THE ROLE OF CAREGIVER SUPPORT IN THE DEVELOPMENT OF ADAPTIVE APPROACHES TO LEARNING FOR PRESCHOOLERS WHO EXHIBIT ANXIOUS-WITHDRAWAL

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Abstract

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One goal of preschool is to provide children with early learning experiences that develop school readiness skills that lay the groundwork for future academic success. Aside from pre-academic skills, such as numeracy and phonemic awareness, one readiness skill, approaches to learning (ATL), captures the way in which children *go about* the learning process. Adaptive ATL skills such as task persistence, creativity, curiosity, and independence are crucial for academic achievement as they undergird the learning process and enable children to competently engage with classroom tasks.

However, preschoolers who display high levels of anxious withdrawal (AW) in the preschool classroom often require more support than peers to develop adaptive ATL. They tend to require additional time to acclimate before engaging, display hypervigilance, and be wary of interacting with others for fear of judgment. While past research suggests a negative relationship between AW and ATL, less is understood about how AW may predict changes in ATL during preschool years, especially in the context of parents and teacher support environments. Further, little is known about the factors that help some children who display higher levels of AW to develop more adaptive ATL than others with similar dispositions. Hence, this study examined the contribution of teacher and parent support, defined as the combined level of demandingness and responsiveness, to changes in ATL over the school year by children exhibiting higher levels of AW.

A sample of 749 children who participated in the FACES 2009 study were followed in their first and second preschool year. ATL was evaluated in two contexts: the classroom, as reported by the teacher, and during a 1:1 testing situation, as rated by an assessor. Incoming levels of ATL were included as a predictor in order to measure

residual change in ATL over the school year. AW was rated by the teacher. One moderating variable, parent support, was self-report, whereas the other moderator, teacher support, was directly observed within preschool classrooms. In order to examine how the relationship between AW, teacher support, and parent support predicts changes in ATL, and how it may look different between the first second preschool year, two sets of regression models were run for each research question, one for each preschool year. Further, for each year, one model was run with the teacher-rated (TR)-ATL as the outcome and the other with assessor-rated (AR)-ATL as the outcome.

Results from correlational analyses indicated that as hypothesized AW tended to be negatively related to ATL. Multilevel regression analyses suggested that change in ATL exhibited by children displaying high levels of AW was dependent upon complex relationships among parent and teacher support, which were inconsistent with differential susceptibility theory. Limitations of the study included a positively skewed AW variable and negatively skewed parent support variable, which may have impeded the ability to evaluate research questions in a sample displaying more marked vulnerability. Findings from the present study underscore the need for early identification of young children displaying moderate-high levels of AW in the classroom. Results also have direct implications for interventions offered to parents and teachers of young children exhibiting higher levels of AW that can foster expression of more adaptive ATL.

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APPROVAL OF THE DISSERTATION

This dissertation, "The role of caregiver support in the development of adaptive approaches to learning for preschoolers who exhibit anxious-withdrawal," has been approved by the Graduate Faculty of the Curry School of Education in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Dedication

To countless friends and family who offered various forms of encouragement that inspired me to keep putting one foot in front of the other.

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The early childhood years prior to formal schooling are an especially critical period of development. Children are rapidly developing and acquiring skills necessary for building competency in not only immediate tasks, but also future ones (Drake, Belsky, & Fearon, 2014; Repetti, Taylor, & Seeman, 2002). Their skills are shaped through interactions experienced across a variety of contexts (Burchinal, Peisner-Feinberg, Pianta, & Howes, 2002; Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001; Duncan et al., 2007; Hamre, Hatfield, Pianta, & Jamil, 2014; McClelland, Morrison, & Holmes, 2000). For instance, the quality of a preschooler's interactions with their teacher can contribute to acquisition of self-regulation skills needed to more competently engage in classroom activities (Williford, Whittaker, Vitiello, & Downer, 2013). Further, preschoolers whose parents used practices that were structured, yet responsive reported higher levels of competence as adolescents than those exposed to harsher practices (Baumrind, Larzelere, & Owens, 2010). Moreover, the existence of federal regulations such as the *Early Intervention Program for Infants and Toddlers with Disabilities* (Individuals with Disabilities Education Act, Part C, Sec. 631), federal grant programs like *Women, Infant, and Children* (WIC), and initiatives such as former President Obama's *Preschool for All*, highlight recognition of the early childhood years as a key developmental period.

Given the recognized importance of establishing positive patterns during this period, the need to identify young children who are more inclined to struggle cannot be overstated. One such group is those who display higher levels of anxious-withdrawal (AW), which is characterized by increased reticence and nervousness when in less familiar settings. While disengagement in social interactions can stem from a variety of factors, such as peer rejection, a preference for solitude, and developmental delays, which can be difficult to differentiate (Coplan, Ooi, Rose-Krasnor, & Nocita, 2014; Eisenberg, Shepard, Fabes, Murphy, & Guthrie, 1998; Rubin, Coplan, & Bowker, 2009), one prevailing theory is that young children most often display anxious withdrawal due to a combination of a more cautious/fearful disposition and exposure to an environment that is perceived as threatening in some way (Buss, 2011; Degnan, et al., 2014; Eisenberg et al., 1998; Gazelle, 2006). This early cautiousness has also been associated with development of social anxiety, which is largely characterized by a fear negative social appraisal (Clauss & Blackford, 2012; Coplan & Arbeau, 2008; Hirshfeld-Becker, 2007).

This heightened inhibition can hinder children's abilities to take full advantage of learning opportunities, particularly in the school setting (Coplan & Armer, 2005; Coplan, Prakash, O'Neil, & Armer, 2004; Evans, 1987; Rudasill & Konold, 2008). Due to the increased social demands arising from more frequent interactions with peers and teachers, expectations to perform tasks in front of others, and demands to display assertiveness in order to express needs, young children exhibiting AW require extra support to positively engage in the classroom (Kalutskaya, Archbell, Rudasill, & Coplan, 2015). For instance, young children who exhibited more internalizing problem behaviors, a category that subsumes AW, had more positive peer relationships when they experienced a more warm

and supportive relationship with their teacher (Baker, Grant, & Morlock, 2008) and shy young children were more actively engaged in classroom activities when their teacher provided more emotional support (Buhs, Rudasill, Kalutskaya, & Griese, 2015). Despite the vulnerabilities experienced by children exhibiting AW, the body of research on classroom environments that promote their positive engagement is small in comparison to studies about children who exhibit externalizing problem behaviors (Kalutskaya et al., 2015). While both types of problem behaviors are associated with negative outcomes, the latter are more likely to receive attention as they are more disruptive and salient in the busy classroom environment (Winsler & Wallace, 2002).

Ideally, preschool should equip children with basic readiness skills needed for success when they enter more formal education (Hair, Halle, Terry-Humen, Levelle, & Calkins, 2006). One readiness skill of more recent attention is approaches to learning (ATL), also known as learning behavior. This umbrella term "encompasses a variety of behaviors, skills, dispositions, and attitudes that describe the way in which children approach or react to learning situations," including task persistence and attention (Dominquez, Vitiello, Maier, & Greenfield, 2010). These behaviors facilitate the learning process and are reliably predictive of positive classroom engagement, academic performance, and school adjustment (Chen & McNamee, 2011; DiPerna, Vopel, & Elliot, 2001; Li-Grining, Votruba-Drzal, Maldonado-Carreño, & Haas, 2010; McDermott, Rikoon, & Fantuzzo, 2016). Highlighting their significance to child development, the National Education Goals Panel listed ATL as the most important kindergarten readiness skill (Kagan, Moore, Bredekamp, 1995). Given that children who display more AW typically exhibit more maladaptive ATL than peers, they are at an increased risk of

experiencing poorer socio-emotional and academic outcomes (Dominquez et al., 2010; Fantuzzo, Bulotsky-Shearer, Fusco, & McWayne, 2005). Hence, there is a significant need to identify factors that encourage young children displaying AW to develop more adaptive ATL in the classroom.

To build a framework for identifying factors that contribute to the development of adaptive ATL skills in this subgroup of children, it is helpful to explore relevant theories from socioecological literature. According to Urie Bronfenbrenner's ecological systems theory, individuals do not develop in a vacuum, but within the context of embedded environmental systems (1977). For young children, their most proximal and, thus, influential ecosystems include the home and school. Taking this one step further, person-environment fit theory states that an individual functions best when their environment is compatible with their needs (Edwards, Caplan, & Van Harrison, 1998). Understandably so, to function competently, young children who display more AW require different degrees of support than peers who display less AW, as they must overcome their reticence and anxiety (Rubin et al., 2009).

In reality though, children do not always have teachers and parents that both offer high levels of support; both can become busy and less attentive or get angry and yell. Differential susceptibility theory posits that some biologically-based child characteristics can render them more vulnerable to experiencing the negative consequences associated with environmental risk factors as well as likely to respond more positively to supportive environments than less vulnerable children (Belsky, 2013; Belsky & Pluess, 2009). Subsequently, young children who display less AW are more resilient than peers exhibiting more AW when in environments containing risk factors. This is because their

social competence can buffer them from experiencing as strongly the negative consequences associated with a more adverse environment.

In light of these theories, when identifying factors of the home environment that foster development of adaptive ATL in young children exhibiting higher AW, of significance are those that help them overcome the barriers posed by AW so that they can display adaptive ATL. There is a strong literature base suggesting that parenting practices play a role in the level of AW children display at home and at school (Coplan, Arbeau, & Armer, 2008; Hudson, Dodd & Bovopoulos, 2011; Rubin, Bugess, & Hastings, 2002; Rubin, Cheah, & Fox, 2001). Traditionally, less supportive parenting practices characterized by harsher, more directive approaches are related to higher levels of internalizing behaviors and school maladjustment (Coplan et al., 2008; Rubin et al., 2001; Rudasill et al., 2014). In contrast, more supportive parenting practices that offer clear, consistent expectations, while also displaying warmth, have been associated with more positive outcomes for children who display increased AW (Coplan et al., 2008; Hane, Cheah, Rubin, & Fox, 2008). However, the contribution of parenting practices to the development of ATL in preschoolers exhibiting AW remains to be directly tested.

Given that the classroom setting is the "point of performance" for demonstrating ATL skills, the contribution of teacher practices to the development of more adaptive ATL for preschoolers displaying AW is also of relevance. Traditionally, supportive teaching practices, which create structured, yet nurturing responsive environments, are believed to be more beneficial for children displaying AW as they create environments that are more predictable and responsive to their needs. This, in turn, can promote more adaptive functioning (Avant, Gazelle, & Faldowski, 2011; Gazelle, 2006). For instance,

young children exhibiting AW were more accepted by peers when in classrooms that had higher levels of teacher warmth and responsiveness (Gazelle, 2006). Being more included in the group may help children displaying AW feel more comfortable fully engaging in activities. However, the contribution of supportive teacher practices to the development of ATL for young children exhibiting AW has yet to be explicitly examined.

It is important though to not only consider how teacher and parenting practices are independently associated with the development of ATL in preschoolers exhibiting AW, but also how the interplay between the two contributes to child outcomes. While differential susceptibility theory suggests that children displaying AW and who have parents who do not use supportive practices are more susceptible to displaying less adaptive ATL at school, it also suggests that they are more likely to benefit than more socially competent peers from increased environmental support (Belsky & Pluess, 2009; Boyce & Ellis, 2005). Of significance then is the potential for supportive teaching practices (i.e., more responsive and demanding) to buffer children who exhibit higher levels of AW from displaying the poor outcomes they display when in less supportive classrooms. Hence, the present study explores the understudied contribution of parenting and teaching practices, as well as the interaction between these practices, to the development of ATL in preschoolers who exhibit more AW. Additionally, considering evidence that a child's level of dependency upon parent (Bhavnagri & Parke, 1991; Pianta & Harber, 1996) and teacher (Downer, Booren, Lima, Luckner, & Pianta, 2010; Howes & Hamilton, 1992) for skill acquisition decreases with age, this study also examines how variations in parent and teacher support contribute to the ATL

demonstrated by young children displaying AW in their first and second year of preschool. Findings have the potential to provide caregivers with insight for crafting environments that are more compatible with the needs of these children, and, subsequently, better position them to maximize learning opportunities and develop to their potential.

Chapter II of this study opens with general discussion of the level of functioning of children who display AW in the classroom and their barriers to displaying adaptive ATL. It then moves into introduction of the diathesis stress model and differential susceptibility theory to establish a framework for the hypothesized individual and combined contribution of parenting and teacher practices to the level of ATL displayed by young AW children. The Literature Review concludes with the research aims and hypotheses that guide exploration of the presented issues. Chapter III details the sample design and analytic procedures implemented to address the presented research aims, while Chapter IV presents findings from analyses. Finally, Chapter V offers interpretations and practical implications of results from the present study.

Chapter II: Literature Review

Anxious-Withdrawal in Young Children

Young children display different levels of engagement in the classroom. Some eagerly jump into new activities, whereas others nervously observe from a distance. This last group of children is often described as *anxious-withdrawn*[i] (AW; Gazelle, 2006). The tendency to exhibit AW behaviors is generally believed to arise from the dynamic interplay between a more inhibited temperament and exposure to environmental factors that exacerbate anxiety (Blair, Peters, & Granger, 2004; Buss, 2011; Rapee, 2014; Rimm-Kaufman & Kagan, 2005; Williams et al., 2009). Hence, these children often display increased wariness and withdrawal in novel and more demanding situations (Coplan et al., 2004; Hirshfeld-Becker et al., 2007; O'Connor, Cappella, McCormick, & McClowry, 2014; Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2006).

Borrowing from approach-avoidance motivation theory, children who are more inhibited have a more easily activated behavioral inhibition system and often overly-anticipate negative outcomes (Derryberry & Rothbart, 1997; Elliot & Thrash, 2002). Hence, they tend to be more hypervigilant and require more time than peers to acclimate before engaging. They are also more likely to display high emotional reactivity. They experience quick escalations of fear, sadness, or anxiety in reaction to environmental changes and can be difficult to soothe (Blair, Denham, Kochanoff, & Whipple, 2004; Buss et al., 2013; Eisenberg, et al., 1998; Presley & Martin, 1994;

Rimm-Kaufman & Kagan, 2005). This might present as quickly crying or freezing when in less familiar settings. Subsequently, these children have a higher risk for developing an anxiety disorder (Buss, 2011; Buss et al., 2013; Clauss & Blackford, 2012; Degnan et al., 2014; Hudson et al., 2011). For instance, in a sample of 146 preschoolers who displayed profound levels of behavioral inhibition, 90% met criteria for a diagnosable anxiety disorder (Rapee et al., 2005).

Difficulties identifying AW in young children. Despite the aforementioned risk factors associated with higher levels of AW, the research field for internalizing problem behaviors, which subsumes AW, is small in comparison to that of externalizing problem behaviors (e.g., aggressive or disruptive). Internalizing problem behaviors manifest in more subtle manners as they are characterized by an "overcontrol of emotions." The child's distress is directed inward, making their struggles less noticeable and less likely to interfere with others (Guttmannova, Szanyi, & Cali, 2007). Children who display internalizing problem behaviors are also often compliant and remain on-task, thus making their need for intervention less apparent (Kalutskaya et al., 2015). Taken together, caregivers are more likely to overlook indicators of internalizing problems (Berg-Nielsen, Solheim, Belsky, & Wichstrom, 2012).

There is also evidence that AW presents differently in young children across genders (Rimm-Kaufman & Kagan, 2005; Rubin et al., 2002). For instance, in a sample of preschoolers who displayed AW, boys were more likely to engage in solitary-passive behaviors (e.g., building alone with blocks) during free play than girls (Coplan et al., 2004). Such discrepancies can make it even more challenging for caregivers of young children to identify AW. Further, because young children are less able to introspect or

reliably report on more abstract feelings, such as anxiety, internalizing problem behaviors are particularly difficult to identify in this age group. Another confound is the fact that a degree of inhibition in response to new settings and engagement in solitary play is developmentally appropriate for young children (Asendorpf, 1991; Rimm-Kaufman & Kagan, 2005). Given the barriers to identifying children displaying AW, the aforementioned challenges affiliated with AW, and the relatively small body of literature pertinent to these issues, further study of appropriate supports for these children at home and school is warranted.

Functioning of Young Children Displaying AW in the Classroom

During the early childhood years before formal schooling, children are acquiring fundamental skills that lay the groundwork for future success (Blair & Raver, 2015; Duncan et al., 2007). At the same time, for preschoolers exhibiting AW, increased social and performance demands can make the initial classroom experience intimidating and hinder their ability to succeed to their potential (Coplan et al., 2008; Kalutskaya et al., 2015). Hence, they are in particular need of support in this setting. For example, young children who display more signs of AW are reported to produce fewer comments in the classroom (Evans, 1987; Rimm-Kaufman & Kagan, 2005), observe rather than actively engage in peer interactions (Coplan, DeBow, Schneider, & Graham, 2009; Coplan et al., 2004), experience more peer rejection (Buhs et al., 2015), and initiate fewer interactions with the teacher than peers (Coplan & Prakash, 2003; Rimm-Kaufman et al., 2002).

As an illustration, Asendorpf and Meir (1993) analyzed the verbal exchanges of a group of second graders over a seven-day period. They found no difference in the number of conversations engaged in or the quantity of speech produced by shier versus more

sociable children when interacting with familiar peers. However, shier children produced less speech with less familiar peers. The ability to speak comfortably with new peers is particularly crucial for adaptive ATL as it facilitates processes such as cooperating when completing tasks and sharing ideas.

Findings from Rimm-Kaufman and Kagan (2005) also suggest that children who exhibit more AW have the capacity to positively engage with peers and demonstrate prosocial behaviors (such as cooperating). However, they experience challenges utilizing these skills without support when the demands of the environment exceed their capacity to do so (Coplan, Schneider, Matheson, & Graham, 2010). Their more limited social skills and low task engagement can contribute to teachers across grade levels perceiving AW students as less academically (Coplan, Hughes, Bosacki, & Rose-Krasnor, 2011; Hughes & Coplan, 2010) and socially competent (Chang, 2003; Rudasill & Konold, 2008) than peers. Interestingly, there is evidence suggesting that these unfavorable perceptions are specific to Western Culture given that Non-Western teachers tend to view shy-inhibited children as more mature than less inhibited peers (Chen, Dong, & Zhong, 1997; Chen, Rubin, & Li, 1997). Taken together, in line with the overarching objective of this study, there is a need to better understand caregiver practices that help children who display more AW to overcome barriers to learning.

Approaches to Learning of Young Children Who Exhibit Higher Levels of AW. Displaying higher levels of AW can be detrimental to success at any age, but even more so during preschool years when children are supposed to be developing school readiness skills (Duncan et al., 2007; Kagan et al., 1995). In response to the growing achievement gap, the National Education Goals Panel (NEGP) listed as its first goal,

"… all children in America will start school ready to learn" and identified five dimensions of *school readiness* that children should master by the time they enter kindergarten: physical well-being and motor development, social and emotional development, language development, cognition and general knowledge, and approaches towards learning (ATL). While success in each dimension better positions children for success in the classroom, they identified ATL as the most important readiness skill as it facilitates the learning process (Kagan et al., 1995). Given the crucial role of ATL in school performance, a specific aim of this study is identifying factors that assist preschoolers who present more AW in the classroom in developing adaptive ATL. The following sections broadly define ATL and discuss its presentation in young AW children, including barriers to demonstrating adaptive functioning in this area.

Defining ATL. ATL is an umbrella term describing the way in which a child manages and responds to the demands of the learning process. Related terms include learning (-related) behavior/ skills (e.g., McClelland, Acock, & Morrison, 2006; McDermott, Leigh, & Perry, 2002) and task orientation/engagement (Downer et al., 2010; Hightower et al., 1986)[ii,iii]. It is "the effortful and goal-directed means by which children go about classroom learning processes, as distinguished from the cognitive skills and sociobehavioral adaptations that might emerge from those learning processes" (McDermott et al., 2016); it is also considered malleable. While there is lack of clarity regarding the individual aspects of ATL (Dominquez, Vitiello, Fuccillo, Greenfield, & Bulotsky-Shearer, 2011), measures of ATL typically include evaluation of a child's competence motivation (e.g., curiosity, openness to try new things, independence, task persistence), executive functioning (e.g., concentration, inhibition, flexible thinking,

planning), and attitude toward learning (e.g., cooperative when frustrated and following instructions) that manifest when executing learning-related tasks (Dominquez et al., 2010; Matthews, Kizzie, Rowley, & Cortina, 2010; McDermott et al., 2002).

ATL skills are essential to the learning process. Just because a child demonstrates the *capacity* to learn new information, it does not automatically follow that they will be able to do so at the time of performance. In order to successfully complete tasks children need to demonstrate adaptive behaviors and attitudes *toward* the learning process (Escalón & Greenfield, 2009). Understandably then, ATL is often predictive of school adjustment, emotion regulation, and academic achievement (DiPerna et al., 2001; Li-Grining et al., 2010; McDermott et al., 2016; Williford et al., 2013b; Yen, Konold & McDermott, 2004), even beyond the influence of IQ (Schaffer & McDermott, 1999), and has been found to have the potential to close the achievement gap (Razza, Martin, & Brooks-Gunn, 2015).

Additional child characteristics associated with ATL. Before discussing the contribution of a child's level of AW to their development of ATL, there are other child-level factors associated with ATL worth noting. First, girls and older children generally display more adaptive ATL than boys or younger children (Escalón & Greenfield, 2009; McClelland, Morrison, & Holmes, 2000; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009; Tach & Farkash, 2006). A few, however, have found no association with sex or age (Schaefer & McDermott, 1999), or just not with sex (McClelland et al., 2000; Williford et al., 2013b) or just not with age (McClelland & Morrison, 2003), suggesting an inconsistent relationship. Interestingly though, younger children have been reported to demonstrate faster rates of change in ATL over the school year than older children

(Dominguez et al., 2010), possibly because they have more room to grow. As to socioeconomic status (SES), discrepancies have been observed, where some have found a positive relationship (Hair et al., 2006; Matthews et al., 2010), and others no relationship (Williford et al., 2013b). Inconsistencies are also observed in the association between the child's higher level of education of the child's mother and the adaptiveness of their ATL. For instance, a number of researchers have noted more years of maternal education to be promotive of ATL (McClelland et al., 2000; Rimm-Kaufman et al., 2009; Tach & Farkas, 2010), while others have found ATL to not be significantly predicted by maternal years of education (e.g., Williford et al., 2013b). As for the role of a child's ethnicity/race, the picture is also indefinitive. While most have found ratings of ATL to be higher for Caucasian or Asian American students than African American and Latino students (Denver & Karabenick, 2011; McClelland et al., 2000; Tach & Farkash, 2006), there is evidence to suggest that this relationship is mediated by other factors such as SES and academic achievement (Fantuzzo et al., 2005; Tach & Farkash, 2006). Given the contribution of these demographic variables, each was included as covariates in regression models.

Presentation of ATL in young children exhibiting AW. Adaptive ATL facilitates positive outcomes for young children displaying AW. For example, it has been found to mediate the negative relationship between internalizing problem behaviors, including AW, and academic achievement (Dominquez, Maier, Vitiello, Fuccillo, & Greenfield, 2009; Hughes & Coplan, 2010; O'Connor et al., 2014), whereby young children displaying AW who had less adaptive ATL exhibited poorer academic skills. Furthermore, in the few pertinent studies identified, children who display higher levels of

AW often demonstrate more maladaptive ATL in the classroom than peers (Dominquez, et al., 2009; Dominquez et al., 2010; Fantuzzo et al., 2005; Hartz & Williford, 2015; Hughes & Coplan, 2010). At the same time, preschoolers exhibiting AW have been found to demonstrate similar gains in ATL over the school year as peers (Dominquez et al., 2010), again highlighting the malleability of ATL and potential for these students to develop adaptive ATL skills despite having lower incoming levels of ATL. Such findings beg the question of what types of environments are the most fruitful settings for this to occur.

At the same time, Fantuzzo et al. (2005) reported beginning of the year levels of social withdrawal to negatively, but not significantly, predict ATL in the Spring. While this suggests that variations in ATL at the end of the school year are not entirely dependent upon earlier levels of shyness, there are a few methodological issues to consider. Fantuzzo and colleagues (2005) used the same measures for behavioral adjustment and ATL as Dominguez and colleagues (2010), but input subscale scores for each measure into analysis whereas the other study collapsed such scores into higher order scales of "Shyness" and "Aggression." This implies that the contribution of social withdrawal to variations in ATL may be reduced when evaluating its effects using a broad versus more fine-grain measure. Nevertheless, these discrepancies demonstrate that a clearer understanding of the relationship between AW and ATL in the classroom is warranted.

A number of characteristics of children exhibiting AW hinder their ability to demonstrate adaptive ATL. For instance, being avoidance motivated renders them less likely to take the risks needed to develop adaptive ATL, such as sharing ideas in groups

and using trial and error when problem solving. Moreover, increased reactivity in their attentional system contributes to hyper-focus on threat-relevant information in the environment, such as negative social appraisal (Derryberry & Rothbart, 1997; Kendell & Treadwell, 2007). This can increase susceptibility to experiencing poor self-esteem and decreased tolerance for personal error in elementary school (Lahat et al., 2014; Meyer et al., 2013; Stoeckli, 2009). Similarly, others have found self-effacing thoughts to predict poor test performance in children exhibiting AW and possibly attenuate the effectiveness of positive self-talk (Prins & Hanewald, 1999). Hence, given their hypervigilance, it can be difficult for them to shift focus from perceived threats back onto academic tasks.

