two or more steps in organized way.	1	2	3	4
5. Acts without thinking	1	2	3	4
6. Has temper tantrums.	1	2	3	4
7. Is inattentive.	1	2	3	4
8. Disobeys rules or requests.	1	2	3	4
9. Breaks into or stops group activities.	1	2	3	4
10. Has difficulty waiting for a turn.	1	2	3	4

Appendix D

Holmes-Rahe Life Stress Inventory Sample Items

1	Changes in residence
2	Major change in sleeping habits
3	Gaining a new family member
4	Changing jobs
5	Major change in responsibilities at work
6	Major personal injury or illness
7	Marriage
8	Being fired at work
9	Getting back together with romantic partner
10	Retirement from work
11	Major change in the health or behavior of a family member
12	Pregnancy
13	Major break-up with romantic partner
14	Major change in financial state
15	Death of a close friend
16	Detention in jail or other institution
17	Major change in number of arguments with romantic partner
18	Personal accomplishment you feel proud of
19	Death of a close family member
20	Son or daughter leaving home

Appendix E

CPRS Sample Items

	Definitely does not apply	Not really	Neutral	Applies somewhat	Definitely applies
1. I share an affectionate relationship with my child.	1	2	3	4	5
2. If upset, my child will seek comfort from me.	1	2	3	4	5
3. My child is uncomfortable with physical affection or touch from me.	1	2	3	4	5
4. My child values his/her relationship with me.	1	2	3	4	5
5. When I praise my child, he/she beams with pride.	1	2	3	4	5
6. My child spontaneously shares information about him/herself.	1	2	3	4	5
7. My child easily becomes angry at me.	1	2	3	4	5
8. It is easy to be in tune with what my child is feeling.	1	2	3	4	5
9. Dealing with my child drains my energy.	1	2	3	4	5
10. My child is sneaky or manipulative with me.	1	2	3	4	5

Appendix F

LECP (Chaos) Questionnaire Sample Items

Yes	No	
Y	N	There is very little commotion in our classroom.
Y	N	We almost always seem to be rushed.
Y	N	We are usually able to stay on top of things.
Y	N	No matter how hard we try, we always seem to be running late.
Y	N	It's a real zoo in our classroom.
Y	N	The atmosphere in our classroom is calm.
Y	N	There is often fuss going on in our classroom.
Y	N	No matter what we plan for, it doesn't seem to work out.
Y	N	We can usually find things when we need them.
Y	N	You can't hear yourself think in our classroom.

Appendix G

Teacher Interview Protocol

1. Tell me about [the student] in the classroom.

2. How is he/she different from other students in the class?

3. How is he/she similar to other students in the class?

4. When thinking about [the student] in the classroom, how would you describe his/her ability to attend (pay attention to, stay engaged) to activities throughout the day?

5. When the [the student] has a task to do, what is his/her typical behavior? Does he/she stay on-task? Does he/she finish early? Does he/she have a hard time getting started? Does he/she start the task, then get distracted?

6. How does he/she behave when tasks are challenging?

7. How does he/she behave when tasks are too easy for him/her?

8. What types of learning settings does [the student] work well in (whole group, small group, individual)? Why do you think this? What settings are more challenging for him/her? Why?

9. When is [the student] actively engaged (enthusiastic) in the classroom? Please describe.

10. How would you describe [the student's] ability to follow and remember instructions/directions?

11. How would you describe his/her ability to follow school/classroom rules?

12. Do you feel like [the student] could behave if he/she wanted to? Please explain.

13. What classroom/school circumstances affect his/her ability to be patient, follow expectations, and respect other students' personal space?

14. What is your relationship like with [the student's] family/caregivers?

15. Do you know of any home circumstances (changes or disruptions to routine) that have affected his/her school work or behavior?

16. Is there anything else we didn't cover?