Further, the positive correlation between AW and standardized measures of inhibitory control can represent a risk and resiliency factor (Brooker, Kiel & Buss, 2016; Lamm et al., 2014; Valiente, Swanson & Lemery-Chalfant, 2012). For instance, emotional and behavioral regulation can help children display competence in school-related activities as they are able to control impulses (Blair & Raver, 2015; McClelland et al., 2014; Montroy, Bowles, Skibbe, & Foster, 2014). However, the negative synergistic effect arising from its coupling with anxiety in social settings may contribute to the overcontrol of emotions typical of children displaying more AW when in seemingly innocuous social situations where hypervigilance seems less warranted (Brooker et al., 2016).

Hypervigilance and wariness can also hinder AW children from displaying social skills needed for effective problem solving and cooperative learning - two aspects of ATL. For instance, in a sample of kindergarten, second, and fourth students, as compared to typically adjusted peers, those displaying higher levels of AW demonstrated less

competent problem solving skills (e.g., passivity) when initiating problem solving attempts and less persistence at working through interpersonal conflicts with both familiar and unfamiliar peers (Stewart & Rubin, 1995; see also Eisenberg et al., 1998; Erdley & Asher, 1996). While avoidance of these situations can temporarily reduce anxiety, it can inadvertently put children at risk for developing long-term social deficits as they miss opportunities to develop these skills.

Further, while it is normal for young children to display heightened inhibition in the presence of adults (American Psychological Association, 2013), those who display AW are more likely to experience difficulty engaging in activities in their presence. For instance, they have been found to release more cortisol than peers during test administration with a stranger (Blair et al., 2004) and shier 5th graders performed worse on tests when taken in a 1:1 versus group format (Crozier & Hostettler, 2003). This highlights discomfort performing under directed attention. Hesitancy engaging with teachers can also contribute to set-backs in the learning process as these children are more inclined to struggle alone than seek help. As an illustration, preschoolers rated by teachers as either more anxious-fearful than peers were less likely to initiate interactions with the teacher than peers who showed more prosocial behaviors (Coplan & Prakash, 2003).

When they do interact with the teacher, there is evidence that the teacher can perceive it as overly dependent. For example, preschoolers exhibiting higher levels of AW and who demonstrated more advanced language skills (as measured by complexity of speech during a play session with an independent examiner) were reported by the teacher to display more dependent behaviors (Rudasill, Rimm-Kaufman, Justice, &

Khara, 2006). This suggests that for those who are more comfortable talking, they use their skills to seek more support than seems warranted from the teacher, which can stem from self-doubt in their ability to handle classroom challenges independently.

At the same time, it should be noted that teachers in the Coplan and Prakash (2003) study initiated more interactions with children whom they rated as more anxious-fearful and asocial suggesting they intentionally pursue more interactions with these students (see also Evans, 1987). It is important though to bear in mind the possibility that not all students who actually met criteria for these categories received extra support, as indicators of AW are easy to overlook in a busy classroom. This again underscores the necessity of acquiring better understanding of how this group's difficulties manifest in the classroom and the level of environmental support required to promote adaptive functioning. Subsequently, of relevance is exploration of select socio-ecological theories that provide a framework for conceptualizing the interplay between a child's level of AW, the adaptiveness of their ATL, and their experienced level of parent and teacher support.

Examining the Development of Adaptive ATL in Young Children Exhibiting AW through the Lens of Socio-Ecological Theories

According to self-determination theory, individuals are naturally inclined (motivated) to pursue experiences that foster personal growth. In this optimal state, they display vigor, creativity, autonomy, and drive. However, others exhibit diminished motivation, which contributes to less-optimal functioning, including passivity and reduced pursuit of personal development. Variations in levels of intrinsic motivation are postulated to arise from variations in psychological functioning and exposure to social

contexts with "conditions that [either] foster [or] undermine positive human potentials" (Ryan & Deci, 2000). Conditions that promote feelings of competence, relatedness, and autonomy are said to promote intrinsic motivation (Ryan & Deci, 2000).

Young children are naturally curious about their surroundings and seek to master tasks (high intrinsic-motivation) (Barrett & Morgan, 1995), which in turn should promote adaptive ATL (optimal functioning). However, those who display higher levels of AW are more inhibited and wary and therefore tend to hesitate (attenuated intrinsic-motivation) (Escalón & Greenfield, 2009; Kagan et al., 1995). Through self-determination theory, we see the hopeful possibility of boosting the intrinsic-motivation of young children exhibiting higher levels of AW to actively engage in classroom experiences by identifying aspects of their social context that "foster" their confidence to do so (Ryan & Deci, 2001). Granted how understudied this area is, the present study sought to identify aspects of the home and classroom that foster or deter development of ATL in preschoolers exhibiting more AW.

Diathesis stress model. While the quality of a young child's functioning is influenced by interactions experienced across various social contexts, those occurring within the school or home are expected to be most influential. These ecological systems are most proximal to the child, who typically spends a substantial amount of time there (Bronfenbrenner, 1977). For example, according to a recent report from the National Center for Educational Statistics, between 1990 and 2014 the percentage of children attending full-day kindergarten or preschool increased from 44% to 80% and from 34% to 49%, respectively (Kena et al., 2016).

The quality of a classroom's social context varies and most children of average temperament can succeed in sub-optimal learning conditions (Brophy-Herb, Lee, Nieva, & Stollak, 2007; Walker, 2008). They can fall back on protective factors, such as well-developed social skills, that could buffer some of the effects of suboptimal teaching practices. However, this is not necessarily the case for young children who display higher levels of AW. The diathesis-stress model theorizes that they are likely to experience an even sharper decline in ATL, or less growth, in suboptimal classrooms than peers. The presence of a pre-dispositional risk factor (i.e., high AW) lowers their threshold for the level of stress they can experience from an adverse setting (i.e., suboptimal teaching practices) and adequately function (Gazelle & Ladd, 2003; Zuckerman, 1999). As described below, suboptimal parenting practices may further exacerbate the severity of AW behaviors children display in the classroom (Baumrind et al., 2010; Chronis-Tuscano et al., 2015; Edwards et al., 2010; Hane et al., 2008; Repetti, et al., 2002). In light of the diathesis-stress model, due to these compounding factors, children displaying higher levels of AW and who are also exposed to less supportive parenting practices may be less able to tolerate additional stress from the classroom environment than counterparts who have parents that demonstrate more supportive practices (Calkins, Blandon, Williford, & Keane, 2007; Pluess & Belsky, 2010).

Differential susceptibility theory. Belsky & Pluess (2009) postulated that there is a positive side to the diathesis-stress model. Differential susceptibility theory posits that individuals who are predisposed to experiencing the negative consequences of external stressors are at the same time more susceptible to experiencing greater gains under improved environmental conditions than less vulnerable peers. This suggests the

potential for young children who exhibit higher levels of AW to develop more adaptive ATL when in classrooms characterized by highly supportive teaching practices than peers displaying lower levels of AW. In contrast, children displaying high levels of AW are expected to demonstrate fewer gains in ATL than less vulnerable peers when they have teachers who have less supportive teaching practices.

Given that differential susceptibility theory makes hypotheses about the effects of environmental stressors on *biologically-based* vulnerabilities, researchers typically rely on parent ratings of AW to test for evidence of differential susceptibility (Pluess & Belsky, 2010). Parent ratings of shyness are believed to capture more biologically based temperamental shyness (i.e., behavioral inhibition due to fear of novel situations and evident as behavioral inhibition in infancy) versus inhibition arising from fear of social evaluation, which is found to be captured more by teacher report of anxiety (Rudasill et al., 2014). While maternal and teacher report of AW generally have low to moderate correlations, the two are more correlated in the preschool years, with their associations weakening as the child ages (Asendorpf, 1990; Eisenberg et al., 1998) and the former has been found to predict the latter (Rimm-Kauffman & Kagan, 2005). These trends open the possibility of testing for the emergence of differential susceptibility when assessing the potential of teacher support to foster the development of more adaptive ATL for children demonstrating higher levels of *teacher-reported* AW in the classroom, the actual setting in which ATL must be displayed. This theory has yet to be directly explored in the literature and thus, is a focus of the present study. The following sections offer a brief overview of the current body of literature examining the individual and joint role of

parenting and teaching practices on the level of AW and ATL displayed by young children in the classroom.

Contribution of Parenting Practices

Before children enter the classroom, they already have acquired considerable knowledge from interactions with caregivers[iv]. As young children spend even more time with caregivers than do older children, and are more reliant on them, they are even more impacted by parenting, or socialization, practices. When describing the objective of parenting, Diana Baumrind, a respected pioneer in the field of parenting, stated, "In all societies a prime responsibility of parents is to socialize their children to conform sufficiently to normative standards of conduct to function successfully in their community" (2010). While the manner in which caregivers approach this task varies, Baumrind classified parenting styles by evaluating variations in the *responsiveness* and *demandingness* caregivers display or report in their interactions with their children (Baumrind, 1966; Darling & Steinberg, 1993)[v]. Responsiveness describes the extent to which caregivers demonstrate warmth, respect for the child's autonomy, and are attentive to their child's individual needs. Demandingness characterizes the extent to which parents place developmentally appropriate expectations, enforce structure, oversee tasks, and consistently discipline disobedience (Baumrind, 1991).

As demonstrated in the literature, the most ideal parenting style is generally considered the one characterized by high levels of both responsiveness and demandingness, because of its contribution to more positive child outcomes for children as compared to styles that have lower levels of responsiveness and/or demandingness (Sorkhabi & Mandara, 2013). While Baumrind employed the term "Authoritative" to

describe this more supportive style (1967), others have adopted different terminology to describe similar parenting behaviors such as *high parental warmth and firmness* and *positive parenting behaviors* (e.g., Hane et al., 2008; Lovejoy, Graczyk, O'Hare, & Neuman, 2000; Steinberg et al., 2006). Hence, for simplicity, the term *supportive parenting* will be used in this study to encompass the varied terminology found in the field to describe this parenting style. In practice, caregivers who exhibit supportive parenting practices convey firm, clear expectations and structure, display warmth and nurturance, respect and promote autonomy, and use discipline approaches that are meant to be instructional and not vindictive. In contrast, less supportive parenting practices are harsh, reactive, inconsistent, and controlling.

Interplay between parenting practices a child's level of AW. Traditionally, supportive parenting practices have been associated with reduced anxiety and better social adjustment for children in general, but even more so for those who display high levels of AW (Coplan et al., 2008; Hane et al., 2008; LaFreniere & Dumas, 1992). Such parents are often more responsive to their child's needs and emphasize building self-esteem, while providing consistent structure. They tend to more accurately gauge the level of support their child will need based on the demands of the environment. These tendencies can help children who display high levels of AW learn to better regulate their emotions and utilize coping skills (Kiel & Buss, 2012).

Supportive parenting practices also help reduce anxiety in children as the caregiver's consistent emotional responsiveness can co-regulate a child's developing emotion regulation systems so that they are better able to independently tolerate stress (Schore & Schore, 2008). For instance, preschoolers with more secure attachments have

been found to demonstrate less teacher-rated anxiety in the classroom (Wood, Luiselli, & Harchik, 2007). Interestingly, some have found gender effects, highlighting that the relationship between attachment and anxiety is generally consistent, but not necessarily linear (LaFrenière et al., 1992).

Supportive parenting practices can also have long-term implications for preschoolers who exhibit AW, such as decreased symptomology in middle school (Hane et al., 2008). In a longitudinal study of children from the ages of 4-15, those with parents who reported use of more supportive practices displayed a slower increase in the development of internalizing problem behaviors as compared to peers with parents employing less supportive practices (Williams et al., 2009). More recently, in a neuroimaging study, after experiencing peer rejection, adolescents with a history of AW, and who had parents who reported use of more supportive practices, displayed less activation in the brain region associated with fear and anxiety than counterparts with parents who reported less use of supportive practices (Guyer et al., 2015). This suggests that supportive parenting practices can buffer children exhibiting more AW from having as strong of a negative emotional response to negative social appraisal – possibly through the development of higher stress tolerance and confidence.

Broadly speaking, less supportive parenting practices are considered risk factors for all children, but especially those who display their own personal risk factors such as high levels of AW (Guyer et al., 2015; Pluess & Belsky, 2010). For instance, given that these children are more hypervigilant, anxious, and sensitive to criticism than peers, insecurity and stress are likely to increase when caregivers place high demands, but do not provide adequate emotional responsiveness to support the child in meeting them

(Darling & Steinberg, 1993). Use of less supportive practices might stem from these caregivers perceiving shyness differently than caregivers who use more supportive approaches. For example, parents who used less supportive practices reported feeling higher levels of embarrassment and anger after reading vignettes about children displaying shy behavior (Coplan, Hastings, Lagacé-Séguin, & Moulton, 2002). While they also reported similar emotional reactions after reading vignettes depicting a variety of behaviors (i.e., aggressive and prosocial), such reactivity can render them less empathetic to children exhibiting AW who require more support than peers. Subsequently, they could be less inclined to provide supports for reducing anxiety and building self-esteem.

Along these lines, Baumrind (1967) found that preschoolers with parents who displayed less supportive practices exhibited more behavioral inhibition. Similarly, toddlers exhibiting more AW and had mothers who exhibited less support displayed more social reticence at 4 years of age (Rubin, Burgess, & Hastings, 2002). Further, increased use of negative, critical speech by parents is also associated with higher levels of internalizing problem behaviors in young children (Repetti et al., 2002; Williams et al., 2009). When interpreting these findings, it is worth noting that parent-child relationships are dynamic. Children who are more anxious are often more emotionally reactive and can display controlling behaviors, such as displaying non-compliance when asked to make a small change in their routine, in order to relieve anxiety. This in turn can elicit controlling behaviors from parents, thus perpetuating the cycle (Dumas, LaFreniere, & Serketich, 1995).

Such a transactional effect can also be seen in the observation that overprotective/fretful parenting practices can exacerbate anxiety (Coplan et al., 2008; Root, Hastings, Kenneth, 2016; Vreeke, Muris, Mayer, Huijding, & Rapee, 2013). These practices are characterized by high levels of affection and close proximity, but excessive restriction of the child's ability to make choices ("over-managing"), particularly during low stress/risk activities where scaffolding is not as appropriate (Rubin et al., 2001). Some have hypothesized that this behavior is in part driven by increased caregiver trait anxiety (Root et al., 2016). Their hypervigilance is likely intensified if they have a child who displays more AW as the child's cautiousness and nervousness can make them more hesitant to place demands on the child out of fear of further upsetting them. Subsequently, these children are less likely to have opportunities to actively challenge their anxieties as their parents shelter them from difficult, but age-appropriate experiences (e.g., going to daycare alone).

Given the documented contribution of supportive parenting practices to a child's level of AW, of interest is the extent to which such outcomes play a role in a young child's level of school functioning.

Contribution of parenting practices to development of ATL in young children exhibiting AW. Parenting practices have long been recognized as contributors to school performance and functioning (Barbarin, Downer, Odom, & Head, 2010; Burchinal et al., 2002; Gronlick & Ryan, 1989; Pianta, Nimetz, & Bennett, 1997). Learning is not isolated to the classroom. Children engage in formal and informal learning activities with caregivers at home and in the process build skills for adaptive ATL (e.g., persistence, curiosity, and cognitive flexibility). As described above, supportive parenting practices

offer all children, but more so those who exhibit more AW, the push to try new activities and take risks within the security of a challenging, yet responsive setting (Rubin et al., 2001). At the same time, there is evidence, that parent scaffolding of social interactions is more beneficial for younger children, namely as these skills are less developed and are thus more dependent on caregivers and adults (Bhavnagri & Parke, 1991; Pianta & Harbers, 1995; Stipek, Feiler, Daniels, & Milburn, 1995). However, little is known about the potential difference in how parent support contributes to the adaptiveness of ATL displayed by more AW preschoolers as they age.

Moreover, anxiety can impair a child's ability to fully engage in the classroom; having parents who can model emotion regulation and boost confidence *outside* of school can "reduce emotional barriers to learning" *in* school (Wood, 2007). Further, as demonstrated by Ainsworth's well-known "strange-situation" experiments, supportive parenting practices can help young children self-soothe, continue engaging in activities, form bonds with new caregivers, and even less familiar ones - all essential skills for preschoolers to develop in order to be positioned to display more adaptive ATL in the classroom (Ainsworth, 1979; Matas, Arend, & Sroufe, 1978).

For instance, toddlers observed to have a more secure attachment with parents were found to more competently engage with teachers and peers in the classroom (Howes, Rodning, Galluzzo, & Myers, 1988). Relatedly, Baumrind (1967) found that preschoolers exhibited the highest levels of autonomy, curiosity, and behavioral and emotional self-regulation in free play sessions when parents employed supportive practices. On the other hand, less supportive practices are thought to discourage creativity

and problem-solving and increase emotional dysregulation as they limit autonomy and place less focus on providing encouragement.

However, the contribution of parenting practices to how young children displaying AW develop adaptive ATL, to the knowledge of the author, has not been explicitly tested with formal, comprehensive measures of ATL. A small number of studies though have examined related issues, such as whether variations in parenting practices for this age group significantly contribute to the child's development of skills considered aspects of ATL (e.g., Chronis-Tuscano et al., 2015; Coplan et al., 2008; O'Connor et al., 2014). For instance, Coplan et al. (2008) found that kindergarteners displaying AW, who had mothers who reported use of more supportive parenting practices, demonstrated more adaptive ATL-related skills such as improved school adjustment and peer relationships, than counterparts whose mothers displayed overprotective parenting practices. As stated, young children exhibiting AW who have more positive peer relationships may be better positioned to feel relaxed enough to freely engage in classroom activities, a foundational piece for adaptive ATL. However, this study only compared the effects of supportive parenting practices to those of overprotective parenting practices without considering the wider range of less supportive parenting practices.

In this same vein, Pluess and Belsky (2010) identified an association between parenting practices, school functioning, and child temperament. While they did not specifically target young children displaying AW, they selected children who presented with "difficult" temperaments at 6 months of age, which was characterized by wariness and avoidance-motivation, recognized predictors of AW. Children with parents who

utilized more demanding, yet responsive practices when they were in early childhood demonstrated more positive academic achievement, social skills, and work habits in middle school (related to ATL, i.e., "works neatly and carefully" and "keeps materials organized") than peers whose caregivers employed more intrusive and harsh practices. Those who had more difficult temperaments as infants displayed even more pronounced gains when exposed to more supportive parenting practices. As the sample was not exclusively composed of AW children and results can only be extrapolated to the larger population of children with 'difficult' temperaments. However, it should be noted that Pluess & Belsky (2010) used a more relaxed significance threshold ($\alpha = 0.10$), and the two-way interaction between work habits and parenting practices in predicting work habits was only trending in significance, suggesting a weak relationship. Nevertheless, it partially supports one of the theories of this study, that supportive parenting practices have the potential to buffer children prone to AW from displaying the poor learning–related behaviors.

And finally, there is experimental literature to suggest that training parents to use more supportive practices with children who display AW can contribute to improved classroom performance (Chronis-Tuscano et al., 2015; O'Connor et al., 2014). For example, in *The Turtle Program* (Chronis-Tuscano et al., 2015) parents were provided 8-weeks of direct instruction and in-session modeling on strategies for facilitating autonomy, self-reliance, and curiosity in their child. Children were also provided social skills training in a group format. At the end of the program, as compared to participants in the waitlist control group, treatment group caregivers were reported to display more responsive parenting practices, but no changes were noted in use of overly directive

practices. The authors postulated that this was due to caregivers initially displaying low levels of these behaviors. Children in the treatment group were reported by both parents and teachers to exhibit less anxiety than those in the control group.

While these findings from Chronis-Tuscano and colleagues (2015) suggest that this intervention contributed to children displaying more relaxed behaviors in the classroom, as the authors did not conduct mediation or moderation analyses, it cannot be determined to what extent these positive changes in behavior were associated with parenting practices, social skills training, a combination of both, or other uncontrolled factors, such as teacher practices. Along these lines, it is important to note that classroom quality, which has a known relationship with ATL (Dominquez et al., 2010), was not taken into account in the studies mentioned in this section. Thus, it is difficult to distinguish what portion of the effects was attributable to this construct. With this in mind, the following section explores the contribution of classroom factors to development of ATL for young children displaying AW.

Contribution of Classroom-Level Teacher Practices

Preschool classrooms are vibrant environments comprised not only of static physical structures, such as the materials and furniture, but also dynamic features such as children and teachers who actively engage with the environment (Burchinal, Cryer, Clifford, & Howes, 2002; Dunst, McWilliam, & Holbert, 1986; National Institutes of Child Health and Development and the Early Child Care Research Network [NICHD ECCRN], 2002; Peisner-Feinberg et al., 2001). While there is documentation of dyadic teacher-child interactions significantly contributing to the level of classroom functioning for children exhibiting AW (Baker et al., 2008; Gazelle, 2006), young children's

interactions with the teacher more often occur during group instruction or with peers (Downer, Rimm-Kaufman, & Pianta, 2007; Pianta, LaParo, Payne, Cox, & Bradely, 2002). Hence, they must be able to successfully navigate the milieu of the classroom climate, not always with the individual support of the teacher, in order to display adaptive ATL. Therefore, of relevance is the contribution of supportive *classroom level* processes on ATL of young children displaying AW. However, while not a perfect equivalent, findings from studies on the contribution of dyadic teacher-child relationships are of relevance to the present study as they offer suggestions for how a child displaying AW might respond to similar interactions experienced at the classroom level. Further, supportive, dyadic teacher-child interactions are often highly correlated with a supportive classroom climate (Pianta et al., 2002).

A classroom's climate is the dynamic aspect of its ecology that arises from the interactions between the teachers, children, and activities in the room. Review of the literature indicates that there is variation in how researchers conceptualize the different components of a classroom's ecology. For instance, some note three broad domains: Emotional Support, Organizational Support, and Instructional Support (La Paro, Pianta, & Stuhlman, 2004; Pakarinen et al., 2010). The former describes how positive or negative the tone of the classroom is and the level of shared control between teachers and students; it captures the global level of "responsiveness" displayed by the teacher to student, such as sensitivity, shared positive affect, and respect for autonomy. Organizational Climate captures the style of behavior management enforced by the teacher (i.e., how clearly rules are defined and consistently enforced) and classroom productivity (i.e., the smoothness of classroom processes). This aspect of classroom

climate can also be said to capture the level of "demandingness" in the classroom (NICHD ECCRN, 2002). Instructional Climate describes the level of academic rigor in terms of the degree to which interactions stimulate critical thinking and active, meaningful engagement with materials.

Other researchers though do not include instructional support in measures of classroom climate and instead focus on aspects that parallel the Baumrind parenting typologies of demandingness and responsiveness. For instance, the Classroom Rating Scale for preschoolers includes domains for communication, shared leadership, organization, and negotiation (Brophy-Herb et al., 2007). Similarly, the Classroom Environment Scale includes higher order domains of emotional support and management (Buyse et al., 2008). Despite variations in how classroom climate is conceptualized, each perspective underscores that routine teacher-child interactions can coalesce into broad domains that meaningfully characterize key aspects of a classroom's climate. This approach to defining classroom climate is used in this study in order to facilitate more direct comparison between the role supportive parenting practices and supportive classroom-level teacher practices play in the adaptiveness of ATL displayed by more AW young children. For the sake of simplicity, from this point forward, "supportive classroom-level teacher practices" will be referred to as supportive teacher practices.

Broad contributions of teacher practices to ATL. Similar to parenting practices, there is documentation of young children exhibiting more adaptive functioning when experiencing supportive teacher practices (Brophy-Herb et al., 2007; Walker, 2008). Such practices motivate students to more actively engage in the learning process by increasing student feelings of competence, relatedness, and autonomy (Skinner & Belmont, 1993).

Moreover, while attachment theory is often applied to assessment of parent-child relationships, in more recent decades it has been used to evaluate the quality of teacher-child relationships (Ainsworth, 1989; Commodari, 2013; Sabol & Pianta, 2007). In line with the parenting literature, young children who experience more secure attachments with teachers have higher social and academic competence and learning behaviors (Commodari, 2013; Mitchell-Copeland, Denham, & DeMulder, 1997; Pianta et al., 1997).

However, there is also indication that supportive teacher practices do not consistently contribute to ATL or aspects of ATL and that high levels of responsiveness or demandingness can individually promote more adaptive ATL. For instance, in one of the few studies examining the relationship between global ATL scores and teacher practices, demandingness but not responsiveness, was positively associated with adaptive learning behaviors (Dominquez et al., 2010), whereas another did not find teacher practices to significantly contribute to ATL (Dominquez, et al., 2011). Similarly, in a longitudinal study, children's academic work habits were not significantly related to the quality of dyadic teacher-child interactions (Pluess & Belsky, 2010). While there is merit to evaluating the individual effects of responsiveness and demandingness on the development of ATL, studying their combined effect is more likely to parallel how a child experiences them in the classroom.

As to associations with aspects of ATL, more demanding classrooms have been positively associated with classroom engagement and cognitive and behavioral control in young children (Pianta, et al., 2002; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009; Williford, Maier, Downer, Pianta, & Howes, 2013). Responsiveness has

been associated with aspects of ATL such as task persistence (Pakarinen et al., 2014), social competence (Pianta et al., 2002), and on-task engagement (Buhs et al., 2015; NICHD ECCRN, 2002; Reeve, Jang, Carrell, Jeon, & Barch, 2004). However, it should be noted that Buhs and colleagues (2015) and Reeve and colleagues (2004) did not include measures of demandingness in their models and therefore it is not possible to determine how the strength of the association would change if it had been included.

Such inconsistency in findings underscores the importance of considering how differences in the sample of children, teachers, and the ATL skills evaluated contribute to the strength of the relationship between teacher support and ATL (e.g., Chen & McNamee, 2011; Razza et al., 2015). Moreover, the lack of clarity surrounding the role of supportive teacher practices indicates need for further study, especially for the understudied group of young children exhibiting more AW who often display less adaptive ATL than peers.

Role of teacher practices in the adaptiveness of ATL displayed by young children exhibiting AW. More supportive teaching practices have the potential to reduce anxiety in children and foster more positive outcomes for children (Assor, Kaplan, Kanat-Maymon, & Roth, 2005; Griggs, Rimm-Kaufman, Merritt, & Patton, 2013). Differential susceptibility theory posits that the outcomes for preschoolers displaying higher levels of AW are even more sensitive to the level of support exhibited by teachers than those of low AW peers (Belsky, 2013; Pluess & Belsky, 2010). There is substantial evidence suggesting that teacher behaviors can moderate the relationship between the severity of a child's risk factor status and level of classroom functioning (e.g., Baker, 1999; Campbell & Ramey, 1997; Decker, Dona, & Christenson, 2007; Gosse, McGinty, Mashburn,

Hoffman, & Pianta, 2014; Hamre & Pianta, 2005). For instance, kindergarteners whose mothers had less than a college education or who demonstrated functional risk (i.e., externalizing problem behaviors, poor attention skills, and social and academic competence) exhibited higher levels of academic achievement and a closer relationships with the teacher when in first grade classrooms with higher teacher support (Hamre & Pianta, 2005). However, this study did not account for variation in the quality of kindergarten teacher behaviors and therefore it is difficult to determine its contribution to observed differences in classroom functioning in the first grade. While this study did not specifically evaluate the contribution of teacher support to the development of ATL in children displaying AW, as is the focus of the present study, its findings underscore the theory that supportive teacher practices can buffer children who display poor academic and social-emotional competence from experiencing poor school outcomes associated with lower quality environments.

While supportive teacher practices should in theory create an environment that best facilitates the development of adaptive global ratings of ATL in young children who exhibit high levels of AW, to the knowledge of the author no studies have explicitly examined this association. However, the findings of studies examining related issues suggest ambiguity in this relationship. For instance, Dominguez et al. (2011) found that demandingness, but not responsiveness, buffered preschoolers who displayed problem behaviors in structured learning situations (e.g., participating in group activities) from displaying maladaptive ATL. While this study did not isolate children displaying AW, such findings are applicable as children displaying AW likely present with deficits across the selected situations (Coplan et al., 2008).

Other researchers though have found responsiveness to be a significant contributor, not to global levels of ATL, but to aspects of ATL development for children displaying AW. For example, although the effect size was small, elementary school students with internalizing problem behaviors displayed more adaptive work habits when they shared warmer and more trusting relationships with their teacher than those who experienced more conflict with their teacher (Baker et al., 2008). There is also ample evidence across grade levels that high levels of responsiveness at the classroom and child level are associated with increased peer acceptance for anxious or AW children (Avant et al., 2011; Chang, 2003; Gazelle, 2006). As children exhibiting AW are wary of engaging in less familiar settings and taking risks, teacher practices that build feelings of belongingness have the potential to foster adaptive ATL, as posited earlier through self-determination theory (Ryan & Deci, 2000).

At the same time, a few studies have found that responsiveness does not play a significant or consistent role in promoting competence in skills that are aspects of ATL. For instance, in a group of 1st graders, responsiveness was only a protective factor for boys who displayed more AW in preschool (Gazelle, 2006). Additionally, Rimm-Kaufman and colleagues (2002) observed that teacher sensitivity did not moderate the level of self-reliance displayed by kindergarteners who exhibited AW as toddlers. There are a number of possible explanations for this finding such as ratings for self-reliance being taken at the end of the year, when children had more time to adjust to the setting.

Such ambiguity again emphasizes the necessity for better understanding of how variation in the level of support offered by teachers fosters or hinders development of adaptive ATL in young children displaying AW. The present study expands the current

knowledge base by examining the moderating role of supportive teacher practices on the relationship between AW and development of ATL, within preschool setting, where expression of competent readiness skills is particularly crucial. Further, given the evidence to suggest that younger children are more dependent on teachers for support in the classroom, of additional interest is obtaining a better understanding of how supportive teacher practices play a role in the development of ATL for children in their first versus second preschool year.

At the same time, teacher characteristics aside from classroom practices also contribute to the level of ATL displayed by children. For instance, teachers with more years of experience have been found to perceive internalizing behaviors as significantly more "serious" than those with less years of classroom experience (Kokkinos, Panayiotou, & Davazoglou, 2004; McCarty, Abbott-Shim, & Lambert, 2001). These findings suggest that increased years of teaching can heighten their awareness of the significance of these more covert behaviors and thus better position them to implement practices necessary for facilitating the development of adaptive ATL for this group. Additionally, the quality of instructional support in a classroom has an inconsistent relationship to ATL. For example, high quality instructional support has been associated with more adaptive ATL-related skills (i.e., engaging competently with peers on tasks), when paired with high quality emotional support (Wilson, Pianta, & Stulhman, 2007), whereas others have reported it to predict more maladaptive ATL (Dominquez et al., 2011). Together, these findings suggest that the contribution of years of teaching experience and quality of instructional support are important to take in to account when

evaluating the contribution of supportive teacher practices on the development of ATL for children displaying AW.

Combined Effect of Parent and Teacher Practices on Development of ATL in Young Children Displaying AW

Although an understanding of the individual contribution of supportive parenting and teacher practices on the ATL displayed by children exhibiting AW in a preschool classroom can provide valuable information, it does not account for the possibility of them having a synergistic effect on ATL development. Children do not enter the classroom as blank slates, as proposed by Western philosopher John Locke. When children move between ecological systems, the behavior patterns they develop from interactions with caregivers in the first system (i.e., home) do not lose significance when they enter the new system (i.e., the classroom). Instead, the child is influenced by experiences in both systems (Bronfenbrenner, 1977). For instance, kindergarteners with higher reports of problems at home have been rated by teachers as displaying higher levels of security seeking behavior and social inhibition in school (Koomen & Hoeksma, 2003).

Moreover, the quality of a child's attachment with parents can shape the quality of their attachment with teachers (Ainsworth, 1989; DeMulder, Denham, Schmidt, & Mitchell, 2000; Sabol & Pianta, 2012). For example, preschoolers observed to have more positive interactions with their mothers had more secure attachments with their preschool teacher, while those who exhibited more conflictual interactions with their mother were found to have more insecure, dependent, and conflicted relationships with their teacher (Pianta et al., 1997). At the same time, it is possible for more supportive teacher practices

to buffer children from the negative outcomes associated with experiencing less supportive parenting practices. For instance, a secure attachment with their preschool teacher was found to buffer children with insecure attachments with the mothers from displaying poor prosocial skills in the classroom (Mitchell-Copeland et al., 1997). At the same time, others have noted gender effects, signaling that this relationship is not entirely linear (DeMulder et al., 2000). Nevertheless, these findings suggest that if the new environment contains features that reduce the negative effects of the child's incoming vulnerabilities, it is possible for them to display more optimal functioning in that setting (e.g., Campbell & Ramey, 1997).

However, the extent to which supportive teaching practices moderate the associations between a child's level of AW and the parenting practices utilized by their parents in predicting the child's development of ATL is unclear. The limited knowledge is understandable given that the pool of literature on AW is relatively small and the body of work on ATL is relatively new, especially for young children. A few studies, however, have more broadly examined how interactions between parenting practices, teaching practices, and a child's mental health predicts their level of school functioning (Buyse et al., 2011; Hartz & Williford, 2015).

For example, Hartz and Williford (2015) conducted a study examining this complex relationship in a group of kindergarteners. When teacher sensitivity was high, for the group of children with high preschool negative emotionality, no significant difference was noted in the level of internalizing behaviors they displayed as kindergarteners in the classroom, regardless of their preschool levels of maternal sensitivity. This finding suggests a buffering effect of teacher sensitivity on classroom

functioning for emotionally dysregulated children, but runs counter to what would be predicted by the differential susceptibility theory (i.e., that children with higher negative emotionality and less sensitive mothers will respond significantly more favorably to higher levels of teacher support). Surprisingly, in classrooms with low teacher sensitivity, as maternal sensitivity increased so did these children's level of internalizing behavior. The authors speculate that such results illustrate that excessive sensitivity can exacerbate wariness in children displaying negative emotionality as such behaviors can be experienced as overbearing/ protective.

However, Buyse and colleagues (2011) did find the expected buffering effect Specifically, they found that sensitive teaching practices buffered against the negative effects of a less securely attached mother-child bond on both the quality of the teacher-child relationship and the child's level of aggression. While they did not test the effects within the context of AW, it points to the possibility of supportive teacher practices shaping social skills, an aspect of ATL, under particular parenting conditions. This possibility has powerful implications in that it provides support for the theory that in supportive classrooms, vulnerable young children who display both high levels of AW, and experience less supportive parenting practices, have the potential to display growth in ATL similar to less vulnerable peers. That said, the following section describes the research aims and hypotheses this study seeks to explore in order to further knowledge in these areas.

Research Aims and Hypotheses

Participants in the present study were drawn from a large, longitudinal nationally representative dataset that sought to study the impacts of Head Start (federally funded

preschool) enrollment on the children and their families. The study follows 749 preschoolers from their first to second Head Start years. There are 241 teachers in the study during the first year and 263 in the second and 59 programs both years. Complex multi-stage sampling procedures were used during data collection, which allow for results to be generalizable to the general population. For the following sections: T1 = Fall of the first Head Start Year (Fall Yr1: 2009); T2 = Spring of the first Head Start Year (Spring Yr.1; 2010); and T3 = Spring of the second Head Start year (Spring Yr.2; 2011).

AIM 1: *To investigate the extent to which (a) parenting practices moderate the relationship between a preschooler's teacher-reported AW and changes in ATL observed in the classroom across the school year and (b) what this relationship looks like during a child's first year in preschool (age 3) and their second year in preschool (age 4).*

Hypothesis 1: All children with parents who report use of more supportive practices will show more positive changes in ATL than those who report use of less supportive practices. However, in line with differential susceptibility theory, those children with higher AW are expected to demonstrate greater positive change in ATL scores than those with lower AW under conditions of high parent support. In contrast, under conditions of low parent support, those with higher AW are expected to demonstrate less positive change in ATL scores than those with low AW. These hypothesized differences will be even more pronounced in the first year, because younger children tend to be more dependent on parents for support in developing skills.

AIM 2: *To investigate the extent to which (a) teaching practices moderate the relationship between a preschooler's level of incoming teacher-reported AW and changes*

in ATL observed in the classroom across the school year and (b) what this relationship looks like during a child's first year in preschool (age 3) and their second year in preschool (age 4).

Hypothesis 2: All children experiencing higher teacher support will show greater positive changes in ATL than counterparts experiencing lower levels of teacher support. However, in line with differential susceptibility theory, those displaying higher levels of AW will make greater positive changes in ATL in classrooms with high teacher support, than those demonstrating lower levels of AW. In contrast, in classrooms with lower teacher support, those exhibiting higher AW are expected to make less positive change in ATL scores than those displaying lower AW. Again, these hypothesized differences are expected to be even more striking in the first Head Start year, because younger children may require more support for developing skills as they are adjusting to classroom expectations.

AIM 3: *To examine the extent to which (a) supportive teaching practices moderate the association between AW and ATL in preschoolers, when accounting for variations in levels of parent support and (b) what these relationships look like during a child's first year in preschool (age 3) and their second year in preschool (age 4).*

Hypothesis 3: Overall, regardless of a child's level of AW, those experiencing higher teacher support will show greater positive changes in ATL than counterparts experiencing less teacher support. In line with differential susceptibility theory, in classrooms with higher teacher support, children exhibiting higher levels of AW, and who have parents who report use of less supportive practices, will make greater positive changes in ATL than those displaying lower AW and also who have parents who report

use of less supportive practices. The same pattern is expected when looking at those with parents who report use of more supportive practices. In lower teacher support classrooms, children displaying higher AW, and who have parents who report use of less supportive practices, will make less positive change in ATL than peers displaying lower AW and who also have parents who report use of less supportive practices. The same pattern is expected when looking at those with parents who report use of more supportive practices. The differences between the groups will be even more pronounced in the first than second year as younger children tend to be more dependent on parent and teacher support for building skills and are adjusting to school expectations. Together, these proposed trends reflect the underlying premise of differential susceptibility theory, that at-risk children (i.e., those exhibiting higher levels of AW) experience an increased sensitivity to both positive and negative contexts than less at-risk peers.

Chapter III: Methodology

Participants and Sampling Procedures

The children included in the present study were participants in the 2009 cohort of the Head Start Families and Children Experiences Study (FACES). This large, longitudinal, nationally-representative study tracked selected 3 and 4 year olds from their first year enrolled in Head Start in the Fall of 2009 through the Spring of their Kindergarten year (Spring of 2012 and 2011, respectively). To generate a nationally representative sample, a complex multistage-sampling approach guided by Chromy's procedure (Chromy, 1979) was employed to select programs, centers, and classrooms. It involved use of probability proportion to size (PPS) and implicit and explicit stratification sampling techniques. Sampling stages included: Head Start programs, centers within programs, classrooms within programs, and children within classrooms. Children had equal probability of being selected from within their classroom, while selection of individual units in prior stages was based on use of PPS sampling.

Only programs located in the United States or Washington, DC that provided direct services to children, and were not defunded, were included. Programs located in a U.S. territory or overseen by either the American Indian-Alaska Native Head Start or Migrant and Seasonal Head Start programs were excluded. Strata were created and used to develop a sampling frame for selecting programs, centers, and

classrooms. Explicit stratification involves first dividing the population into strata and then selecting a sample from within each stratum. Implicit stratification, which is typically done within an explicit strata, entails organizing units in a stratum by a certain variable and then selecting units by identifying a random starting point and sampling every n-th unit (Aßmann et al., 2011). At the program level, implicit sampling strata were status as a public school district grantee, percentage of children with a disability, the proportion of children for whom the primary language spoke at home was English, and whether or not at least 25% of the program's children were dual-language learners. Explicit sampling strata at the program level included the proportion of ethnic/minority enrollment, urbanicity, and census region. Implicit strata at the center level included proportion of English-language learners; no explicit strata were used. Overall, FACES selected two centers per program, at most three classrooms per center, and approximately ten children per classroom. Each classroom was considered its own stratum. Subpopulations were not oversampled.

In the Fall of 2009, in the original study, the total number of units consented at each stage included (number originally selected in parentheses): 60 (65) programs, 129 (130) centers, 486 (486) classrooms, 439 (447) teachers, and 3,349 (4,718) children (*N*= 1,954 and 1,395 respectively for the 3 year-old and 4 year-old cohorts). In the Spring of 2010, the consented sample included the same number of programs and centers, while the number of classrooms, teachers, and children respectively reduced to 482, 445, and 3,020. Parents and teachers of selected children were automatically included in the study. Data were no longer collected on children who prematurely left Head Start.

Participant selection. The following criteria were used to isolate the study sample from the original sample of 3,349 children. First, given that analytic procedures do not run if included cases have non-positive weights (Rudasill, Hawley, LoCasale-Crouch, & Buhs, 2016; U.S. Department of Health and Human Services [HHS], 2013), children without a positive value for the sampling weight used in analysis were excluded. Second, given that of interest is examining the contribution of caregiver (parents and teachers) support on the relationship between AW and gains in ATL during both the first and second year of exposure to a Head Start classroom, this study focuses exclusively on children who first attended Head Start at age three and then remained in the FACES study (and therefore Head Start) as four year olds. Further, comparing data on the same group of children helps limit the potential for confounds in the results that might arise if comparing different groups of children. For instance, if different children were in each sample, it would be hard to tell if observed differences in results actually stemmed from them being in their first versus second preschool year or if instead arose from unaccounted for factors such as their caregivers first enrolling them in Head Start at 3 year olds or just for their pre-kindergarten year at 4 years old.

As data on teacher practices were only collected in the Spring, children who switched classrooms between Fall and Spring of their 1st Head Start (HS) year were excluded. However, given that a large portion of children in the 3 year old cohort, who met the aforementioned criteria, had different 1st year and 2nd year teachers (519 out of 749 children) and that data on teacher level covariates used in regression models were available on their 2nd year teachers, having the same 1st and 2nd year teacher was not an

inclusion criterion. The final empirical sample was 749 children, 241 and 263 teachers in year 1 and 2 respectively, and 59 programs in both years.

Study sample. As shown in Table 1, within the sample of 749 children, the gender ratio was fairly evenly split (49% female); 36% were of Latino origins and the same percentage identified as Black, 19.5% Caucasian; and, the mean age was 41.14 months in Fall Yr.1 and 60.43 months in Spring Yr.2 (the only time data were collected that Head Start year). Most children's mothers did not attend college (highest education level reported as "less than college:" $M = 30\%$, $SD = 0.46$; and "either GED or High school diploma:" M = 36%, SD = 0.48) and roughly half of caregivers of children in the empirical sample reported an income-to-needs ratio that qualified as below the federal poverty line (Fall Yr.1: $M = 59\%$, $SD = 0.49$ and Spring Yr.2; $M = 50\%$; $SD = 0.50$).

Excluded children (i.e., those in the 4 year old cohort or those in the 3 year old cohort who either switched classrooms in their first preschool year or did not have a positive value for the study's sampling weight) had a similar gender composition (t [3213] = 0.73, $p > 0.05$)], Fall and Spring Yr.1 AW scores (respectively, t [3121] = -0.19, $p > 0.05$ and t [2774] = -0.51, $p > 0.05$), Spring Yr.2 teacher-reported ATL (t [555.86] = -0.65, $p > 0.05$), and Fall Yr.1 and Spring Yr.1parent support scores (t [2989] = -0.65, $p > 0.05$ and t [2465] = -0.89, $p > 0.05$, respectively). However, the empirical sample received significantly lower assessor-reported ATL scores at all data collection points (Fall Yr.1; t [3011] = 3.47; Spring Yr.1: t [2744] = 3.56; and Spring Yr.2: t [2009] = 5.75, all $ps < 0.05$) and teacher-reported ATL scores in Fall and Spring Yr1 (respectively, t [1364.93] = 5.77, $p < 0.05$ and t [555.86] = -0.65, $p < 0.05$). In both Fall Yr.1 and Spring Yr.2, the average age of children in the empirical sample was significantly younger than

that of the excluded sample (respectively, t [2299.62] = 31.63, $p < 0.05$ and t [2005.40] = 38.17, $p < 0.05$) While the number of White and Latino students in the excluded group was statistically similar to that of the study sample (t [3123] = 0.42, $p > 0.05$ and (t [3123] = 0.73, $p > 0.05$ respectively), it had a statistically higher percentage of Black students (t [1178.72] = -3.82, $p < 0.05$). In terms of socioeconomic status, an equal percentage reported an income-to-needs ratio that met the federal government criteria for living at or below the poverty line in Fall Yr.1 (t [1243.26] = -0.94, $p > 0.05$), but significantly fewer met criteria in the empirical sample (t [1232.68] = -2.05, $p < 0.05$) in Spring Yr.2.

Teachers from Yr.1 were largely female and Caucasian (Latino: M = 22%; Black: 35.8%; Caucasian: M = 50.2%). Teachers not included in the study during Yr.1 were also majority female and had a statistically similar representation of Caucasian, Latino, and Black teachers (respectively, t [474] = 0.36, t [476] = -0.05, t [472.48] = -1.43, all ps > 0.05). Such demographic statistics were not collected on teachers during Yr.2. Teachers in Yr.1 had an average of 13.05 years of teaching experience (SD = 8.67) and in Yr.2 an average of 13.40 years (SD = 9.03). These values did not significantly differ from excluded teachers (t [475] = 0.13, t [372] = 1.66, all ps > 0.05). In both Spring Yr.1 and Yr.2, there was no significant difference between observer ratings of Teacher Support for included versus excluded teachers (respectively, t [412] = -0.47; t [344] = -1.97; all ps > 0.05).

Missingness. The FACES 2009 user guide notes multiple reasons for non-responsiveness such as refusal to respond, language barriers, disenrollment from Head Start, and excessive school absence (HHS, 2013), but limited information on the reason

for missingness was provided in the actual dataset (i.e., *skipped but should have been answered, data on entire instrument are missing, omitted by design, refused to respond,* or *responded with "I don't know"*). For all cases of missingness in the empirical sample, items were largely missing due to the first two reasons listed in parentheses. In the Yr.1 regression models assessing outcomes in the first HS year, 647 children had data available for all variables of interest. Missing data were greatest at the child-level for the Fall and Spring observer ATL scores (*N*=31; 4.1%), followed by the Fall Parent Support ratings and income-to-needs ratio (*N*=17; 2.3%), Teacher Report of Fall AW, ATL, and externalizing behavior scores (*N* = 14; 1.9%), and Teacher Report of Spring ATL scores (*N* = 13; 1.7%). At the teacher level, the only source of missing data were reports of years of teaching experience (*N* = 3; 0.01%). In Yr.2 regression models evaluating outcomes in the second HS year, 599 children and all 263 teachers. Missing data were greatest at the child-level for Spring Yr.2 income-to-needs ratio (*N* = 81; 10.8%), followed by data from the Spring Yr.1 Child Rearing Practices Report (*N* = 76; 10.1%), followed by Spring Yr.1 observer ATL scores (*N*=31; 4.1%), Spring Yr.2 Teacher Report of ATL (*N*=29; 3.9%), the Fall Yr.1 Parent Support score and income-to-needs ratio (*N* = 17; 2.3%), Teacher Report of Spring Yr.1 ATL, AW, and externalizing behavior scores (N = 13; 1.7%), and the child's age Spring Yr.2 (N = 12; 1.6%). Teachers had data available on all study variables.

In order to account for missing data when fitting regression models, full maximum likelihood with robust standard errors (MLR) was used. This method utilizes all available data to calculate a likelihood function for each case in order to reduce bias in the estimation of parameters and standard errors due to missingness (Peugh & Enders,

2004). Additionally, FACES 2009 sampling weights account for not only a child's probability of selection and attrition in the study, but also rates of responsiveness on FACES 2009 measures.

Data Collection Procedures

FACES data were collected in four waves: Fall 2009 (T1), Spring of 2010 (T2), Spring of 2011 (T3), and Spring of 2012 (T4). Only data collected during the first three waves were included in analyses for the present study. In Fall 2009, a Field Enrollment Specialist from the FACES team facilitated the consenting process for selected children, their parents, and teachers. The final response rate for consented children was 94%. Aside from classroom observations, all data were collected in the start of the Fall and Spring.

Independent assessors administered untimed, individual assessments of literacy, math, language, and executive functioning skills through standardized testing. At the end of the individual testing, assessors rated each child's behavior during that portion of testing using the Leiter International Performance Scale Revised (Leiter-R), Examiner Rating Scale. Teachers completed the Teacher Child Report (TCR) form online or in paper-and pencil form, to evaluate each selected child's behavior and learning. FACES 2009 also conducted Fall and Spring teacher interviews to obtain information about teacher demographics, professional history, classroom procedures, and curricula. In addition, parent interviews were collected in the Fall and Spring and covered basic demographics, parental mental health, parent-child interactions, and home-based academic supports.

As to classroom observations, data collection for the Classroom Assessment Scoring System (CLASS), a measure of teacher-child interaction quality, was only

conducted in the Spring. Observers underwent a four-day training on the coding system under the direction of qualified trainers. The first portion of the training battery consisted of 2 full days of didactic workshops on the coding schema followed by 2 full days in the field that addressed techniques for maintaining coding integrity within the classroom. To proceed to the second phase, trainees had to demonstrate at least 80% agreement on the ratings of training clips. To pass phase 2 of training, and complete certification, their ratings during training live-observations needed to be within 1 point of the master code, at least 80% of the time overall.

Classroom observations took place in the mornings and assessors stayed for at least four hours in order to see a fuller range of activities. At least 4 coding observation cycles were completed during each visit; cycles consisted of 20 minutes of coding followed by 10 minutes of scoring. Scores were recoded in paper form and then transcribed into the computer. To minimize their impact on typical classroom interactions, assessors attempted to remain as inconspicuous as possible.

Measures

A variety of measures was used to gather data on participants, including parent and teacher report, interviews, and direct assessment. Following is a description of measures used to capture the present study's parameters. Table 3 depicts how each measure is used in regression models for each research question.

Child level variables.

Anxious withdrawal. A central focus of this dissertation was to explore the contribution of a child's observed level of AW to their level of ATL in the classroom. His

or her score on the anxious/withdrawn subscale from the FACES Problem Behavior Scale (PBS) was used to evaluate his or her incoming level of AW expressed in the classroom setting each school year. The FACES PBS is a compilation of items from the Personal Maturity Scale (PMS; Entwisle, Alexander, Cadigan, & Pallis, 1987) and the Behavior Problems Index (PBI; Peterson & Zill, 1986); others, such as Youn (2016) and Ansari, Purtell and Gershoff (2016), have used it to measure behavioral difficulties displayed by young children in the classroom. The original PMS measures cooperative and engaged behaviors, whereas the BPI evaluates negative behaviors that impede learning. Both measures have been utilized to evaluate internalizing problem behaviors, such as AW, in young children (e.g., Halle, Wandner, & Chien, 2007; Jackson & Mare, 2007).

The FACES 2009 team selected 14 items from these two scales to evaluate the degree to which a child displays anxious/withdrawn, disruptive/aggressive, and hyperactive behaviors. Teachers rated items on a 3-point scale with 1 representing "*Not true"* and 3 representing "*Very True or Often True*" within the past month. Examples of items from the anxious-withdrawn scale include, *Worries about things for a long time* and *Is nervous, high-strung, or tense* (See Table 2). In the current study, adequate alphas were noted in the Fall Yr.1 and Spring Yr.1, respectively 0.68 and 0.72.

Approaches to learning. Teachers and assessors have been found to offer unique perspectives on a child's behavior in the same setting (Achenbach, McConaughy, & Howell, 1987; De Los Reyes, Thomas, Goodman, & Kundey, 2013; Winsler & Wallace, 2002). Hence, in order to evaluate predictors of the adaptiveness of their ATL across multiple settings, an initial objective was to create a composite of ATL demonstrated in daily classroom interactions, as observed by the teacher over a one-month period, as well

as in an individual testing situation, as observed by an independent assessor. However, as described in the Psychometric Work section below, given the composite's poor psychometric properties, separate regressions were run for each research aim, one with a teacher rating of ATL and another with assessor ratings. While this was not the original plan, running two models allows for comparison of the contribution of parent and teacher support to the adaptiveness of the ATL exhibited by more AW preschoolers under different conditions. The following is a description of the measures of ATL used in the study.

The *Leiter International Performance Scale Revised* (*Leiter-R*)*, Examiner Rating Scale* (Roid & Miller, 1997) is a direct observation measure of a child's response to the assessor, testing materials, and the testing situation during standardized administration. The original measure evaluates behavior on a 3-point scale (i.e., *rarely/never, sometimes, often, or usually/always*) and yields two scales: Emotion/Regulation and Cognitive/Social. FACES 2009 only used the latter in analyses. A child's standard score on the Cognitive/Social scale was used as a measure of assessor reported ATL (Aikens, Moiduddin, Xue, Tarullo, & West, 2012).

This scale is comprised of four subscales that together evaluate a child's executive functioning and task-related social skills during testing. Scores range from 50-126, with higher scores indicating more adaptive approaches to learning. The Organization/Impulse Control subscale contains eight items and measures skills such as "thinks and plans before beginning." The Activity Level subscale contains 4 items including "needs minimal reinforcement to sit still." The Attention Level subscale contains 10 items and evaluates a child's ability to focus such as "directed to task despite

external noises and sights." The Sociability subscale is comprised of 5 items looking at characteristics such as “cooperates and complies with examiner’s requests.” The FACES 2009 User Guide reported the Cognitive/Social scale to have strong reliability of 0.90 on the entire study sample for both Fall and Spring Yr.1 and Spring Yr.2; similar to observed alphas in the empirical sample (.89-.91). This measure also has demonstrated validity as a measure of executive functioning (Olds et al., 2004) and predictor of academic outcomes, with small, but significant effect sizes noted (Rudasill et al., 2016). While to the knowledge of the current author, the Cognitive/Social scale has not been formally used as a measure of ATL outside of FACES or other projects by Mathematica Policy Research group (Mathematica Policy Research Group, 2012), the core subscales are similar to those used on established measures of ATL (e.g., Preschool Learning Behaviors Scale- McDermott et al., 2002).

The *Early Childhood Longitudinal Study (ECLS–K) Approaches to Learning Scale* (U.S. Department of Education, 2002) provided teacher ratings of ATL. Teachers completed this 6 -item rating scale. Items measured task persistence, motivation, autonomy, adaptability, and attention (see Table 2) demonstrated by a child in the classroom over the past month. They were rated on a 4-point scale from *Never* to *Very Often*. A higher total score indicates more adaptive ATL. The FACES 2009 User Guide reported alpha values of 0.91, 0.92, and 0.93 in Fall and Spring Yr.1 and Yr.2 (HHS, 2013), and the scale has been used with diverse samples (Turney, 2009). In the study sample, alphas were similar at 0.89, 0.91, and 0.93 respectively. It has been found to be a valid measure of school readiness and, when used in a composite with other school

readiness indicators, to predict later academic achievement in elementary school (Duncan et al., 2007).

Parent Support [PS]. Another central objective of this dissertation is to a gain better understanding of the relationship between the level of parent support (i.e., caregiver responsiveness and demandingness) and the adaptiveness of ATL displayed by AW preschoolers. The FACES 2009 Parent Interview included a module about socialization practices that had questions about parent support. One group of items from this module asked about discipline, such as the use of time-out and spanking, and family routines, such as the amount of television watched per week, chores, bedtime, and mealtime.

The FACES 2009-modified version of the Child Rearing Practices Report (CRPR*;* Block, 1965) included 13 of the 91 items in the original CRPR and offered another source of items for this module. There is a well-documented body of research supporting the validity and reliability of the original CRPR measure in large, diverse samples of preschoolers (U.S. Department of Health and Human Services, Administration for Children and Families, 2010). Scores on the original *CRPR Nurturance* and *Restrictiveness* subscales have been associated with socio-emotional development and school adjustment (Silver, Measelle, Armstrong, & Essex, 2010). Caregivers used a 5-point scale to report how accurately statements described their beliefs and practices, from *Exactly* to *Not at All*. It yields scores for three scales: *Authoritarian*, *Authoritative,* and *Adherence* to *Rules*. FACES 2009 specifically created the first two subscales based on the Baumrind parenting typologies (Baumrind, 1967). A higher *Authoritarian* score denoted use of harsher and more autocratic parenting

practices, whereas a higher *Authoritative* score denoted use of more emotionally supportive and democratic practices. The third subscale evaluates consistency in rule enforcement.

Both a statistical and theoretical approach were used to select a subset of items from this parent socialization module on the Parenting Interview to form the present study's Parent Support composite (see Table 2) capturing a parent's level of responsiveness and demandingness. A description of these approaches is described in the Data Analysis section. The internal reliability of the final composite was found to be acceptable (Fall Yr.1, $\alpha = 0.71$; Spring Yr.1, $\alpha = 0.69$).

Classroom level variables.

Teacher Support [TS]. Another research objective involves examination of the predictive validity of teacher support on the ATL displayed by young children with higher levels of AW, and how that relationship interacts with the level of parent support experienced by the child. Similar to parent support, teacher support is defined here as the caregiver's level of responsiveness and demandingness demonstrated in her interactions with children. While the parent support variable evaluates caregiver interactions with the individual child, a teacher's level of support was evaluated by assessing her classroom-level interactions with students, as children are more likely to engage with their teacher in a group versus individual setting (Downer et al., 2007; Pianta et al., 2002).

Hence, items from the Classroom Assessment Scoring System, Pre-Kindergarten version (CLASS-Pre-K; Pianta, LaParo, & Hamre, 2008) were selected to evaluate teacher support given that this direct observation measure evaluates classroom quality based on global ratings of teacher-child interactions as they occur across three domains:

Emotional Support (ES), Classroom Organization (CO), and Instructional Support (IS). Each domain is comprised of dimensions. Classroom quality ratings are on a 7-point Likert scale: *Low* (1-2), *Medium* (3-5), *High* (6-7) for both domains and dimensions. As further discussed in the Psychometric Work section below, only dimensions of the Emotional Support and Classroom Organization domain were used in the Parent Support composite for their parallels with the Baumrind constructs of responsiveness and demandingness.

The ES domain includes the dimensions: Positive Climate, Negative Climate, Teacher Sensitivity, and Regard for Student Perspective. For all but the Negative Climate dimension, higher scores denote higher classroom quality. Negative Climate was reverse coded in analyses. Teachers in classrooms that have high levels of ES are warm, responsive, and support autonomy. Classrooms low in ES are characterized by harsh tones, criticism, teacher disengagement, and intrusive teacher control.

The CO domain is comprised of three dimensions: Behavior Management, Productivity, and Instructional Learning Formats. Items from the latter focus on the teacher's ability to modify lessons in order to facilitate student learning and engagement. High scores on the Behavior Management dimension denote classrooms where teachers use proactive behavior management and deliver firm, clear, and consistent instructions. Teachers who receive high scores on the Productivity dimension implement efficient routines that maximize learning opportunities.

The CLASS has solid psychometric properties and a long-standing history of successful use in large-scale studies with diverse groups of preschoolers (i.e., Multi-State Study of Pre-kindergarten; e.g., Brock & Curby, 2014; Pianta et al., 2005). It has also

been found to be predictive of problem behaviors (including internalizing behaviors), school adjustment, and academic success (Brock & Curby, 2014, Curby et al., 2009; Gazelle, 2006). As further described in the Psychometric Work section, statistical and theoretical approaches were used to select a subset of dimension scores from the CLASS to form the Teacher Support composite. The final composite was found to have strong internal reliability (Spring Yr.1 and Spring Yr.2, $\alpha = 0.86$).

Covariates. Select variables were included in regression models to account for variability in end of the year ATL scores due to factors aside from primary predictors of interest (i.e., AW, PS, and TS).

Child level. First, incoming ATL scores, which were the Fall of the first preschool year in the first set of analyses and the Spring of the first preschool year in the second set of analyses, were included as a predictor in order to evaluate gains in ATL over the school year (Dominguez et al., 2010); they were created in the same manner as described above for their corresponding ATL outcome variable. A child's age (McClelland et al., 2000; Tach & Farkash, 2006, Dominguez et al., 2010), gender (Escalón & Greenfield, 2009; Rimm-Kaufman et al., 2009; Tach & Farkash, 2006), race (McClelland et al., 2000; Tach & Farkash, 2006; Denver & Karabenick, 2011), income-to-needs ratio (Hair et al., 2006; Matthews et al., 2010), and mother's highest level of education (McClelland et al., 2000; Rimm-Kaufman et al., 2009) have also been found to contribute to ATL. For both Yr.1 and Yr.2 models, the child's gender, race, and mother's highest level of education were obtained from the Fall Yr.1 Parent Interview (updated versions of the latter were not available in subsequent waves). Given that information about the income-to-needs ratio was available for both Fall Yr.1 and Spring Yr.2, and that a large number

of study children, for whom these data were available, reported a change in status between Yr.1 and 2 (*N*= 284; 43.7%), the former was used in Yr.1 regression models and the latter in Yr.2 regression models. As to the child's age, in Yr.1 regression models, it was obtained from Fall Yr.1 Parenting Interview data, while the recorded age of the child at the time of the Spring Yr.2 direct assessments was used in Yr.2 models.

A child's level of externalizing problem behaviors has been associated with maladaptive ATL (e.g., Fantuzzo et al., 2005). In order to account for the effect of this variable in models, a composite for externalizing problem behaviors was derived from the Hyperactivity and Disruptiveness/Aggression subscale scores on the teacher-reported FACES Problem Behavior Scale (see Psychometric Work section below), from which items for the Anxious-Withdrawn score were also taken. The original Hyperactivity subscale contained three items (e.g., *The child is very restless and fidgets*) and demonstrated adequate internal reliability in the empirical sample (Fall Yr.1, $\alpha = 0.73$; and Spring Yr.1, $\alpha = 0.74$). The original Disruptive/ Aggressiveness subscale contained four items (e.g., *The child its or fights with others*) and also exhibited strong alpha values (Fall Yr.1, $\alpha = 0.85$; and Spring Yr.1, $\alpha = 0.86$). Both the PBI and PMS have been used in previous studies to evaluate externalizing problem behaviors in young children (e.g., Spieker, Larson, Lewis, Keller, & Gilchrist, 1999; Studts & van Zyl, 2013). The alphas of the final externalizing behavior composites were 0.78 for both Fall and Spring of Yr.1, indicating adequate internal reliability.

Teacher level. First, there is indirect evidence to suggest that more years of teaching experience could be predictive of more adaptive ATL for more AW preschoolers (e.g., Kokkinos et al., 2004; McCarty et al., 2001). Teachers reported their

years of teaching experience during the Teacher Interview; these values were used in regression models. Additionally, the quality of classroom instruction has been found to predict both adaptive and maladaptive ATL (e.g., Dominguez et al., 2010; Wilson et al., 2007), suggesting the importance of accounting for its effect in models. A teacher's Instructional Support domain score on the CLASS was used for this variable. Dimensions of the Instructional Support domain evaluate the ability of teachers to cultivate critical thinking skills in students. In the present study, the alphas for Spring Yr.1 and Spring Yr.2, were found to be adequate at 0.88 and 0.89, respectively.

Data Analysis

Initial psychometric work.

Approaches to learning (Spring Yr.1 and Spring Yr.2 ATL Composites). An attempt was made to create a composite ATL score for both Yr.1 and Yr.2 regression models from the mean of a child's teacher-reported ECLS-K ATL scale score (U.S. Department of Education, 2002) and assessor-reported Leiter-R, Examiner Rating Scale, Cognitive/Social scale standard score. However, in line with best practice, given that scores between measures had correlations below 0.50 (Hemphill, 2003; Fall Yr.1, r = 0.22; Spring Yr.1, r = 0.20; and Spring Yr.2, r = 0.24; all ps < 0.001) and alpha values below 0.70 (Tavakol & Dennick, 2011; Fall Yr.1, α = 0.04; Spring Yr.1, α = 0.05; and Spring Yr.2, α= 0.05), the decision was made to run two separate models for each research question, for both Yr.1 and Yr.2 regression models: one containing *ECLS-K ATL* scores reflecting a teacher's perspective, and the other using Leiter-R Cognitive/Social scale scores to reflect an assessor's observations, as the outcome variables.

Teacher support. In the present study, Baumrind's (1991) characterization of caregiver practices in terms of the combined level of responsiveness and demandingness displayed in their interactions with children provided the theoretical framework for selection of CLASS dimension scores to comprise the teacher support composite. Scores from dimensions for the Emotional Support and Classroom Organization domains of the CLASS (La Paro et al., 2004) were considered for the composite. Other researchers have also used CLASS ES and CO dimension scores to create a measure of teacher socialization practices (e.g., Barbarin et al., 2010). Given that the CLASS's Instructional Learning Formats dimension of the CO domain and dimensions of the Instructional Support domain capture teacher practices outside of the realm of demandingness and responsiveness, their scores were excluded. Psychometric work indicated that the remaining items (See Table 2) had strong internal reliability (Spring Yr.1, $\alpha = 0.86$; Spring Yr.2, $\alpha = 0.86$).

The strength of bivariate correlations among items in both Spring Yr.1 and Yr.2 composites (See Table 5) were slightly lower than reported in the literature (e.g., Pakarinen et al., 2010; Pianta et al., 2008), but still positive, significant, and largely strong to moderate. However, correlations between the reverse-coded Negative Climate dimension score and other dimension scores in both composites were positive, significant, but weak (Spring Yr.1, *r*s between 0.36 and 0.28; Spring Yr.2, *r*s between 0.31 and 0.21; all *p*s < 0.001) except for the very weak, insignificant relationship between Negative Climate and Regard for Student Perspective dimension scores in Spring Yr.2 ($r = .11$; $p = 0.07$). Such weak correlations between Negative Climate dimension scores and other composite items suggest that in this particular sample trends in observers' ratings of

Negative Climate do not as closely follow trends in scores for other dimensions. Despite these lower correlations, the decision was made to keep this dimension in the composite because it captures the presence of teacher-child interactions characterized by harsher tones and more conflict, qualities that are included in the definition of responsiveness, established by Baumrind (1967, 1991) and used in this study. Further, low scores on the Positive Climate dimension simply denote the absence of positive affect and attunement, and not the presence of conflict, meaning that lower scores in this dimension would not automatically reflect the presence of a Negative Climate.

Parent support. As with the teacher support variable, Baumrind's (1991) differentiation of caregiver practices in terms of the level of responsiveness and demandingness displayed in their interactions with children provided the theoretical framework for selection of items to comprise the Parent Support composite. Items from the Parent Interview parent socialization module of the FACES 2009 study considered for construction of the Parent Support variable initially included the thirteen items FACES selected from the CRPR (Block, 1965) and two items related to the use of spanking and time-out. In order to better ensure that higher scores on the Parent Support composite more definitively indicated higher levels of responsiveness and demandingness and lower scores the opposite, items that were perceived to be ambiguous and less clearly denote the presence or absence of either were excluded (i.e., *I warn kids about bad things, I teach that misbehavior is punished,* and *I do not allow my child to become angry with me*).

Bivariate correlations between the remaining 12 items were analyzed as a preliminary evaluation of reliability (See Table 4). Results indicated that there were

overall low correlations among the items. The decision was made to remove the two discipline-related items, as well as the three CRPR items that asked about negative parenting behaviors (i.e., *use of physical punishment, believing that children should be seen and not heard, and reporting having no energy to parent*) as they demonstrated particularly low correlations of close to .10 with most other items. Moreover, alphas of the Parent Support composite strengthened when these items were excluded. Further, the finding in the literature that the use of spanking and time-out are not consistently indicative of more or less supportive caregiver practices offered a theoretical rationale for excluding those items (Altschul, Lee, & Gershoff, 2016; Baumrind, 1996; Larzelere & Kuhn, 2005; Slade & Wissow, 2004). While there were significant, but weak bivariate correlations between the remaining seven items (Fall Yr.1 range of *r* values: 0.16 to 0.40; Spring Yr.2 range of *r* values: 0.11 to 0.37, all *p*s < 0.001), the composites demonstrated adequate internal reliability (Fall Yr.1, $\alpha = 0.70$; Spring Yr.1, $\alpha = 0.69$; Santos, 1999; Tavakol & Dennick, 2011). While the weakest correlations were noted for items related to demandingness, they were included as to have representation of this construct in composites. These remaining seven items were used to create the final Parent Support composites.

Externalizing problem behaviors. Externalizing problem behaviors are typically defined as an "under control of emotion" and are characterized by aggressiveness, impulsivity, and defiance (Eisenberg et al., 2001; Guttmannova et al., 2007). To best capture these behaviors, the mean of each child's Hyperactivity and Disruptive/Aggressiveness subscale scores reported on the FACES 2009 Problem Behavior Scale (PBS) was used to create an *externalizing problem behavior* composite.

In the final composites, items (i.e., the means of the two subscale scores) demonstrated strong psychometric properties (Fall Yr.1, $\alpha = 0.78$; $r = 0.65$; Spring Yr.1, $\alpha = 0.78$ and $r = 0.69$, all ps < 0.001).

Analytic procedures.

Accounting for the complex sample survey design in analyses. Efforts were taken to incorporate the complex sampling design features of the FACES 2009 study into analyses (e.g., sampling weights, stratification, and clustering) in order to minimize bias in standard errors and to allow for parameter estimates to be nationally representative. The following sections describe SPSS Version 23 and Mplus Version 7.4's procedures for handling complex study design used in analyses.

Sampling weight selection. While children were randomly selected from classrooms, there was an unequal probability of selection for programs, centers, and classrooms. Hence, FACES 2009 generated sampling weights to reduce the likelihood of obtaining underestimated standard errors for significance testing and to increase the generalizability of results to the general population. Sampling weights are the inverse of the probability of selection; FACES 2009 calculated them for each particular stage of sampling and within each explicit sampling stratum. The sampling weight was then multiplied by the weighted response rate, which allows the sampling weight to also account for the probability of responding at each stage. Based on this algorithm, FACES 2009 created a number of sampling weights to be applied to raw scores in analysis. The FACES 2009 User Guide suggests that weights be selected based on the level of analysis, rounds of data (i.e., longitudinal or cross-sectional), and the data source (i.e., parent

interview, child direct observation, teacher report, etc.) pertinent to the research questions (HHS, 2013). Subsequently, the "Year 1 and Year 2" longitudinal sampling weight PRA13OCW was used in all analyses as it accounts for the presence of teacher report and interview, parent interview, and direct child assessment data across T1 (Fall Yr.1), T2 (Spring Yr.2), and T3 (Spring Yr.3), as well as classroom observations from T2 and T3. The classroom level, "Year 1 Longitudinal" sampling weight T12OCLSWT was used in preliminary analysis of Teacher Interview and Classroom Observation data collected in Yr1.

Subpopulation selection. As the design effect variables are calculated based on the sampling information for all the children in the original sample, the FACES 2009 research team strongly encourages analysts to identify their study sample in a manner that does not subset the data file (ECDSDA Technical Assistance Team, personal communication, 2 August 2016). Subsequently, the SUBPOP subcommand of the CSDESCRIPTIVES function in SPSS and the SUBPOPULATION option of the VARIABLE command in Mplus were used since their estimation procedures incorporate sampling design data from cases that are not a part of the subpopulation. Specifically, data for the sampling weights of nonparticipants are set to zero, while their data are still used in analysis (IBM, 2014, p.388; Muthen & Muthen, 1998-2015, 565-567).

SPSS-Specific modifications. By default, SPSS assumes that data are obtained from a simple random sample. Hence, analyses that calculate standard errors (e.g., significance testing), and whose results are meant to make inferences to the general population, were conducted using the Complex Samples (CS) subfunctions. They permit variance estimates and associated parameters to be calculated through Taylor Series

estimation procedures, which account for sampling design effects (IBM, 2014). In order to use relevant CS subfunctions, a unique sampling plan was created specifying the sampling strata, cluster, and weight. In the current study, the variable STRAT specified the first stage sampling stratum and PSU the cluster (HHS, 2013). PRA13OCW was the sampling weight specified for analysis at the child level and T12OCLSWT at the teacher level.

Mplus-Specific specifications. Modifications were made in Mplus when calculating regression estimates as to obtain not only more accurate standard errors. First, ESTIMATOR = MLR was entered for the ANALYSIS command, variable STRAT was used to specify the STRATIFICATION, both Teacher ID and PSU the CLUSTER, and PRA13OCW the WEIGHT (Muthen & Muthen, 1998-2015, p. 249).

Preliminary analyses. Descriptive statistics were calculated for study predictors and outcomes using the CS DESCRIPTIVES and CS FREQUENCIES subfunctions in SPSS (IBM, 2014, pp. 385-387). Such data were also collected from those excluded from the study so that comparisons could be made between children included and excluded from the empirical sample. Unweighted Pearson correlations between study variables were calculated in SPSS, as results were not used to make inferences about the general population.

Hierarchical linear modeling (HLM). This dissertation sought to evaluate the strength and direction of the moderation effect of parenting practices (RA1), teacher practices (RA2), and their interaction (RA3) on the association between a child's incoming level of AW and Spring ATL score in a child's first (age 3) and second (age 4) year of Head Start. Multilevel regression analyses were the guiding analytic approach for

investigating all three RAs. Continuous outcomes and predictors were standardized through z-score transformations in SPSS prior to use in regression analysis. Further, given that sampling weights for each stage account for prior stages of sampling, only the sampling weight for the lowest level was specified in models (PRA13OCW; Research Connections, 2012).

Assumptions testing. In order to test the validity of regression models, models were evaluated for evidence of non-normality, non-constant variance, and multicollinearity that could potentially bias regression coefficients and standard errors. In terms of normality, given the large sample size of the present study (i.e., $N > 200$), the central limit theorem establishes that there will be a normal distribution in the random error between the outcome variable and its predictors (Allison, 1999, pp. 130-131). Nevertheless, for descriptive purposes, evidence of non-normality was investigated by running separate between and within level regression models for each research question[vi]. Histograms and Normal P-P plots of standardized residuals of dependent variables for both levels of all models were normally distributed. The lone exception was for level 2 models fitted for research questions 2 and 3, specifically Spring Yr.1 models predicting Assessor Rated-ATL, where residuals displayed a more peaked distribution of values around the mean than normal and outliers were noted in the negative end of the distribution

While the occurrence of extreme heteroscedasticity in predictor residuals is rare in large samples, as a precaution, the presence of non-constant variance in the residuals of the outcome variable for between and within level models was analyzed through examination of scatterplots of residuals where observed residuals of Y values were

plotted against predicted values (Allison, 1999, pp. 125-128). Mild deviations from homoscedasticity were observed in standard errors of dependent variables at both levels of regression models for both Head Start years. For instance, in level 2 regression models for all research questions, for the second Head Start year, the overall variance in the standardized residuals of both the AR-ATL and TR-ATL dependent variable gradually decreased as values moved towards the more extreme values of level 2 predictors. Despite these minor deviations in assumptions of normality and homoscedasticity, models are considered to have adequate validity given that robust standard errors, which adjust for such violations, were used in analyses (Muthen, 2011).

Although the risk of multicollinearity inflating standard errors greatly reduces in larger samples, analyses were performed due to the use of aggregated and longitudinal data (Allison, 1999, pp. 145-150). Evaluation of VIF and Tolerance revealed no indication of extreme collinearity between study variables in both levels of all models.

Unconditional models. To determine the appropriateness of running models in a linear or multilevel format, unconditioned versions of the linear mixed model were run. Within Yr.1 and Yr.2, two sets of unconditional models were run for each research question: one with teacher-reported Spring ATL scores as the DV and the other with observer-reported Spring ATL scores. Two unconditional models were run to test the ICCs for each DV. Specifically, for reasons described below, one unconditional model was run to test the effect of clustering of children within teachers, and the other of teachers within programs.

First, given this study's use of teacher level variables and evidence from the literature of nestedness at the teacher level explaining variations in child outcomes (e.g.,

Mashburn, Hamre, Downer, & Pianta, 2006; Reyes, Brackett, Rivers, White, & Salovey, 2012), the first unconditional model tested the effect of clustering at the teacher level on variations in Spring ATL scores.

Second, while program-level predictors are not included in analyses, given that the FACES 2009 technical team identified it as the most important clustering effect to account for in models (ECDSDA Technical Assistance Team, personal communication, August 26, 2016), the second unconditional model in a set evaluated the effect of nestedness of teachers within programs. First, Spring ATL scores for students were aggregated to the teacher level. These scores were then used in the second unconditional model, which evaluated the contribution of clustering in programs on variations in teacher-level aggregated means of Spring ATL scores. This step was taken to examine variations in Spring ATL scores due to effects of nesting in programs, above and beyond teacher-level clustering.

(A) Unconditional Model for All RAs:

$$\text{Level 1: } Y_{ij} = \beta_{0_j} + r_{ij}$$

$$\text{Level 2: } \beta_{0_j} = \gamma_{00} + u_{0j}$$

Equation A presents the equations used to test both unconditional models. In the model testing teacher level clustering effects, Y_{ij}, represents the Spring ATL score for a given child and is defined in terms of the average Spring ATL score across all children (γ_{00}), the error terms attributable to within (r_{ij}) and between (u_{0j}) teacher variability. In the model testing program level clustering effects, Y_{ij}, represents the mean of Spring ATL scores received by students of a teacher and is defined in terms of the average mean

Spring ATL score across all teachers (γ_{00}), the error terms attributable to within (r_{ij}) and between (u_{0j}) program variability.

To calculate the intraclass correlations (ICCs) for teacher-level clustering, the variance for the between teacher Spring ATL means (τ) are divided by the between teacher variance and within teacher variance, ($\tau+\sigma^2$), that is, the total variance. Similarly, to obtain ICCs for program-level clustering effects, the variance for the between program Spring ATL means (τ) are divided by the between program variance and within program variance, ($\tau+\sigma^2$).

Our results provided evidence for significant clustering effects of children within teachers and teachers within programs (Table 6; all ICCs > 0.05). Hence, regression models were run in a two-level format (i.e., children with teacher/classrooms) while also accounting for clustering within programs, described in the following section (Hayes, 2006).

Fitting conditional model equations. Multilevel regression analyses were run in Mplus version 7.4 (Muthen & Muthen, 2008-2015). For RA1, the TYPE = COMPLEX TWOLEVEL command was used to fit the models at the child and teacher level and account for relevant features of the complex sampling design (Muthen & Muthen, 1998 - 2015, pp. 249-250). Further, "TWOLEVEL" accounts for clustering within the teacher, while "COMPLEX" adjusts standard errors to account for clustering within programs (Muthen, 2012). For RAs 2 and 3, in order to account for the hypothesized contribution of a cross-level interaction between a level 1 predictors (i.e., AW and Parent Support [PS]) and level 2 moderator (i.e., Teacher Support [TS]) TYPE= COMPLEX TWOLEVEL RANDOM was used as the RANDOM command creates a random slope in

the model (Muthen & Muthen, 1998 - 2015, 262-263). Full maximum likelihood with robust standard errors (MLR) was specified for estimating parameters. It uses the Hubert-White sandwich estimator, which corrects for bias in SE and chi-square statistics arising from a complex sampling design, missing data, non-independence, and possible non-normality in observations (Muthen & Muthen, 1998 - 2015, pp. 608, 614).

As illustrated in Table 3, Spring ATL scores were the outcome variable for all RAs. Categorical, demographic child-level variables were coded so that the reference group was children who are often found to have higher ATL scores as compared to peers: Non-Hispanic, White girls, whose family's income-to-needs ratio is at least 200% above the poverty threshold and have mothers with at least a bachelor's degree. In line with previous studies, their incoming ATL score for each Head Start year was included as a covariate in order to control for baseline ATL scores and allow for evaluation of change in ATL scores over the year.

As also listed in Table 3, in addition to the aforementioned predictors, the interaction term (PS x AW) was included in RA1, to test the hypothesis that preschoolers with higher, as opposed to lower, AW have greater changes in ATL when parents demonstrate higher support. To evaluate their main effects, PS and AW were also included in this model. For RA2, the cross-level interaction [TS x AW] was included to evaluate the hypothesis that preschoolers with higher, as opposed to lower, AW display greater changes in ATL when in classrooms with more supportive teachers; to evaluate their main effects, TS and AW were also included. RA3 explored the hypothesized buffering effect of TS on the proposed fewer changes in ATL experienced by preschoolers with more AW whose parents report providing less support. This model

included the same predictors and covariates as RAs 1 and 2, as well as the cross-level, three-way interaction term ([PS x AW] x TS). Both 2-way interactions were also included in the RA3 model (AW x TS) and (PS x TS). In both RA2 and 3, between-level covariates were the CLASS Instructional Support domain score and the teacher's years of experience.

Testing regression effects. For each RA, predictors were entered into the full model in a simultaneous, or forced entry fashion as the *a priori* assumption was that the primary child, teacher, and parent factors meaningfully interact to contribute to a child's level of ATL in the Spring (Anderson, 2012). For each model, *p*-values of at least .05 for regression estimates signaled the presence of a statistically significant association between the outcome and predictor. For reasons described in the Results section, significant interactions were plotted at ± 0.5 SD away from the mean as opposed to the traditional ± 1 SD. Relevant calculators from http://www.quantpsy.org/interact (Preacher, Curran, & Bauer, 2006) were used to conduct simple slopes analyses given that they are appropriate for use with data from multilevel models that use complex survey data (Hartz & Williford, 2015; K. Preacher, personal communication, April 16, 2017). Standardized betas were evaluated as a measure of effect size.

Chapter IV: Results

The following section describes the study's findings starting with presentation of results from preliminary analyses to describe the properties of study variables, followed by results from the multilevel regression models that address the primary research questions.

Preliminary Analyses

Prior to running regression models that directly address study aims, descriptive analyses were performed on study variables in order to identify trends that could confound MLM results.

Distribution of variables. Table 1 lists the means, minimum/ maximum, and standard deviation of study variables. A normal distribution was noted for all study variables except for Fall Yr1 and Spring Yr1 teacher reported AW (skewness = 1.51 and 1.83, respectively) and externalizing behavior (skewness = 1.13 and 1.22, respectively). Their positive skew indicates that children tended to be rated by teachers as having lower levels of AW and externalizing behavior. No transformations were performed on these variables as no major violations of the homoscedasticity assumption in the relationship between their residuals of those of the dependent variables were observed. Further, an adequately linear relationship was observed between the residuals of the dependent and independent variables in regression models (Habeck & Brickman, 2014). Also, robust standard errors are

used in analyses. When evaluating the spread of the data, standard deviation values less than 1 were observed for teacher reported ATL, parent support, teacher support, and instructional support across all measured time points. This indicates that obtained values of these parameters are more tightly distributed around that parameter's mean, which can make it more difficult to detect regression effects.

Bivariate correlations. Tables 7 and 8 respectively describe associations noted between study variables involved in regression models for the first and second Head Start year. Overall, correlations were moderate at best, illustrating low collinearity between variables. In particular, across both year's models, significant small to moderate, positive correlations were noted between the incoming Assessor Rated (AR)-ATL and the outcome (i.e., end of year AR-ATL) and also noted between incoming Teacher Rated (TR)-ATL and the outcome (i.e., end of year TR-ATL). Small, but significant positive, associations were noted between TR and AR-ATL scores.

In terms of the relationship between outcome variables (i.e., end of year ATL scores) and the primary predictors of interest, across both years, significant small, negative correlations were observed between incoming AW scores (i.e., Fall Yr.1 for the first Head Start year and Spring Yr.1 for the second) and the outcome, end of year TR-ATL scores (Fall Yr. 1: $r = -0.19$; Yr. 2: $r = -0.14$, all ps < 0.01). A significant small, negative correlation was also noted in the first Head Start year between incoming AW scores and the outcome, end of year AR-ATL scores ($r = -0.08$, $p < 0.05$). As to teacher support, in the first Head Start year, no significant association was noted between it and the outcome, AR-ATL scores. However, in the second Head Start year a small positive, significant correlation was noted between teacher support and the outcome, end of year

TR-ATL ($r = 0.13$, $p < 0.01$). In contrast, across both years, no significant relationships were found between the parent support variable and ATL outcomes.

When examining the relationship between the ATL outcome variables (i.e., end of year AR-ATL and TR-ATL) and child level covariates, some general trends were noted in expected directions. Specifically, across all models, end of year ATL scores were found to have a significant negative association with the child's incoming level of externalizing behavior and sex (male) for that Head Start year. The strength and direction of the relationship between end of year ATL scores and child level socio-demographic variables generally varied. For instance, when looking at race/ethnicity, being identified as "Other" did not significantly correlate with end of year ATL scores. However, being identified as Black or Latino had small negative correlations with end of year TR-ATL scores in the first and second Head Start year, as well as AR-ATL in the second Head Start year. In contrast, for children identified as White, no relationship was noted in the first year, but in the second Head Start year a negative correlation was noted with end of the year TR-ATL and a positive association with end of the year AR-ATL.

As to the relationship between a child's age and end of year ATL, inconsistent results were found. No significant relationships were noted in the first Head Start year. However, a significant, small, positive relationship with both end of year AR and TR-ATL was observed in the second Head Start year. As to maternal years of education, in the second Head Start year, having a degree above a Bachelor's had a small positive relationship with end of year AR-ATL, whereas a mother having at least a High School diploma or GED had a small negative relationship with end of year TR-ATL. No relationships were noted between outcome variables and income-to-needs ratio.

In terms of the associations among primary predictors of interest, in the first Head Start year, Fall Yr.1 AW scores were negatively associated with Spring Yr.1 teacher support scores (r = -0.08, $p < 0.05$), whereas no association was observed in the second Head Start year between incoming levels of AW and end of year teacher support. Across both years, no association was observed between incoming parent support scores and AW or teacher support. The relationships among these primary predictors of interest and child and teacher level covariates can be found in Tables 7 and 8 respectively, for the first and second Head Start year.

Primary Data Analyses: Multilevel Modeling Results

A series of multilevel regression analyses were run in order to probe the present study's three main research questions regarding the role of parent and ATL displayed in a group of preschoolers with various levels of anxious withdrawal. Of secondary interest was investigating if and how these relationships look differently during a child's first and second year in Head Start. Two models were fit for each research question, for each school year: one with AR-ATL as the outcome variable and the other TR-ATL. Continuous variables were standardized prior to analysis. Standardized regression coefficients (β) are presented in Tables 9 thru 11 as to allow for direct comparison of the strength and direction of the effect of predictors on variability in the outcome variables. Specifically, the standardized regression estimate for each continuous predictor is the standard deviation change in ATL scores over the year expected by a one standard deviation change in that specific predictor. Unstandardized regression estimates for categorical variables represent the difference in changes to ATL scores over the preschool year between the reference group and the non-reference group for that variable.

RA1: Contribution of parent support on the association between AW and ATL. The first research aim investigated the extent to which (a) parent support moderates the relationship between a preschooler's teacher-reported AW and changes in AR- and TR-ATL observed over the school year and (b) what this relationship looks like during a child's first year in preschool (age 3) and his second year in preschool (age 4). All results are listed in Table 9.

Child level covariates. Some common trends were noted when looking at the significance of regression coefficients for child-level covariates. First, across all models, when holding other variables constant, higher incoming ATL scores predicted more change in ATL, whereas higher incoming levels of externalizing behavior were associated with fewer positive changes in ATL over the school year.

As to socio-demographic covariates, relationships were less clear. Age predicted more change in both AR- and TR- ATL during the second Head Start year, when holding all other variables constant, but predicted less change in AR-ATL in the first Head Start year. When looking at the contribution of sex, across both Year 1 and Year 2 models, no significant effect was noted on change in AR-ATL; however, as compared to girls, boys made significantly less change in TR-ATL. When looking at the role of a child's race/ ethnicity in predicting the level of change in ATL, in the second preschool year, being identified as "Other" and Latino student, as opposed to White, predicted more changes in TR-ATL, whereas being Black and "Other" predicted less change in AR-ATL. In contrast, in Year 1 models, no difference was noted in the level of change in ATL between racial/ ethnic groups.

The role of a mother's highest education level in predicting ATL also varied by year. Specifically, a trend was noted during the first preschool year whereby maternal education predicted less change in AR- ATL and more change in TR-ATL. In contrast, maternal education predicted less change in TR-ATL in the second preschool year. Finally, of the child level covariates, a child's income-to-needs ratio appeared to contribute least to changes in ATL. Specifically, a significant relationship was only noticed in the second Head Start year.

Main and interaction effects: Parent support x anxious withdrawal. Contrary to expectations, for all Year 1 models and for the Year 2 model predicting the level of change in TR-ATL, variations in a child's incoming level of anxious-withdrawal or parent support were not associated with variations in changes of ATL over the school year. However, in the second Head Start year parent support moderated the relationship between a child's level of AW and their level of positive change in ATL (Figure 1; $\beta = 0.09$; $SE = 0.04$; $p < 0.01$). Interaction graphs were created at high and low levels of anxious withdrawal against high and low values of parent support. Given that crosstabs analysis revealed that some combinations of high and low values of each (i.e., a child displays both high AW and experiences high parent support) had few children, the criteria for being classified as "High" or "Low" was relaxed from 1 SD above or below the mean to 0.5 SD above or below the mean. See Table 12 for the final count of children in each classification.

Results of simple slopes analyses indicated that all children displayed similar levels of change in AR-ATL under conditions of low parent support, but under conditions of high parent support children displaying high AW made more change in AR-ATL as

compared to peers exhibiting low levels of AW. However, the individual slopes for both the "low AW" and "high AW" groups were not significantly different from zero. This suggests that in each group, the change in ATL made by those in the "high parent support" and "low parent support" subgroups were not statistically different (low AW, β = -0.02, SE = 0.05; $p > 0.05$; high AW, β = 0.52, SE = 0.04, $p > 0.05$).

RA2: Contribution of teacher support on the association between AW and ATL. The second research question investigated the extent to which (a) teacher support moderated the relationship between a preschooler's level of incoming teacher-reported AW and level of change in AR- and TR-ATL observed over the school year and (b) what this relationship looks like during a child's first (age 3) and second (age 4) year of preschool. Results can be found in Table 10.

Model specification modifications. Models to probe RA2 included the same predictors as in RA1, except that teacher support replaced parent support. Further, between-level covariates were added, as well as a cross-level interaction between AW and teacher support. In addition, Monte Carlo integration was required for model estimation. Such increased complexity, contributed to the non-convergence of one of the four tested models, namely the Year 2 model predicting the level of change in AR-ATL. In an attempt to facilitate convergence of the most saturated form of the model possible, the maximum number of iterations was increased (Muthen & Muthen, 1998 - 2015).

When the model still did not converge, it was simplified by first removing covariates found to be non-significant in a nested model that predicted change in AR-ATL, but did not contain the cross-level interaction term. These covariates were gradually added back into the model, in order of increasing significance, until the

addition of a covariate resulted in non-convergence. As shown in Table 10, the final model did not include the years of teaching experience or the two Maternal Highest Level of Education covariates: High School/ GED or Some College. Hence, it should be kept in mind that significant results for this model do not take into account these covariates. However, as they did not significantly predict Spring AR-ATL in the nested model, their removal is not expected to significantly shift the strength and direction of regression coefficients obtained in the final model.

Child level covariates. Similar associations were noted among dependent variables and child-level covariates as in RA1 models, suggesting that child-level covariates operate similarly when teacher instead of parent support is taken into account in models and when between-level parameters are included.

Teacher level covariates. Included teacher-level covariates were weak predictors of change in ATL. Only one significant relationship emerged across all models; Instructional Support scores predicted greater changes in AR-ATL in the second Head Start year.

Main and interaction effects: Teacher support x anxious withdrawal. Contrary to expectations, anxious withdrawal, teacher support, and their cross-level interaction did not significantly predict change in AR-ATL or TR-ATL during the first or second Head Start year.

RA3: Moderation effect of teacher support on the association between the interaction of AW and parent support in predicting ATL. The third research question examined the extent to which (a) supportive teaching practices moderate the association between AW and change in ATL exhibited by preschoolers, when accounting for

variations in the level of parent support and (b) what this relationship looks like during a child's first year in preschool and second year in preschool. Again, two separate models were fit for each Head Start year, one with Spring AR-ATL as the outcome, the other Spring TR-ATL scores, this time to test the significance of the three-way interaction ([parent support x AW] x teacher support) in predicting changes in ATL. See Table 11 for all variables included in models as well as results from the multilevel regressions.

Model specification modifications. Addition of the three-way, cross level interaction and relevant two-way interaction terms added to the complexity of the models and contributed to convergence problems for all models except for the Year 2 model predicting change in Spring AR-ATL. The same procedures described in the "Model specification modification" section for Research Question 2 were applied to the three models that initially did not run. Both Year 1 models converged when reduced in the following manner: when the variables *Child: Latino, Child: Other,* and years of teaching experience were dropped from the model predicting change in TR-ATL and when *years of teaching experience* was dropped from the model predicting change in AR-ATL.

The Year 2 model predicting change in TR-ATL did not run even in the most reduced form possible (i.e., all covariates were excluded except for incoming TR-ATL scores [in order to still predict change in ATL]) and the maximum number of iterations was increased. In order to account for non-convergence arising from model estimation getting stuck in a local minimum, the full model was re-run with preliminary regression coefficients used as starting values for the interaction term and main effect variables. Given that these attempts to fit the full model with the three-way interaction term did not facilitate model identification, the model without the three-way interaction term was run

and converged. Although the final model could not be fit with the three-way interaction, running the model with its nested two-way interactions allows for evaluation of the strength and direction of each of these regression coefficients when taking into account the effect of both teacher and parent support.

Child level covariates. Similar associations were noted among dependent variables and child-level covariates as in RA1 and RA2 models, suggesting that child-level covariates operate similarly when teacher support, within and cross level interactions, and teacher level covariates are taken into account in models..

Teacher level covariates. Included teacher-level covariates were again weak predictors of ATL. Specifically, only higher quality Instructional Support predicted more change in AR-ATL in the second Head Start year.

Main and interaction effects: (Parent support x anxious withdrawal) x teacher support. As stated, the 3-way interaction was dropped from the Year 2 model predicting change in TR-ATL. Contrary to expectations, AW, parent support, and teacher support did not significantly predict change in ATL either individually or in two-way interactions either in this model or the Year 1 model predicting change in TR-ATL and neither in the Year 1 nor Year 2 models predicting AR-ATL. However, the three-way, cross-level interaction term ([parent support x anxious withdrawal] x teacher support) significantly predicted change in ATL in all the models that still included the 3-way interaction. Interaction graphs were plotted at high and low levels of anxious withdrawal against high and low values of parent support, under conditions of high and low teacher support. High and low values were respectively plotted at 0.5 SD above and below the mean. Tables 13 and 14 show the result of crosstabs analysis of the number of children identified into high

and low classifications of AW, parent support, and teacher support for the first and second high school year, respectively. The following sections describe the observed trends.

Predicting change in TR-ATL in the first preschool year. In high teacher support classrooms, within both high and low AW classification, those with high reported parent support, made greater positive change in ATL than those with low reported parent support (Figure 2: high AW, $\beta = 1.01$, $SE = 0.03$; low AW, $\beta = 1.11$, $SE = 0.04$; all ps < 0.01). When in classrooms with low levels of teacher support, a significant, but very small difference is noted in the amount of positive change made by children exhibiting high levels of AW who have parents reporting high versus low levels of support ($\beta = 0.02$; $SE = 0.01$; $p < 0.05$); a greater change was noticed for children displaying low levels of AW ($\beta = 0.11$; $SE = 0.003$; $p < 0.01$). However, for children exhibiting low levels of AW, results suggest that reported parent support contributes more to the variability in positive change in TR-ATL than teacher support. Specifically, the pattern for these children looks similar across both low and high teacher support environments.

Predicting change in AR-ATL in the first preschool year. The three-way interaction between AW, reported parent support, and teacher support in predicting positive change in AR-ATL in the first pre-school year was significant (Figure 3; $\beta = -0.72$; $SE = 0.27$; $p < 0.01$). In particular, interactions suggest that for children demonstrating high levels of AW, in both high and low teacher support conditions, their level of positive change in ATL looks similar regardless of their parent support classification, meaning that no significant effect is noted (high teacher support: $\beta = 0.10$, $SE = 0.01$, $p > 0.05$; low teacher support: $\beta = 0.44$, $SE = 0.09$; $p > 0.05$). For children

exhibiting low levels of AW, in high teacher support classrooms, high reported parent support predicted greater changes in AR-ATL ($\beta = 0.69$; $SE = 0.13$; $p < 0.01$). However, unlike in models predicting first year TR-ATL, in low teacher support classrooms, for children exhibiting low levels of AW, no significant difference in the positive change in AR-ATL was noted based on parent support classification ($\beta = -0.12$; $SE = 0.11$; $p > 0.05$).

Predicting change in AR-ATL in the second preschool year. The three-way interaction between AW, reported parent support, and teacher support in predicting AR-ATL in the second pre-school year was significant (Figure 4: $\beta = 0.47$; $SE = 0.24$; $p < 0.05$). Specifically, unlike in the first year of preschool, results from this model suggest that for children with high AW, high reported parent support predicts greater positive change in AR-ATL than low reported parent support regardless of the quality of teacher support (high teacher support: $\beta = 0.50$, $SE = 0.06$, $p < 0.01$; low teacher support: $\beta = 0.34$, $SE = 0.05$, $p < 0.01$). In contrast, for children exhibiting low levels of AW, parent support predicted fewer positive changes in ATL in high teacher support classrooms ($\beta = -0.29$; $SE = 0.06$; $p < 0.01$), while in low teacher support classrooms similar levels of positive change in AR-ATL were noted across parent support classifications ($\beta = 0.03$; $SE = 0.05$; $p > 0.05$).

Chapter V: Discussion

The overarching objective of the present study was to explore the role of supportive caregiver practices in the development of approaches to learning (ATL) in at-risk preschoolers who display high levels of anxious withdrawal (AW), as reported by the teacher, in the classroom. A series of research questions concerning the potential moderation effects of supportive parenting and teacher practices on the AW-ATL relationship were explored in order to address this objective. It was hypothesized that results would be consistent with differential susceptibility theory. Finally, a secondary aim was to examine how these effects may differ in the child's first versus second preschool year and when evaluating positive change in ATL across two contexts: the preschool classroom (rated by teachers) and during individual testing with a less familiar adult (rated by an independent assessor).

The following section starts with exploration of observed interaction patterns predicting positive change in ATL for preschoolers, first in their classroom and then in a 1:1 testing session. It then moves into examination of the overall alignment of study results with what would be expected by differential susceptibility theory. The section concludes with limitations of the study followed by practical implications of the findings for caregivers.

Relationship between Quality of Caregiver Support and Degree of Positive Change in ATL for Children Exhibiting High Levels of AW

Differential susceptibility theory posits that the outcomes for individuals with biologically-based vulnerabilities are more sensitive to variations in the quality of the environment than those without those vulnerabilities (Belsky, 2013; Belsky & Pluess, 2010). Specific to this dissertation study, it was hypothesized that when in supportive environments children displaying higher levels of AW would demonstrate greater positive change in ATL than peers displaying lower levels of AW. In contrast, it was expected that when in less supportive environments those exhibiting high levels of AW would make fewer positive changes in ATL than peers demonstrating lower levels of AW.

Unexpectedly, observed associations between the child's level of AW, the quality of parent and teacher support, and the amount of change they made in ATL were incongruent with differential susceptibility theory. Instead results indicated that in the empirical sample factors other than differential susceptibility theory more strongly contributed to the relationship between a child's level of teacher-reported AW and the supportiveness of their parents and teachers in predicting positive change in ATL. Before providing a deeper discussion of why misalignment with differential susceptibility theory was observed, a summary and interpretations of the relationship patterns that did emerge in the findings is provided, first from models predicting change in TR-ATL and then AR-ATL.

Interplay between AW and ATL in the preschool classroom. Before evaluating results from models predicting TR-ATL, it is important to bring attention to

the demands of the setting in which these behaviors are evaluated by the teacher. The preschool classroom is a lively environment where teachers and students are often engaged in multiple activities. In the present study, preschool teachers used the ECLS-K Approaches to Learning scale to evaluate a child's ability to demonstrate competent ATL, such as curiosity and task persistence, when accessing learning opportunities in the classroom. Given that ratings were reflective of the child's behavior over the past month, they represent a summary of the child's ATL displayed across multiple interactions with teachers, peers, and tasks.

Association between teacher-reported AW and TR-ATL. In the present study, weak, negative correlations were noticed between AW and TR-ATL. Specifically, children who were rated by teachers as demonstrating more AW at the beginning of the school year tended to display lower incoming and end of the year TR-ATL in both the first and second preschool year than peers exhibiting less AW. However, in the literature mixed associations have been found between AW and ATL. For instance, some have reported similarly negative, weak associations (e.g., Hughes & Coplan 2010), whereas others, such as Fantuzzo and colleagues (2005) have reported no correlation between social reticence and ATL. Interestingly though, the latter study, which used a measure that allowed for more nuanced classifications of problem behaviors than the present study, also noted weak negative associations between ATL and the level of "low energy/ withdrawal" a child displays. Taken together, findings from past studies and the present study suggest that the relationship between AW and TR-ATL may tend to be small in magnitude, but dependent upon the sensitivity of the measure of internalizing problem behaviors.

Moderating role of parent support on relationship between a child's level of AW and their degree of positive change in TR-ATL. To the knowledge of the author, this is the first study investigating the role of parent support in the relationship between a child's level of AW and growth in teacher reported ATL. As discussed in the literature review, parent socialization practices and beliefs that are highly supportive (i.e., high demandingness and responsiveness) may equip children who display high levels of anxiety to exhibit more adaptive ATL in the classroom by promoting skills needed for problem solving, emotion and self regulation, managing peer interactions, and adjusting to the school routines (Chronis-Tuscano et al., 2015; Coplan et al., 2008; Karreman, van Tuijl, van Aken, & Dekovic´, 2008; O'Connor, et al., 2014; Pluess & Belsky, 2010; Wood et al., 2007). Hence, it was anticipated that supportive parenting practices would translate into greater positive change in ATL for these students.

Surprisingly though, no such relationship presented in either the first or second preschool year. Moreover, neither a significant main effect of parent support on change in TR-ATL was observed nor were significant correlations between parent support and beginning and end of the year TR-ATL. This suggests that the level of support parents report in their interactions with their children does not necessarily translate into more adaptive ATL or growth in TR-ATL. From review of the literature, one potential explanation stems from the differences between demands children face at home and in the classroom (Rudasill et al., 2014). As stated, TR-ATL evaluates a child's abilities to competently engage in classroom tasks in the presence of stimulating environments and in collaboration with peers. Although parents often help children learn to navigate social interactions (e.g., on play-dates or in the playground) and may also complete academic

tasks with them at home, in the classroom children are expected to display more autonomy when handling classroom expectations than when with their parents. Moreover, the teacher, not the parent, shapes the climate of the classroom. Hence, while parents' supportive socialization practices can equip children to display competent ATL in the home and community, perhaps these skills do not necessarily transfer into the classroom given that the demands and adult in charge are different.

Another potential contributor to the lack of a moderation effect of parent support surrounds the discrepancy between use of self-report versus direct observation. Specifically, the present study used a self-report measure of parent support, which is innately subject to bias due to social desirability, as opposed to direct observation of parent-child interactions. The latter allows for evaluation of the quality of their interactions themselves (Coplan et al., 2008; O'Connor et al., 2014 Pluess & Belsky, 2010; Sangawi, Adams, & Reissland, 2015). The more limited range of the parent support variable also could have hindered the ability to detect effects.

Further, the parent support composite was only composed of items measuring positive parenting behaviors. However, there is evidence to suggest that it is not just the absence of supportive parenting practices, but also the presence of negative parenting practices that predicts higher levels of anxiety and less independence, self-regulation, and confidence in children (McLeod, Wood, & Weisz, 2007; Paschall, Gonzalez, Mortensen, Barnett, & Mastergeorge, 2015; Pettit, Bates, & Dodge, 1997). All of these factors can impair a child's ability to display adaptive ATL in the classroom. Moreover, multiple patterns of parent practices can be classified as "less supportive," such as displaying low demandingness/low responsiveness versus low demandingness/high responsiveness.

While supportive parenting practices are generally found to be more promotive of adaptive ATL than any pattern of less supportive practices (e.g., Coplan et al., 2008; Sorkhabi & Mandara, 2013), differentiation between the patterns would allowed for comparison of if/how each pattern uniquely moderates the AW-ATL relationship. Hence, in order to more fully evaluate the role of parent support, in future research, measurement techniques should include use of direct observation of parent-child interactions and more directly, and thoroughly, account for negative parenting behaviors.

Moderation effect of teacher support on relationship between AW and changes in TR-ATL. Previous studies have explored the contribution of teacher support to changes in TR-ATL displayed by preschoolers (Dominguez et al., 2010; 2011), but the significance of the interaction effect of teacher reported AW and teacher support in predicting change in TR-ATL has not been explored. Hence, the present study examined this relationship. It found that in both the first and second preschool year teacher support did not significantly moderate the relationship between teacher-rated AW and TR-ATL.

These results were unexpected given that more supportive teacher practices create climates that were hypothesized to facilitate development of adaptive ATL. Specifically, teachers who demonstrate high levels of responsiveness and demandingness tend to encourage more autonomy, productive use of classroom time, and sensitivity to the needs of children than less supportive teachers (Brophy-Herb et al., 2007; Hamre et al., 2014). All of these characteristics have the potential to foster development of more adaptive TR-ATL for preschoolers exhibiting high levels of AW, as they typically require additional support to feel relaxed enough to more fully engage (Kalutskaya et al., 2015; O'Connor et al., 2014).

One possible explanation for these unexpected results is that the measure of teacher support administered in the current study did not capture variation in teacher support among individual children. Perhaps it is more so the quality of dyadic teacher-child relationships that contributes to greater growth in ATL for children who display high levels of AW as it captures the quality of their direct, one-on-one interactions with the teacher (Driscoll & Pianta, 2010). For instance, children exhibiting higher levels of internalizing problem behaviors demonstrated stronger work habits when their relationship with their teacher was characterized by less conflict (Baker et al., 2008). At the same time, others have reported no relationship (e.g., Rimm-Kauffman et al., 2002). Nevertheless, given that preschool teachers have been found to initiate more interactions with children who are more anxious (Coplan & Prakash, 2003), it would be fitting to investigate the extent to which the quality of individual teacher-child interactions predict change in ATL.

Another potential explanation for why teacher support did not moderate the relationship between a child's level of AW and change in TR-ATL is that there are other characteristics of the classroom and child to consider. Perhaps of greater importance is the quality of a child's interactions with their peers in the classroom. Given that children are more likely to engage with peers than teachers in the classroom, being more included in the peer group could foster an environment where children who are highly anxious feel more comfortable displaying adaptive ATL, such as persisting on challenging tasks and trying novel activities both when working independently and in a group.

There is partial evidence for this theory in the literature. For instance, increased teacher-reported peer rejection has been associated with decreased engagement in

classroom activities and found to mediate the relationship between a child's level of maternal-reported shyness in preschool and their level of engagement in first grade (Buhs et al., 2015). While they used maternal report of AW and not teacher report, a positive relationship between teacher reported AW and peer rejection has also been observed (Gazelle & Ladd, 2003).

There are also other classroom level factors to consider. For example, the level of internalizing behavior displayed by kindergarteners can increase in conjunction with the number of students in a classroom displaying high levels of externalizing behavior (Yudron, Jones, & Raver, 2014). Perhaps such environments are perceived as less predictable and safe for children who are already more cautious, thus increasing their level of AW and, subsequently, further increasing their reluctance to engage in adaptive ATL behaviors in the classroom. Another aspect of the classroom to consider is the race/ethnicity of students and teachers given that variations in these characteristics can play a role in how teachers perceive a child's behavior (e.g., Berg-Nielsen et al., 2012; Chang & Sue, 2003; Mashburn et al., 2006). Hence, while the present study accounted for race/ethnicity and externalizing behaviors at the individual level, the aforementioned studies suggest that future research should include classroom-level measures of these constructs to account for the variance in change in ATL over the school year predicted by variance in these areas.

Finally, it is also plausible that these null results of the present study in part stem from methodological issues with the outcome variable that would contribute to a ceiling effect. Specifically, the highest possible total score a child could receive on the *ECLS-ATL* scale was a 3 and analysis of sample descriptives indicates that by the Spring of the

second preschool year the mean score was 2.10 (*SD* = 0.73). Hence, the scale itself could have limited the amount of growth it could detect in the level of ATL students displayed in the classroom due to the presence of ceiling effects by the end of the second preschool year. This suggests that in the future utilization of a teacher-report scale with a wider range of scale scores may be better able to detect a fuller range of variations in the change in ATL shown by children in the classroom.

Moderation effect of teacher support on the interaction between AW and parent support in predicting change in TR-ATL. Research Aim 3 explored the three-way interaction between a child's level of AW, parent support, and teacher support in predicting development of ATL displayed in the preschool classroom. The following subsections discuss and compare patterns noticed first in the first preschool year and then the second preschool year.

Predicting change in TR-ATL in the first preschool year. While no main effects were observed, results indicated that the relationship between the supportiveness of a child's teachers and parents in predicting the adaptiveness of the child's ATL in the classroom varies by the child's level of AW (Figure 2). For children rated by teachers as exhibiting low levels of AW, simply entering the classroom environment having been raised by a parent who reports high levels of support positions them to make greater positive changes in ATL than counterparts with low levels of parent support. Moreover, our results suggest that the competence of these children allows them to display similar levels of change in ATL in the classroom regardless of the level of teacher support.

In contrast, children rated by teachers as exhibiting high levels of AW require not just previous exposure to supportive parenting practices, but also supportive teacher

practices in the classroom itself in order to experience patterns of change in in TR-ATL similar to less anxious peers. Such findings align with research showing that children displaying high levels of AW especially need supportive classroom environments to help them acclimate and more fully engage (Kalutskaya et al., 2015). Moreover, while these patterns in the highly supportive teaching environment are consistent with those expected by differential susceptibility theory, it does not necessarily indicate that differential susceptibility is at play, given that the pattern predicted by the theory is not also observed in the less supportive teaching environment (i.e., the effect of parent support on change in ATL is more profoundly noticed in the high versus low AW group *and* children who exhibit high levels of AW make less positive change in ATL than peers who display low levels of AW). As Belsky and Pluess (2009) emphasized in their seminal paper on the theory, without evidence of dual-risk and benefit of an environment to the outcomes of a vulnerable individual, the criteria for differential susceptibility are not met.

Predicting change in TR-ATL in the second preschool year. During the second preschool year, the three-way interaction between AW, parent support, and teacher support did not significantly predict change in ATL in the classroom. This was surprising given the aforementioned benefits of supportive caregiver practices for children exhibiting high levels of AW. However, it is in line with the hypothesis that preschool children are less dependent upon caregiver support for developing ATL skills in their second compared to their first preschool year. Further, others have observed that children who display high levels of AW appear more acclimated to the setting as the school year progresses (Koomen & Hoeksma, 2003; Rimm-Kauffman & Kagan, 2005).

Interplay between AW and ATL during an individual testing session. Before examining the interplay between a child's level of anxiety and caregiver support in predicting Assessor Reported (AR)-ATL, of benefit is to recall the demands of the setting in which these behaviors were evaluated and highlight difference between them and from those placed on children in the classroom. While Teacher Reported (TR)-ATL reflects how a child goes about learning activities in their familiar classroom setting, AR-ATL evaluates how a child goes about the learning process during an individual, 45-minute, standardized testing session with an unfamiliar adult (i.e., the assessor). Rated behaviors included their ability to focus on a task, cooperate with the assessor, and incorporate planning into their decision making process. Hence, AR-ATL captures a child's competence at displaying these skills while performing a narrow set of highly structured tasks. This is in contrast to teacher ratings, which provide a more global measure of a child performing both structured and unstructured tasks. Finally, AR-ATL also captures the competence of a child's ATL when completing tasks with a stranger, in a setting with limited distractions, as opposed to a busier, more familiar classroom.

Association between teacher-reported AW and AR-ATL. Bivariate correlations offered partial support for the hypothesis that the competency of a child's AR-ATL was negatively correlated with their level of teacher-rated AW. Specifically, the expected association was noted between AW and incoming AR-ATL scores for the first and second preschool year and end of year AR-ATL scores in the first preschool year. Such findings align with evidence suggesting that individual testing settings are more stressful for children with internalizing disorders than peers with low levels of AW (e.g., Crozier & Hostettler, 2003). It is possible that a novel setting and fear of social evaluation made it

more challenging for these children in their first preschool year to demonstrate adaptive ATL during testing. However, a child's level of AW was not significantly associated with end of year AR-ATL during the second preschool year. This suggests that by this time they may have been more acclimated to the environment, which positioned them to demonstrate a level of ATL resembling that of peers exhibiting low levels of AW.

Moderation effect of parent support on relationship between AW and change in AR-ATL. No studies were identified explicitly measuring how parent socialization practices contribute to change in AR-ATL for children displaying high levels of AW. However, given that parents typically guide children in navigating interactions with less familiar adults (e.g., doctors and family acquaintances; Asendorpf, 1990; Eisenberg et al., 1998; Pianta & Harbers, 1996), it was hypothesized that children who had parents that did so in a manner that was responsive, yet demanding would more quickly warm up to the assessor and be less likely to have anxiety that interfered with completion of tasks. Further, children are more likely to engage individually with parents than teachers on formal or informal academic tasks. Hence, it was expected that children with warm parents, who challenge them to be curious and independent, would develop more adaptive ATL when completing tasks with an adult (i.e., the caregiver), which they could in turn apply when working with the assessor.

This hypothesis was partially supported. A significant, albeit small, moderation effect was noted of parent support on AW predicting change in AR-ATL in the second preschool year (Figure 1). Specifically, when looking within the group of children with parents who report high levels of support, a weak trend was noted where children demonstrating high levels of AW made greater changes in AR-ATL than counterparts

exhibiting low levels of AW. However, our findings indicated that a fuller picture of this relationship emerges when taking into account the quality of teacher support available in the child's classroom, as discussed further below in the section proceeding the next.

Moderation effect of teacher support on relationship between AW and change in AR-ATL. In the present study, it was hypothesized that all children, but especially those exhibiting high levels of AW, would demonstrate greater positive changes in AR-ATL when in classrooms with teachers who utilize more supportive practices. Although parents more so than teachers are called to scaffold social interactions for children as to help them acclimate to and interact with strangers, teachers are more likely to expose children to the type of academic materials presented by the assessor. Moreover, children in classrooms with high levels of teacher support have been found to demonstrate greater self-regulation, which is an aspect of AR-ATL (e.g. Hamre et al., 2014). Further, some have found that children in preschool classrooms characterized by supportive teacher practices displayed more confidence and pride in accomplishments during individualized testing with an assessor than those with less supportive teachers (Stipek et al., 1995).

However, across both years teacher support was not found to moderate the relationship between a child's level of AW and their AR-ATL or independently predict change in AR-ATL. Null findings here, as opposed to in models predicting change in TR-ATL, might arise from differences previously noted between the environments themselves and the behaviors being evaluated. Given the nature of the classroom, supportive teacher practices are more often aimed at scaffolding adaptive ATL when completing tasks in a familiar setting with peers as opposed to when completing structured tasks in an individual setting.

Moderation effect of teacher support on the interaction between AW and parent support in predicting change in AR-ATL. Research Aim 3 explored the three-way interaction between a child's level of AW, parent support, and teacher support in predicting change in ATL displayed during a 1:1 testing situation, as rated by an independent assessor. The following subsections discuss and compare patterns noticed first in the first preschool year and then the second.

Predicting change in AR-ATL in the first preschool year. Unexpectedly, results indicated that the amount of change in AR-ATL made by children exhibiting high levels of teacher-rated AW did not significantly vary with changes in teacher or parent support. Moreover, in classrooms with high levels of teacher support, high levels of reported parent support had a greater effect on the increase in positive change in AR-ATL made by children displaying low levels of AW as compared to high levels of AW (Figure 3). This was unexpected given that children exhibiting high levels of AW are typically more sensitive to variations in adult support than less anxious peers.

However, there are possible explanations to consider. The first is that in the first preschool year, children displaying low levels of AW were better able to transfer ATL-related skills acquired from previous interactions with parents (i.e., task persistence and confidence in the presence of a stranger) for execution in the testing setting than peers exhibiting high AW. As stated, preschoolers exhibiting higher levels of anxiety tend to experience more stress in 1:1 testing settings (Blair et al., 2004). Hence, this could contribute to their level of anxiety in this particularly novel situation, where they are also under the directed gaze of the assessor, escalating to the point that it suppresses their

ability to experience the positive benefits to AR-ATL associated with exposure to supportive parenting and teacher practices.

Second, the weak effects of teacher and parent support on change in AR-ATL for the children exhibiting high levels of anxiety intimates that other variables more strongly affected this relationship. One to consider is the level of support offered by the assessor in the testing context. While such data were not collected, given that teachers have reported offering special attention to more anxious children (Coplan & Prakash, 2003; Evans, 1987), it is possible that the same could be true for assessors. Hence, of merit would be evaluation of the level of responsiveness and demandingness assessors display during testing, and its contribution to change in AR-ATL.

Predicting change in AR-ATL in the second preschool year. Unlike in the first preschool year, in the second, children exhibiting high levels of AW who also had parents who reported use of highly supportive practices made significantly more positive change in AR-ATL than counterparts with parents who reported low support. This pattern emerged in both high and low teacher support classrooms. The fact that variations in parent support had a stronger effect in the second versus first preschool year for this group of children stands in contrast to the *a priori* hypothesis that caregiver support would contribute more profoundly to change in ATL when the children were younger (Bhavnagri & Parke, 1991). However, this pattern is understandable considering the aforementioned findings that with time children who display more AW may become more acclimated to new people and environments (Rimm-Kaufman & Kagan, 2005). Subsequently, being more comfortable in the second preschool year might help suppress the barrier placed by the anxiety on their ability to access and apply skills learned from

interactions with parents to the testing situation, regardless of the level of support displayed by teachers.

When looking at trends for the group of children with low levels of AW, a somewhat perplexing pattern emerged. Reported parent support predicted less change in AR-ATL, but not in low teacher support classrooms, as observed in the first preschool year, but in classrooms where teachers displayed high levels of support. One hypothesis is that the parenting style exhibited by parents who report use of more supportive practices is experienced as "over-parenting/ helicopter parenting" by children with low AW in their second year of preschool. Such a parenting style is characterized by provision of unwarranted assistance, overprotection from risk, and excessive engagement in the child's emotional development (Segrin, Givertz, Swaitkowski, & Montgomery, 2013).

While good intentioned, there is evidence to suggest that such practices decrease independence and internal motivation in children (Segrin et al., 2013; Schiffrin & Liss, 2017). Although subjects in the mentioned studies were adolescents and young adults, it is possible that such trends are applicable to children in their second year of preschool who display low levels of AW, as they are more competent than peers exhibiting high AW or children in their first year of preschool. Hence, "over-parenting" might contribute to them experiencing less positive change in AR-ATL if the rigor or the autonomy afforded by their parents when completing tasks with them outside of school does not meet the level of challenge they need to demonstrate greater change in AR-ATL in school. Subsequently, for preschoolers who display low AW, being in a classroom with a less supportive teacher might be more beneficial for developing skills necessary for

displaying adaptive ATL when working with an assessor as they are more likely required to independently navigate situations and scaffold their own learning in the classroom.

At the same time, a more parsimonious explanation might be that the trend in change in AR-ATL noted for the low AW group is not so much stemming from "over-parenting," but simply is reflective of a greater proportion of children with low levels of AW having higher incoming levels of AR-ATL than children displaying higher levels of AW. Subsequently the former would have less room for growth over the year. Post hoc comparison of AR-ATL means score for the high and low AW groups provides partial support for this hypothesis. For instance, in both the first and second preschool year, children exhibiting high levels of AW had lower levels of incoming AR-ATL than children displaying low levels of AW; the difference though was only significant when comparing means in the Spring of the first preschool year (t [231.77] = 4.26, $p < 0.01$). Of consideration though is that the average AR-ATL score for each group, at all time points, was in the high 80s to low 90s range, intimating that most children had room for improvement. However, while the difference was not significant, in both the first and second preschool year a higher percentage of children displaying low versus high levels of AW obtained AR-ATL scores that were at least in the "High Average" range (i.e., ≥ 110). Analysis of trends in the movement of scores over the duration of the study suggests that more children in the former group had the potential to make less positive growth in AR-ATL either due to their scores regressing towards the mean or ceiling effects. Nonetheless, including a direct measure of parent support in future studies with the capability to evaluate for "over-parenting" would also provide a valuable next step toward teasing apart these hypotheses.

Potential Contributors to Observed Misalignment with Differential Susceptibility Theory

As stated, in the present sample, evidence for differential susceptibility theory was not found in the relationship between the level of change in ATL for children exhibiting high versus low levels of AW and the supportiveness of their environment. While the section above examined possible factors contributing to the patterns that were observed, there are other factors to consider when evaluating why findings inline with the theory did not emerge.

First, maternal report is typically used as a measure of AW when evaluating for differential susceptibility as it is believed to best capture *biologically-based* behavioral inhibition (Belsky & Pluess, 2009). Hence, the lack of evidence in the present study for differential susceptibility could intimate that it is not detectable when using teacher-report. Put another way, it could suggest that children displaying high levels of teacher-reported AW are not differentially susceptible to experiencing less positive change in ATL when in less supportive environments. However, such assumptions might be premature given that children in the empirical sample tended to exhibit lower levels of AW. The negative skew in AW ratings potentially decreased the likelihood that patterns consistent with differential susceptibility would have emerged because of the lower vulnerability level of the sample. Hence, examining these questions in a sample of children where there is greater variability in and higher levels of AW would be crucial for determining if differential susceptibility emerges when using teacher reported AW.

At the same time, it is also possible that low AW scores reflect more so that teachers having difficulties identifying symptoms of in the classroom as opposed to the

sample actually displaying low levels of AW. As stated, teachers are often multitasking and must attend to multiple children (Berg-Nielsen et al., 2012). This possibility highlights the need for increased teachers training on identification of symptoms of AW in young children. Moreover, it also suggests that of benefit to future studies would be multiple informants evaluating the child's level of AW displayed in the classroom, such an assistant teacher or independent observer.

Second, to the knowledge of the author, the specific research questions explored in the present study have not been explicitly evaluated using maternal report of AW. Hence, the opportunity is not available to determine if patterns predicted by differential susceptibility would have emerged if maternal report of AW were used. Subsequently, an important future direction is running modified regression models from the present sample, as well as a more anxious group of children, where teacher-reported AW is replaced with maternal-rated AW as a predictor of change in ATL. Findings from such models would also provide insight on how similarly or differently caregiver support contributes to the amount of positive change in ATL made by children exhibiting high levels of AW in the classroom versus in the home and community.

Moreover, if evidence for differential susceptibility was also not observed in models using maternal-reported AW, it might indicate that the effects of differential susceptibility are domain specific versus domain general (Belsky, 2013). Put another way, although differential susceptibility may be evident in other environment- outcome relationships for children displaying high levels of AW, it may not necessarily be present in the relationship between the level of support they receive in the environment and their level of positive change in ATL (Belsky, 2005). Given that Belsky (2013) describes the

issue of whether differential susceptibility should be conceptualized as domain general versus domain specific as unresolved, findings from future studies could provide valuable insight for parsing out such issues. For instance, one approach would be evaluating if findings consistent with differential susceptibility emerge when looking at the combined contribution of parent and teacher support on not only change in ATL, but also other school outcomes such as academic competence and peer acceptance, in the context of children displaying high versus low levels of AW. If findings consistent with the theory were found when examining the role of caregiver support on each dependent variable, it could offer support for conceptualizing it as domain general.

Summary

Taken together, results of this study align with Bronfenbrenner's theory that children do not develop in isolation, but within systems that interact and contribute to their outcomes (1977). Specifically, study results offer preliminary findings illustrating that the degree of positive change in ATL a child experiences over a school year is more fully understood when taking into account not just the level of AW they exhibit, but also the *interplay* between the quality of support received in home and school – as opposed to the individual effect of each. In other words, considering the role of parent and teacher support in isolation from the other offers a limited and incomplete picture of how they contribute to growth in ATL for preschoolers who exhibit high levels of AW.

Additionally, study results illustrate that the relationship between AW, parent support, and teacher support in predicting changes in ATL is quite nuanced and varies upon the context in which the learning behaviors are being evaluated and the child's year in preschool. For instance, in the first preschool year, when evaluating the difference

between the amount of change in ATL made by children who display high AW and experience both high parent *and* teacher support as compared to high teacher support and low parent support, is more pronounced in the context of teacher- versus assessor-reported ATL. Identification of such nuances underscores that the most beneficial level of support for developing adaptive ATL in preschoolers may not be linear.

Findings also suggest that the different demands placed on students in a classroom versus an individual testing setting contributes to the persistence of the gap in ATL competence for children exhibiting higher versus lower levels of AW. In particular, the present study found that by the end of the second preschool year children exhibiting higher levels of AW were able to demonstrate a level of ATL in an individual testing setting that was similar to peers who exhibit lower levels of AW. However, even after a second year in preschool, those exhibiting higher levels of AW still demonstrate more maladaptive ATL in the classroom than peers exhibiting lower levels of AW. Such differences suggest that it may be easier for children who display higher levels of AW to display competent ATL when working in a 1:1 setting with a less familiar adult than in their classroom.

Limitations

A number of limitations were noted throughout the Discussion identifying factors of the study that need to be taken into consideration when interpreting results. However, there are others that are also important to note. The first is that results are correlational, meaning that causal inferences are not appropriate. Second, while sampling weights allow for data to be nationally representative, it is important to keep in mind that different findings might emerge if research questions are explored in subsamples of the population

given the noted variations in how parenting practices can contribute differently to the development of children depending upon race/ethnicity (e.g., Sangawi et al., 2013, Sorkhabi & Mandara, 2013; Tamis-LeMonda, Briggs, McClowry, & Snow, 2009). Similarly, of note is that AW is viewed differently across cultures; such variations in perceptions of child behavior could play a role in how parents respond to AW behavior (e.g., Dever & Karabenick, 2011). Third, interpersonal differences between teachers, such as their own level of shyness, have also been found to play a role in their evaluation of children who display high levels of AW (Coplan et al., 2011).

Fourth, other aspects of caregivers and the home environment, aside from indicators of parent support, were not accounted for in the present study. For instance, higher negative emotionality exhibited by parents has been found to contribute to increased levels of internalizing disorders in a sample of Head Start children (McCoy & Raver, 2011). Further, the present study did not account for a family's academic socialization practices, such as the quality of the home learning environment and the parent-school/teacher relationship, which tend to be positively associated with academic outcomes related to ATL (e.g., Bulotsky-Shearer, Wen, Faria, Hahs-Vaughn, & Korfmacher, 2012; Fantuzzo, McWayne, Perry, & Childs, 2004; Powell, Son, File, & San Juan, 2010; Taylor, Clayton, & Rowley, 2004). Additionally, not accounted for was how frequently children actually interacted with their parents. Variations in the regularity with which children were potentially exposed to support from reporting caregivers could have contributed to study outcomes.

Fifth, the present study's measure of AW was imprecise in that it did not allow for distinction between different subgroups of children whose behavior might be classified as

anxious withdrawn, such as those who are asocial versus socially anxious. Such distinctions may have been beneficial given that membership in each of these groups can differently predict ATL, which could necessitate different interventions from teachers and parents (Coplan et al., 2004; Fantuzzo et al., 2005). Further, the present study's AW measure contains an item pertaining to how sad/depressed the child appears, which is a different construct than anxiety (APA, 2013). At the same time, anxiety and sadness are often positively correlated in preschoolers (Egger & Angold, 2006; Hopkins, Lavigne, Gouze, LeBailly, & Bryant, 2012) suggesting that depression could be a reasonable indicator of AW.

Sixth, the teacher support measure was limited in that ratings of a classroom's level of responsiveness and demandingness were based on observations made in one day. Hence, observers only evaluated a snapshot of global teacher-child interactions that may or may not be representative of typical classroom climate (Mashburn, Downer, Rivers, Brackett, & Martinez, 2013). At the same time there is evidence of consistency in CLASS ratings of teachers observed over time (e.g., Pakarinen et al., 2010; Pianta et al, 2009). Moreover, ratings for CLASS dimensions are the average of scores from multiple cycles in one day, which aids in adequately sampling the classroom's overall climate (Pianta et al., 2009).

Finally, due to limitations of the data set, there were differences in the sampling frame between the first and second preschool year models. In particular, in regression models for the first preschool year, incoming and end of year ratings of AW and TR-ATL were respectively from the Fall and Spring of that preschool year. However, in the second preschool year incoming ratings were from the Spring of the first preschool year and end

of year scores were from the Spring of the second school year. Hence, in the second preschool year, it is possible that the child's incoming and end of year level of TR-ATL and AW were reported by different teachers, who, despite using the same measure, might have different interpretations of the measure items or child behavior. A difference in reporters can make it challenging to determine if changes in ratings were due to changes in the rater or child's abilities.

Practical Implications

Given the noted relevance of building adaptive ATL in early childhood to the development of socioemotional adjustment and academic skills (e.g., DiPerna et al., 2001; Li-Grining et al., 2010; Razza et al., 2015), and the paucity of research available on factors contributing to positive change in ATL for preschoolers who exhibit higher levels of AW, the present study poses a number of practical implications. First, it offers support for findings in the literature that children exhibiting higher levels of teacher-reported AW tend to display more maladaptive assessor and teacher reported ATL than peers who display less teacher-reported AW, but not necessarily to a large degree. For school staff and parents, this reiterates that early identification of children who display high levels of AW is crucial. Implicit within this charge is that caregivers have knowledge of indicators of AW or access to instruments or professionals (e.g., their pediatrician or school psychologist) to offer support. Moreover, the fact that negative links between AW and ATL were noted in the present study sample, which tended to display lower levels of AW, demonstrates that identification of children displaying even moderate levels of AW is important. Further, early identification is especially crucial in socioeconomically at-risk populations, such as children and families in Head Start programs, given the noted

increased risk of problem behaviors and life stressors and often limited access to resources (e.g., Chen, Cohen, & Miller, 2009; Hoglund & Leadbeater, 2004).

One method for bolstering identification of young children displaying high levels of AW is through increased communication between parents and teachers. Even though small to moderate correlations have been observed between teacher and parent report of AW (Achenbach et al., 1987; Eisenberg et al., 1998), parents informing teachers about signs of AW they have observed their child display outside of the classroom can help teachers identify children exhibiting AW in the classroom. Such information could alert teachers to monitor that child's behavior at school and evaluate the extent to which these behaviors are impairing classroom functioning. Similarly, teachers can share concerning behavior with parents. Hence, findings from the present study further underscore past findings indicating the benefit of increased interactions between teachers and parents on child outcomes (Fantuzzo et al., 2004; Pirchio, Volpe, & Taeschner, 2011; Powell et al., 2010).

Study results also imply that there are periods when the development of adaptive ATL in children who display high levels of AW are particularly sensitive to the level of support offered by teachers and parents. For instance, during the first preschool year both highly supportive parent and teacher practices were promotive of more adaptive ATL in the classroom. In-school teacher and parent training workshops are one method for equipping teachers and parents to utilize practices that promote the healthy development of these children. For instance, the *INSIGHTS* intervention is a school-based program that offers training to highly anxious children and their teachers and parents on strategies for reducing anxiety and increasing classroom engagement (O'Connor et al., 2014). Also

beneficial for teachers might be training on interventions specifically aimed at creating supportive climates (e.g., Responsive Classroom; Rimm-Kauffman & Chiu, 2007).

Moreover, findings from the present study stress that in order to best position young children displaying AW to develop competence in ATL in school, interventions must also fortify family systems. What avenues are available for further empowering parents to assume an active role in their child's development and leveraging the parent-child relationship as a vehicle for bolstering the engagement and autonomy of children who are more anxious? For example, as discussed in the literature review, Chronis-Tuscano and colleagues (2015) created the *Turtle Program*, a therapeutic intervention that provided parents with live coaching on how to respond to their young child who exhibited behavioral inhibition as to promote more independence and risk taking. Moreover, in response to growing documentation suggesting that anxious parents are more likely to employ intrusive parenting practices that are associated with increased anxiety in children, Ginsburg and colleagues (2015) conducted a study testing the efficacy of a family therapy intervention that taught cognitive-behavioral approaches for managing symptoms of anxiety and addressing parenting concerns. A significantly lower percentage of children in the treatment group developed an anxiety disorder as compared to those in the control group.

At the same time, regardless of the effectiveness of such programs, scheduling conflicts can make them challenging for working families to attend them. Hence, "Back to School Nights" or parent-teacher conferences might be more feasible venues. During these times school faculty can communicate with families about the association between ATL, parent and teacher support, and a child's level of AW. This time could also be used

to introduce strategies for strengthening adaptive ATL (e.g., encouraging task persistence by praising the child's effort and not just the finished product). Similarly, provision of in-home parenting services, such as the Early Head Start Home-Visiting service, is another possibility.

Additionally, parents and teachers have the option to independently access resources. For instance, a growing number of reputable institutions, such as the Child Mind Institute and The Anxiety and Depression Association of America, provide free parenting strategies online for caregivers of young children who are more anxious. Similarly, organizations such as The Center on the Social and Emotional Foundations for Early Learning from Vanderbilt University provide teachers with free resources for creating more structured and responsive classroom environments that can promote socio-emotional development and foster expression of adaptive learning behaviors.

Finally, results from the present study suggest that for children displaying high levels of AW, parent support more so than teacher support contributes to the development of adaptive ATL demonstrated in an individual testing setting. While ideally all children would experience supportive parenting practices, this is not always reality. Hence, of potential benefit would be teachers or school psychologists to consider providing children with opportunities to develop skills that support presentation of adaptive ATL in a 1:1 setting (e.g., work comfortably with a less familiar adult; focus on a task without peer or teacher support). Given that it is atypical for children to complete tasks in front of an assessor, as in the present study, the necessity of developing such skills is pertinent more for the sake of equipping children to be able to demonstrate them in school settings they are more likely to encounter. For instance, this could include performing tasks under the

directed attention of others (i.e., presentations), completing individual in-class assignments, and taking standardized tests. However, it is important to recognize that the trends that emerged in this study are from the general population and that an individual child's need for support may vary.

Conclusions

Highly supportive interactions between young children and their caregivers at home and school can play a significant role in fostering healthy development and preparing preschoolers for kindergarten. However, as highlighted in the current study, the level of support that would be most beneficial to the child can be quite complex and contingent upon multiple factors such as their disposition, quality of relationships with caregivers across various contexts, year in school, and the unique challenges presented in their environment. As attempted in the present paper, continued identification of aspects of caregiver-child interactions that lead to particularly fruitful outcomes for at-risk groups of young children, such as those displaying high levels of anxious withdrawal, can help close the noted achievement/performance gaps between them and less vulnerable peers during this crucial period of development.

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Table 1

Sample Descriptives

	Unweighted				Weighted		
Variable	*N*	*M*	*Minimum/ Maximum*	*SD*	*Population Size*	*M*	*SE*
Child Level							
T1 Age (Months)	749	41.41	32.00/56.00	3.68	171939	41.20	0.23
T3 Age (Months)	737	60.63	52.00/74.00	3.70	168975	60.18	0.22
T1: Anxious Withdrawal (TR)	735	1.51	0.00/10.00	1.84	169486	1.57	0.09
T2: Anxious Withdrawal (TR)	736	1.40	0.00/12.00	1.84	164938	1.44	0.10
T1 ATL Score (TR)	735	1.50	0.00/3.00	0.66	169486	1.48	0.04
T1 ATL Score (AR)	718	85.83	40.00/124.00	15.30	164812	86.53	1.13
T2 ATL Score (TR)	736	1.74	0.17/3.00	0.71	164938	1.75	0.04
T2 ATL Score (AR)	718	87.49	40.00/124.00	14.34	165777	87.28	0.99
T3 ATL Score (TR)	720	2.10	0.00/3.00	0.73	166179	2.08	0.04
T3 ATL Score (AR)	737	90.71	40.00/117.00	14.32	168975	91.42	0.99
T1 Parent Support (PR)	732	4.19	1.29/5.00	0.55	169400	4.16	0.03
T2 Parent Support (PR)	673	4.22	2.43/5.00	0.54	155545	4.25	0.03
T1 Externalizing Behavior (TR)	735	1.61	0.00/7.00	1.67	169486	1.62	0.10
T2 Externalizing Behavior (TR)	736	1.52	0.00/7.00	1.64	164938	1.56	0.09
Teacher Level							
T2 Yrs of Tchg Exp.	238	13.05	0.00/30.00	8.67	33279	13.25	0.91
T3 Yrs of Tchg Exp.	263	13.40	0.00/30.00	9.03		N/A	N/A
T2 Teacher Support (AR)	241	5.23	2.61/6.33	0.53	33279	5.24	0.04
T3 Teacher Support (AR)	263	5.33	3.00/6.46	0.52		N/A	N/A
T2 Instructional Support	241	2.25	1.00/4.42	0.65	33279	2.32	0.07
T3 Instructional Support	263	2.12	1.00/4.67	0.70		N/A	N/A

Boy	382	51.0	86259	50.20
Girl	367	49.0	85679	49.80
Race/Ethnicity				
Black	273	36.4	57584	33.50
Latino	273	36.4	62647	36.40
Caucasian	146	19.5	35558	20.70
Other	55	7.3	15778	9.20
Mother's Highest Level Ed.				
Less than High School	221	29.5	53350	31.00
High School/GED	266	35.5	58115	33.80
Some College	166	22.2	38482	22.40
B.A. or Higher	49	6.5	9977	5.80
T1 Income: Needs Ratio (PR)				
At or Below Poverty Line (≤ 1)	446	59.5	108727	63.20
Low Income (1 < X ≥ 2)	222	29.6	47798	27.80
Above Low Income (≥ 2)	64	8.5	12874	7.50
T2 Income: Needs Ratio (PR)				
At or Below Poverty Line (≤ 1)	375	50.1	91537	53.20
Low Income (1 < X ≥ 2)	225	30.0	49278	28.70
Above Low Income (≥ 2)	68	9.1	13824	8.00
Teacher Level (T1 only)				
Gender				
Male	2	0.08	418	1.30
Female	236	99.2	32861	98.70
Race/Ethnicity				
Black	85	35.9	11107	33.50
Latino	53	22.3	6864	20.60
Caucasian	121	51.1	18174	54.90
Other	44	17.3	5549	16.70

Note. Child level estimates were weighted using sampling weight variable PRA130CW; sampling weight variable T120CLSWT was applied to teacher level estimates. T1= Fall Yr.1; T2= Spring Yr.1; T3= Spring Yr.2; AR= Assessor Report; TR= Teacher Report; and PR= Parent Report.

Table 2

Study Variable Instruments and Items

Construct (Reporter): Source	Measurement Items
1. Approaches to Learning (AR): *International Performance Scale Revised* (Leiter-R), Examiner Rating Scale- Cognitive/ Social scale (Roid & Miller, 1997)	1A. Organization/ Impulse Control Subscale[a] *Thinks and plans before beginning.* *Inhibits verbalizations appropriately.* 1B. Sociability Subscale[a] *Interacts positively.* *Cooperates and complies with examiner's requests.* 1C. Activity Level Subscale[a] *Focuses without fidgeting* *Needs minimal reinforcement* 1D. Attention Level Subscale[a] *Pays attention during instructions and demonstrations.* *Focuses on task.* *Directed to task despite external noises and sights.*
2. Approaches to Learning (TR): The *Early Childhood Longitudinal Study (ECLS–K) Approaches to Learning Scale* (U.S. Department of Education, 2002)	2. *Keeps belongings organized.* *Pays attention well.* *Shows eagerness to learn new things.* *Easily adapts to changes in routine.* *Persists in completing tasks.* *Works independently.*
3. Anxious/Withdrawn (TR): *FACES-2009 Problem Behavior Scale*	3. *Keeps to herself/himself; withdraws.* *Lacks confidence to learn new things.* *Is nervous, high-strung, or tense.* *Seems unhappy, sad/depressed.* *Worries about things for a long time.* *Seems sleepy/tired in class.*
4. Parent Support (PR): FACES-2009 adapted Child Rearing Practices Report (CRPR; Block, 1965)	*4. I have warm intimate moments with my child.* *I encourage my child to be curious.* *I am easygoing/relaxed with my child.* *I make sure my child knows I appreciate him.* *I have no difficulty sticking with rules.* *I encourage my child to be independent.* *Once I decide how to deal with misbehavior, I follow through.*

5. Teacher Support (AR): Average of listed dimension scores from the *Classroom Assessment Scoring System (CLASS; Pianta, LaParo, & Hamre 2005)*	*Positive Climate* *Negative Climate (Reverse Coded)* *Teacher Sensitivity* *Regard for Student Perspective* *Behavior Management* *Productivity*
6. Externalizing Behavior Composite (TR): Constructed by author from the mean of the *Hyperactive* and *Disruptive/Aggressive* subscales of the *FACES-2009 Problem Behavior Scale*	6A. Hyperactive subscale *Acts too young for his or her age.* *Can't concentrate, can't pay attention for long.* *Is very restless, fidgets all the time, can't sit still.* 6B. Disruptive-Aggressive subscale *Disobeys rules or requests.* *Disrupts ongoing activities.* *Hits or fights with others.* *Has temper tantrums/hot temper.*
7. Instructional Support (AR)*: Instructional Support Domain* score from the *Classroom Assessment Scoring System (CLASS; Pianta, LaParo, & Hamre 2005)*	7. *Quality of Feedback Dimension* *Concept Development Dimension* *Language Modeling Dimension*

Note. AR= Assessor Report; PR= Parent Report; TR= Teacher Report.
[a]Due to copyright laws, the full set of items on the Leiter-R subscales of the Cognitive Social scale was not provided; this chart includes all the examples of subscale items provided in the FACES 2009 User Guide.

Table 3

Regression Model Parameters

	Model Set 1: Year 1 (1st Head Start Year)		
Parameter	Research Aim 1	Research Aim 2	Research Aim 3
1. Dependent Variables	T2 Approaches to Learning (AR/TR)	T2 Approaches to Learning (AR/TR)	T2 Approaches to Learning (AR/TR)
2. Main Effects			
Child Level	*T1 Anxious-Withdrawn Score* *T1 Parent Support*	*T1 Anxious-Withdrawn Score*	*T1 Anxious-Withdrawn Score* *T1 Parent Support*
Teacher Level	N/A	T2 Teacher Support	T2 Teacher Support
Interactions			
Two-Way, Child Level	*(T1 Anxious-Withdrawn Score) x (T1 Parent Support)*	N/A	*T1 Anxious-Withdrawn Score x T1 Parent Support*
Two-Way, Cross-Level	N/A	*(T1 Anxious-Withdrawn Score) x (T2 Teacher Support)*	*T1 Anxious-Withdrawn Score x T1 Parent Support*
Three-Way, Cross-Level	N/A	N/A	*(T1 Anxious-Withdrawn Score x T1 Parent Support) x (T2 Teacher Support)*
4. Covariates			
Child Level	*T1 Age, T1 Gender, T1 Race/Ethnicity, T1 Income: Needs Ratio, T1 Mother's Highest Level of Education, T1 Externalizing Behavior, T1 Approaches to Learning (AR/TR)*	*T1 Age, T1 Gender, T1 Race/Ethnicity, T1 Income: Needs Ratio, T1 Mother's Highest Level of Education, T1 Externalizing Behavior, T1 Approaches to Learning (AR/TR)*	*T1 Age, T1 Gender, T1 Race/Ethnicity, T1 Income: Needs Ratio, T1 Mother's Highest Level of Education, T1 Externalizing Behavior, T1 Approaches to Learning (AR/TR)*
Teacher Level	N/A	T2 Years of Teaching Experience; T2 Instructional Support	T2 Years of Teaching Experience; T2 instruction Support

	Model Set 2: Year 2 (2nd Head Start Year)		
1. Dependent Variables	T3 Approaches to Learning (AR/TR)	T3 Approaches to Learning (AR/TR)	T3 Approaches to Learning (AR/TR)
2. Main Effects			
Child Level	*T2 Anxious-Withdrawn Score* *T2 Parent Support*	*T2 Anxious-Withdrawn Score*	*T2 Anxious-Withdrawn Score* *T2 Parent Support*
Teacher Level	N/A	T3 Teacher Support	T3 Teacher Support
Interactions			
Two-Way, Child Level	*(T2 Anxious-Withdrawn Score) x (T2 Parent Support)*	N/A	N/A
Two-Way, Cross-Level	N/A	*(T2 Anxious-Withdrawn Score) x (T2 Teacher Support)*	N/A
Three-Way, Cross-Level	N/A	N/A	*(T2 Anxious-Withdrawn Score x T2 Parent Support) x (T3 Teacher Support)*
4. Covariates			
Child Level	*T3 Age, T1 Gender, T1 Race/Ethnicity, T2 Income: Needs Ratio, T1 Mother's Highest Level of Education, T2 Externalizing Behavior, T2 Approaches to Learning (AR/TR)*	*T3 Age, T1 Gender, T1 Race/Ethnicity, T2 Income: Needs Ratio, T1 Mother's Highest Level of Education, T2 Externalizing Behavior, T2 Approaches to Learning (AR/TR)*	*T3 Age, T1 Gender, T1 Race/Ethnicity, T2 Income: Needs Ratio, T1 Mother's Highest Level of Education, T2 Externalizing Behavior, T2 Approaches to Learning (AR/TR)*
Teacher Level	N/A	T3 Years of Teaching Experience; T3 Instructional Support	T3 Years of Teaching Experience; T3 Instructional Support
Interactions			
Two-Way, Child Level	N/A	N/A	*(T2 Anxious-Withdrawn Score) x (T2 Parent Support)*
Two-Way, Cross-Level	N/A	N/A	(T2 Parent Support) x (T3 Teacher Support) *(T2 Anxious-Withdrawn Score) x (T3 Teacher Support)*

Note. T1= Fall Yr.1 (2009); T2= Spring Yr.1 (2010); T3= Spring Yr.2 (2011); N/A= Not Applicable- parameter not included in regression model for that Research Aim.

Table 4

Pearson Bivariate Correlations for Considered Parent Support Items

	(1) Warm intimate moment with child	(2) Encourage child to be curious	(3) Easy-going/ relaxed with child	(4) Make sure child knows I appreciate	(5) No difficulty sticking w/rules	(6) Encourage indepen-dence	(7) Follow through on misbeha-vior	(8) Have spanked child this week	(9) Have used 'time out' this week	(10) No energy to make child behave	(11) Physical punishment is best	(12) Believe child should be seen and not heard
(1)	1	.298**	.169**	.214**	.111**	.207**	.166**	-.031	-.034	-.028	-.043	-.033
(2)	.261**	1	.248**	.322**	.216**	.256**	.351**	-.031	-.018	-.061	-.062	-.053
(3)	.226**	.298**	1	.318**	.228**	.169**	.245**	.076*	.031	-.065	-.017	.125**
(4)	.301**	.354**	.303**	1	.276**	.329**	.317**	-.002	-.058	-.045	-.087*	.057
(5)	.165**	.195**	.155**	.241**	1	.234**	.327**	-.030	-.059	-.127**	.058	.030
(6)	.229**	.363**	.173**	.260**	.259**	1	.374**	-.051	-.022	.032	.018	.071
(7)	.175**	.304**	.193**	.295**	.368**	.396**	1	-.059	-.047	-.082*	.046	.024
(8)	.024	-.001	.125**	.044	-.027	-.019	-.042	1	.100**	-.114**	-.297**	-.153**
(9)	.038	-.040	.058	-.003	-.007	-.006	-.002	.169**	1	-.021	.022	.098*
(10)	.017	-.065	-.051	-.004	-.089*	.031	-.082*	-.102**	-.054	1	.124**	.132**
(11)	-.027	-.027	-.063	-.031	.035	.061	.055	-.242**	.062	.162**	1	.290**
(12)	.039	-.045	.105**	.026	.154**	.066	.069	-.096*	.121**	.212**	.254**	1

Note. Bivariate correlations for items considered for use in the Parent Support variable; items 1-7 were used in the final composite. Items 1-7 and 10-12 were selected from the *Child-Rearing Practices Report* (*CRPR*; Block, 1965) by the FACES 2009 team. Items 8-9 were created by FACES and are dichotomous variables. Below the diagonal are the correlations for responses collected during the Fall 2009 (T1) Parent Interview, above the diagonal, during the Spring 2010 (T2) Parent Interview. * $p \leq 0.01$; ** $p \leq 0.05$.

Table 5

Pearson Bivariate Correlations for Teacher Support Items

	(1) Positive Climate	(2) Teacher Sensitivity	(3) Regard for Student Perspectives	(4) Behavior Management	(5) Productivity	(6) Negative Climate
(1)	1	.708**	.611**	.625**	.632**	.310**
(2)	.609**	1	.759**	.521**	.526**	.212**
(3)	.477**	.767**	1	.414**	.536**	.112
(4)	.627**	.635**	.533**	1	.638**	.286**
(5)	.557**	.546**	.531**	.605**	1	.206**
(6)	.361**	.280**	.293**	.355**	.335**	1

Note. Bivariate correlations for items that make up the final Teacher Support variable. Items are scores from the named dimension of the *Classroom Assessment Scoring System* (*CLASS*; Pianta, La Paro, & Hamre, 2008) direct observation of teacher-child relationships. Below the diagonal are the correlations for scores collected during the Spring 2010 (T2), above the diagonal, during the Spring 2011 (T3).
* $p \leq 0.01$; ** $p \leq 0.05$.

Table 6

Interclass Correlations (ICCs) for Unconditional Models

	Year 1 Model: First Head Start Year			
	Dependent Variable: ATL (AR)		Dependent Variable: ATL (TR)	
	Child Level Model	Teacher Level Model	Child Level Model	Teacher Level Model
Between-Cluster Variance (σ^2_o)	0.131**	0.448*	0.338**	0.118
Total Variance	0.973	1.062	0.923	1.004
ICC (ρ)	0.135	0.422	0.367	0.118
	Year 2 Model: Second Head Start Year			
	Dependent Variable: ATL (AR)		Dependent Variable: ATL (TR)	
	Child Level Model	Teacher Level Model	Child Level Model	Teacher Level Model
Between-Cluster Variance (σ^2_o)	0.172**	0.230**	0.316**	0.132*
Total Variance	1.027	0.100	1.046	0.100
ICC (ρ)	0.167	0.230	0.302	0.132

Note. For child level models the cluster variable was the child's teacher for that year was the cluster variable. For teacher level models, the dependent variable was created by aggregating the scores of their students in the empirical sample; the cluster variable was the program. ATL= Approaches to Learning; AR= Assessor Report; TR= Teacher Report.
** $p \leq 0.01$; * $p \leq 0.05$.

Table 7

Bivariate Correlations for Study Variables Used in Models for the First Head Start Year

	(1) T2-ATL (AR)	(2) T2-ATL (TR)	(3) AW	(4) PS	(5) T2-TS	(6) ATL (AR)	(7) ATL (TR)	(8) EB	(9) T2 YTE	(10) T2-IS	(11) Child Age	(12) Child Boy	(13) Child White	(14) Child Black	(15) Child Latino	(16) Child Other	(17) Mat. Ed < HS	(18) Mat. Ed = HS/ GED	(19) Mat. Ed Some Cllge	(20) Mat. Ed > B.A.	(21) Child Pvety	(22) Child Low Incme	(23) Above Low Incme
(1)	1	.257**	-.076*	.027	.049	.294**	.175**	-.260**	.042	.012	-.059	-.097**	.037	-.047	-.012	.061	-.032	-.020	-.011	.055	.023	-.035	.008
(2)		1	-.191**	.015	.040	.206**	.584**	-.452**	-.034	.057	.053	-.222**	-.017	-.133**	.146**	.007	.060	-.019	.000	.030	-.011	.003	.014
(3)			1	.004	-.076*	-.050	-.325**	.393**	.053	-.048	-.062	.112**	.077*	-.044	-.020	-.007	-.017	-.015	.029	-.045	-.009	.017	.003
(4)				1	-.022	.017	.039	-.023	.046	-.033	-.037	.050	.039	.089*	-.116**	-.001	-.050	-.011	.100**	-.069	.007	.009	-.027
(5)					1	.046	.040	-.106**	-.075*	.538**	.032	-.021	.170**	-.055	-.087*	-.008	.031	.018	.022	-.118**	.041	-.053	.021
(6)						1	.216**	-.217**	.037	-.067	.074*	-.161**	.090*	-.149**	.060	.031	.036	-.049	.053	.015	.017	.025	-.054
(7)							1	-.604**	-.091*	.003	.110**	-.203**	.021	-.118**	.100**	.010	.051	-.004	-.040	.057	.002	.014	-.016
(8)								1	.022	-.079*	-.079*	.289**	-.002	.027	-.031	.008	-.081*	.005	.033	.044	-.099**	.082*	.032
(9)									1	-.058	.032	-.041	.052	.063	-.109**	.000	-.040	.013	.054	-.026	-.017	.028	-.024
(10)										1	-.016	-.027	.223**	-.075*	-.103**	-.012	-.024	-.029	.046	-.044	.018	-.032	.040
(11)											1	.007	-.074*	.024	.011	.045	.046	-.018	-.017	.027	-.007	.047	-.043
(12)												1	.024	.038	-.007	-.082*	-.069	.041	.047	-.043	.008	-.007	.003
(13)													1	-.373**	-.373**	-.139**	-.104**	.036	.046	.006	-.006	.005	.030
(14)														1	-.574**	-.213**	-.204**	.058	.124**	.024	-.082*	.073*	.017
(15)															1	-.213**	.313**	-.110**	-.150**	-.021	.076*	-.054	-.043
(16)																1	-.059	.048	-.015	-.012	.023	-.048	.006
(17)																	1	-.480**	-.345**	-.171**	.265**	-.176**	-.156**
(18)																		1	-.396**	-.196**	-.042	.019	.023
(19)																			1	-.141**	-.097**	.069	.055

(20)																						1	-.156**	.088*	.151**
(21)																							1	-.787**	-.371**
(22)																								1	-.198**
(23)																									1

Note. AR= Assessor Report; TR = Teacher Report; T1= Fall Yr1; T2 = Spring Yr2; PS = Parent Support; TS = Teacher Support; EB = Externalizing Behavior; TYE = Years Teaching Experience; IS = Instructional Support; HS = High School. Variables without specified time points can be assumed to be from TI.

Table 8

Bivariate Correlations of Study Variables used in Models for Second Head Start Year

	(1) T3-ATL (AR)	(2) T3-ATL (TR)	(3) T2-AW	(4) T2-PS	(5) T3-TS	(6) T2-ATL (AR)	(7) T2-ATL (TR)	(8) T2-EB.	(9) T3 YTE	(10) T3-IS	(11) T3-Child Age	(12) Child Boy	(13) Child White	(14) Child Black	(15) Child Latino	(16) Child Other	(17) Mat. Ed < HS	(18) Mat. Ed = HS/ GED	(19) Mat. Ed Some Cllge	(20) Mat. Ed > B.A.	(21) T2-Child Pvrty	(22) T2-Child Low Incme	(23) T2-Above Low Incme
(1)	1	.247**	-.065	.028	.013	.260**	.185**	-.195**	.009	.107**	.123**	-.077*	.100**	-.011	-.110**	.071	-.061	.027	-.001	.089*	.013	-.063	.063
(2)		1	-.139**	-.007	.128**	.231**	.444**	-.369**	-.008	.066	.083*	-.233**	-.077*	-.108**	.164**	.014	.036	-.103**	.060	.064	-.017	.046	.012
(3)			1	.005	-.022	-.168**	-.396**	.493**	-.013	-.080*	.016	.103**	.056	.025	-.068	-.011	-.049	.044	.060	-.047	.002	.026	-.055
(4)				1	-.012	-.003	-.013	-.026	.024	.037	-.026	.027	.004	.051	-.058	.002	-.034	-.019	.071	-.025	.027	-.012	-.029
(5)					1	.078*	.136**	-.083*	.021	.603**	-.004	-.016	.039	-.085*	.035	.024	.018	.012	-.001	-.015	-.020	-.020	.033
(6)						1	.257**	-.317**	.034	.085*	-.054	-.097**	.037	-.047	-.012	.061	-.032	-.020	-.011	.055	.024	-.006	.043
(7)							1	-.612**	.041	.111**	.050	-.222**	-.017	-.133**	.146**	.007	.060	-.019	.000	.030	-.014	.001	.023
(8)								1	.009	-.047	-.024	.294**	.058	.048	-.080*	-.032	-.104**	.034	.033	.013	-.051	.014	.066
(9)									1	.220**	.033	.025	.044	.033	-.061	-.011	-.007	.010	.065	-.059	-.004	-.010	.006
(10)										1	.010	-.006	.080*	-.017	-.116**	.126**	-.017	.023	.014	.023	-.044	-.015	.085*
(11)											1	-.005	-.086*	.013	.037	.036	.035	-.014	-.023	.045	.039	-.010	-.083*
(12)												1	.024	.038	-.007	-.082*	-.069	.041	.047	-.043	.004	.007	.040
(13)													1	-.373**	-.373**	-.139**	-.104**	.036	.046	.006	-.021	-.021	.056
(14)														1	-.574**	-.213**	-.204**	.058	.124**	.024	-.093*	.036	.031
(15)															1	-.213**	.313**	-.110**	-.150**	-.021	.107**	.012	-.075*
(16)																1	-.059	.048	-.015	-.012	.005	-.050	.000

(17)																									1
(18)																									-.480**
(19)																									-.345**
(20)																									-.171**
(21)																									.219**
(22)																									-.117**
(23)																									-.143**

Note. AR= Assessor Report; TR= Teacher Report; T2 = Spring Yr1; T3 = Spring Yr2; PS = Parent Support; TS = Teacher Support; EB = Externalizing Behavior; TYE = Years Teaching Experience; IS = Instructional Support; HS = High School. Variables without specified time points can be assumed to be from TI.

** $p \leq 0.01$; * $p \leq 0.05$.

Table 9

Research Question 1: Moderation Effect of Parent Support on the Association between Anxious-Withdrawal and Approaches to Learning

	Year 1 Models		Year 2 Models	
Dependent Variables[a] →	Approaches to Learning-T2 (AR)	Approaches to Learning-T2 (TR)	Approaches to Learning-T3 (AR)	Approaches to Learning-T3 (TR)
Parameters ↓	β (S.E.)	β (S.E.)	β (S.E.)	β (S.E.)
Intercept	0.159 (0.486)	-0.160 (0.278)	1.280** (0.469)	0.508* (0.250)
Child Age[b]	-0.086* (0.039)	0.033 (0.032)	0.154** (0.036)	0.103** (0.030)
Child: Male (T1)	0.035 (0.045)	-0.089** (0.034)	-0.025 (0.049)	-0.147** (0.034)
Child Race- Black (T1)	-0.025 (0.063)	-0.024 (0.049)	-0.151** (0.058)	0.040 (0.050)
Child Race-Latino (T1)	0.020 (0.068)	0.053 (0.055)	-0.182** (0.062)	0.138** (0.053)
Child Race-Other (T1)	0.055 (0.057)	0.004 (0.038)	-0.030 (0.043)	0.072* (0.031)
Mother's Highest Ed. < High School (T1)	-0.186** (0.061)	0.099* (0.047)	-0.069 (0.049)	-0.106 (0.066)
Mother's Highest Ed. = H.S./ GED (T1)	-0.146* (0.059)	0.077* (0.041)	0.014 (0.043)	-0.129* (0.062)
Mother's Highest Ed. = Some College (T1)	-0.128 * (0.051)	0.104* (0.044)	-0.037 (0.044)	-0.013 (0.061)
Income: Needs Ratio ≥ Poverty Level	0.013 (0.052)	-0.064 (0.067)	-0.035 (0.048)	0.023 (0.042)
Income: Needs Ratio = Low Income (1 < X ≥ 2)	-0.013 (0.044)	-0.012 (0.067)	-0.082 (0.049)	0.077* (0.038)
Externalizing Behavior	-0.263** (0.043)	-0.249** (0.063)	-0.171** (0.044)	-0.239** (0.042)
Approaches to Learning -AR/TR[c]	0.264** (0.050)	0.493 ** (0.054)	0.229** (0.049)	0.382** (0.044)
Anxious-Withdrawal	0.011 (0.044)	0.041 (0.048)	0.019 (0.046)	0.042 (0.038)

Parent Support	0.019 (0.035)	0.022 (0.039)	0.018 (0.038)	-0.032 (0.038)
(Anxious Withdrawal x Parent Support)	-0.014 (0.032)	0.030 (0.039)	0.087* (0.038)	0.057 (0.043)
Residual Variance- Within Level	0.805 (0.034)	0.538 (0.024)	0.837 (0.036)	0.642 (0.030)

Note. This table contains standardized regression coefficients. AR= Assessor Report; TR= Teacher Report; T1= Fall Yr.1; T2= Spring Yr.1; T3= Spring Yr.2.

[a] The AR-Approaches to Learning (ATL) dependent variable is the child's standardized score on the *LEITER Cognitive/Social* scale. The TR-ATL dependent variable is the child's standardized score on the *ECLS-K Approaches to Learning* Scale.

[b] The time point for parameters without specified time points can be assumed to be T1 in the Year 1 Model and T2 in the Year 2 model.

[c] For the AR-ATL dependent variable, the ATL predictor is the child's AR-ATL score for the specified time point; for the TR-ATL dependent variable, the ATL predictor is the child's TR-ATL score for the specified time point.

* $p \leq 0.01$; ** $p \leq 0.05$.

Table 10

Research Question 2: Moderation Effect of Teacher Support on the Association between Anxious-Withdrawal and Approaches to Learning

	Year 1 Models		Year 2 Models	
Dependent Variables[a] →	Approaches to Learning-T2 (AR)	Approaches to Learning-T2 (TR)	Approaches to Learning- T3 (AR)	Approaches to Learning-T3 (TR)
Parameters ↓	β (S.E.)	β (S.E.)	β (S.E.)	β (S.E.)
Intercept	0.163 (0.452)	-0.160 (0.276)	1.218** (0.437)	0.509* (0.260)
Child Age[b]	-0.093* (0.039)	0.023 (0.029)	0.155** (0.037)	0.107** (0.030)
Child: Male (T1)	0.037 (0.045)	-0.088** (0.032)	-0.024 (0.049)	-0.147** (0.034)
Child Race- Black (T1)	-0.020 (0.065)	-0.034** (0.049)	-0.149* (0.064)	0.042 (0.049)
Child Race- Latino (T1)	0.025 (0.066)	0.055 (0.055)	-0.175** (0.065)	0.142** (0.055)
Child Race-Other (T1)	0.056 (0.058)	0.010 (0.036)	-0.041 (0.045)	0.068* (0.032)
Mother's Highest Ed. < High School (T1)	-0.199** (0.061)	0.101* (0.051)	-0.068 (0.036)	-0.111 (0.067)
Mother's Highest Ed. = H.S./ GED (T1)	-0.158** (0.056)	0.079 (0.047)	-[d]	-0.131* (0.061)
Mother's Highest Ed. = Some College (T1)	-0.143** (0.049)	0.109* (0.043)	-[d]	-0.013 (0.061)
Income: Needs Ratio ≥ Poverty Level	0.012 (0.050)	-0.078 (0.064)	-0.025 (0.049)	0.024 (0.043)
Income: Needs Ratio = Low Income (1 < X ≥ 2)	-0.013 (0.045)	-0.020 (0.068)	-0.082 (0.049)	0.075* (0.037)
Externalizing Behavior	-0.262** (0.047)	-0.242** (0.057)	-0.165** (0.052)	-0.222** (0.044)
Approaches to Learning -AR/TR[c]	0.274** (0.053)	0.505** (0.049)	0.232** (0.052)	0.378** (0.040)
Anxious-Withdrawal	0.042 (0.224)	0.134 (0.190)	0.263 (0.330)	0.416 (0.354)
Residual Variance-	0.802 (0.034)	0.512 (0.025)	0.842 (0.036)	0.639 (0.030)

Within Level				
Years of Teaching Experience	0.089 (0.107)	0.068 (0.095)	-[d]	-0.040 (0.077)
Instructional Support	0.001 (0.136)	0.078 (0.092)	0.311* (0.150)	0.017 (0.105)
Teacher Support	0.090 (0.151)	-0.035 (0.087)	-0.275 (0.147)	0.096 (0.120)
Anxious Withdrawal x Teacher Support	0.067 (0.288)	-0.045 (0.136)	0.542 (0.341)	0.353 (0.626)
Residual Variance-Between Level	0.985 (0.034)	0.988 (0.021)	0.931 (0.063)	0.988 (0.024)

Note. This table contains standardized regression coefficients. AR= Assessor Report; TR= Teacher Report; T1= Fall Yr.1; T2= Spring Yr.1; T3= Spring Yr.2.

[a] The AR-Approaches to Learning (ATL) dependent variable is the child's standardized score on the *LEITER Cognitive/Social* scale. The TR-ATL dependent variable is the child's standardized score on the *ECLS-K Approaches to Learning* Scale.

[b] The time point for within level parameters without specified time points can be assumed to be T1 in the Year 1 Model and T2 in the Year 2 model. The time point for between level parameters without specified time points can be assumed to be T2 in the Year 1 Model and T3 in the Year 2 model.

[c] For the AR-ATL dependent variable, the ATL predictor is the child's AR-ATL score for the specified time point; For the TR-ATL dependent variable, the ATL predictor is the child's TR-ATL score for the specified time point.

[d]The full model was not able to be specified; this variable was dropped in order to allow for model convergence.

* $p \leq 0.01$; ** $p \leq 0.05$.

Table 11

Research Question 3: Moderation Effect of Teacher Support on the Interaction between Anxious Withdrawal and Parent Support in Prediction Approaches to Learning

	Year 1 Models		Year 2 Models	
Dependent Variables[a] →	Approaches to Learning-T2 (AR)	Approaches to Learning-T2 (TR)	Approaches to Learning-T3 (AR)	Approaches to Learning-T3 (TR)
Parameters ↓	β (S.E.)	β (S.E.)	β (S.E.)	β (S.E.)
Intercept	0.164 (0.661)	-0.127 (0.250)	1.025* (0.407)	0.510 (0.276)
Child Age[b]	-0.083* (0.041)	0.030 (0.031)	0.152** (0.038)	0.107** (0.032)
Child: Male (T1)	0.037 (0.058)	-0.086* (0.034)	-0.023 (0.051)	-0.143** (0.038)
Child Race- Black (T1)	-0.018 (0.064)	-[d]	-0.152* (0.063)	0.039 (0.052)
Child Race- Latino (T1)	0.024 (0.101)	-[d]	-0.176* (0.073)	0.145* (0.060)
Child Race-Other (T1)	0.060 (0.065)	0.007 (0.041)	-0.042 (0.044)	0.069* (0.031)
Mother's Highest Ed. < High School (T1)	-0.195** (0.061)	0.124* (0.050)	-0.060 (0.056)	-0.107 (0.068)
Mother's Highest Ed. = H.S./ GED (T1)	-0.152** (0.054)	0.086 (0.046)	0.022 (0.048)	-0.129* (0.060)
Mother's Highest Ed. = Some College (T1)	-0.135** (0.052)	0.111* (0.044)	-0.030 (0.053)	-0.014 (0.063)
Income: Needs Ratio ≥ Poverty Level (T1)	-0.011 (0.045)	-0.085 (0.066)	-0.031 (0.055)	0.023 (0.043)
Income: Needs Ratio = Low Income (1 < X ≤ 2) (T1)	0.015 (0.054)	-0.024 (0.066)	-0.077 (0.051)	0.075* (0.036)
Externalizing Behavior	-0.264** (0.045)	-0.251** (0.056)	-0.169** (0.049)	-0.237** (0.041)
Approaches to Learning -AR/TR[c]	0.275** (0.052)	0.505** (0.048)	0.247** (0.051)	0.380** (0.041)
Anxious-Withdrawal	0.174 (1.477)	0.209 (0.208)	0.353 (0.581)	0.245 (0.224)
Parent Support	0.177 (1.250)	0.817** (0.302)	0.133 (0.227)	-0.181 (0.673)

(Anxious Withdrawal x Parent Support)	-0.208 (0.398)	-0.625** (0.108)	0.540 (0.525)	0.039 (0.056)
Residual Variance-Within Level	0.801 (0.033)	0.505 (0.024)	0.832 (0.037)	0.625 (0.030)
Years of Teaching Experience	-[d]	-[d]	-0.096 (0.124)	-0.036 0.080
Instructional Support	-0.012 (0.290)	0.071 (0.096)	0.344** (0.131)	0.006 (0.109)
Teacher Support	0.082 (0.285)	-0.032 (0.086)	-0.272 (0.155)	0.102 (0.124)
Anxious Withdrawal x Teacher Support	0.131 (1.225)	-0.056 (0.140)	0.086 (0.358)	0.055 (0.277)
Parent Support x Teacher Support	0.418 (0.975)	0.453 (1.109)	-0.090 (0.219)	-0.220 (0.324)
(Anxious Withdrawal x Parent Support x (Teacher Support)	-0.723** (0.272)	0.974** (0.014)	0.469* (0.237)	-[d]
Residual Variance-Between Level	0.994 (0.028)	0.997 (0.010)	0.817 (0.158)	0.988 (0.027)

Note. This table contains standardized regression coefficients. AR= Assessor Report; TR= Teacher Report; T1= Fall 2009; T2= Spring 2010; T3= Spring 2011.

[a] The AR-Approaches to Learning (ATL) dependent variable is the child's standardized score on the *LEITER Cognitive/Social* scale. The TR-ATL dependent variable is the child's standardized score on the *ECLS-K Approaches to Learning* Scale.

[b] The time point for within level parameters without specified time points can be assumed to be T1 in the Year 1 Model and T2 in the Year 2 model. The time point for between level parameters without specified time points can be assumed to be T2 in the Year 1 Model and T3 in the Year 2 model.

[c] For the AR-ATL dependent variable, the ATL predictor is the child's AR-ATL score for the specified time point; For the TR-ATL dependent variable, the ATL predictor is the child's TR-ATL score for the specified time point.

[d]The full model was not able to be specified; this variable was dropped in order to allow for model convergence.

$p \leq 0.01$; ** $p \leq 0.05$.

Table 12

Cross-Tabs Analysis of Number of Students in Each AW and Parent Support Classification for Year 2

Parent Support Classification	Anxious-Withdrawal Classification			
	1	2	3	Total
1	*82*	*78*	*43*	203
2	*108*	*78*	*40*	226
3	*104*	*72*	*55*	231
Total	294	228	138	660

Note. Children in classification 1 have z-scores at least one-half a standard deviation (SD) below the mean for that variable; 2 = between one-half SD above and below the mean; 3 = at least one-half SD above its mean. Italicized values represent the number of children that fit into each combination of parent support and anxious-withdrawal classification.

Table 13

Cross-Tabs Analysis of Number of Students in Each Parent Support, Teacher Support, and Anxious-Withdrawal Classification for Year 1

	Anxious-Withdrawal Classification=1			
Parent Support Classification	Teacher Support Classification			
	1	2	3	Total
1	*24*	*47*	*25*	96
2	*25*	*43*	*35*	103
3	*17*	*39*	*40*	96
Total	66	129	100	295

	Anxious-Withdrawal Classification=2			
Parent Support Classification	Teacher Support Classification			
	1	2	3	Total
1	*19*	*44*	*36*	99
2	*20*	*38*	*25*	83
3	*30*	*30*	*25*	85
Total	69	112	86	267

	Anxious-Withdrawal Classification=3			
Parent Support Classification	Teacher Support Classification			
	1	2	3	Total
1	*11*	*24*	*20*	55
2	*16*	*14*	*21*	51
3	*16*	*25*	*9*	50
Total	43	63	50	156

Note. Children in classification 1 have z-scores at least one-half a standard deviation (SD) below the mean for that variable; 2 = between one-half SD above and below the mean; 3 = at least one-half SD above its mean. Italicized values represent the number of children that fit into each combination of teacher support and parent support for within each anxious-withdrawal classification.

Table 14

Cross-Tabs of Number of Students in Each Parent Support, Teacher Support, and Anxious-Withdrawal Classification for Year 2

	Anxious-Withdrawal Classification=1			
Parent Support Classification	Teacher Support Classification			
	1	2	3	Total
1	*20*	*43*	*19*	82
2	*25*	*48*	*35*	108
3	*22*	*42*	*40*	104
Total	67	133	94	294

	Anxious-Withdrawal Classification=2			
Parent Support Classification	Teacher Support Classification			
	1	2	3	Total
1	*19*	*36*	*23*	78
2	*17*	*34*	*27*	78
3	*30*	*24*	*18*	72
Total	66	94	68	228

	Anxious-Withdrawal Classification=3			
Parent Support Classification	Teacher Support Classification			
	1	2	3	Total
1	*11*	*18*	*14*	43
2	*10*	*22*	*8*	40
3	*14*	*21*	*20*	55
Total	35	61	42	138

Note. Children in classification 1 have z-scores at least one-half a standard deviation (SD) below the mean for that variable; 2= between one-half SD above and below the mean; 3= at least one-half SD above its mean. Italicized values represent the number of children that fit into each combination of teacher support and parent support for within each anxious-withdrawal classification.

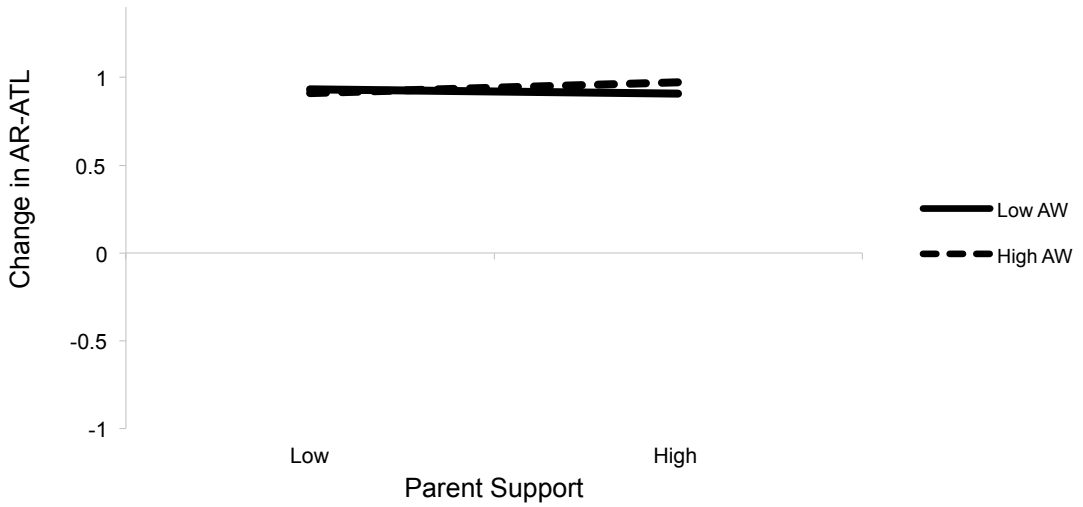

Figure 1. Moderation effect of supportive parenting on relationship between anxious- withdrawal and assessor rated (AR)-Approaches to Learning during the child's second preschool year (Research Aim 2). "High" and "Low" values for variables are respectively one-half a standard deviation above and below the mean for the standardized version of that variable.

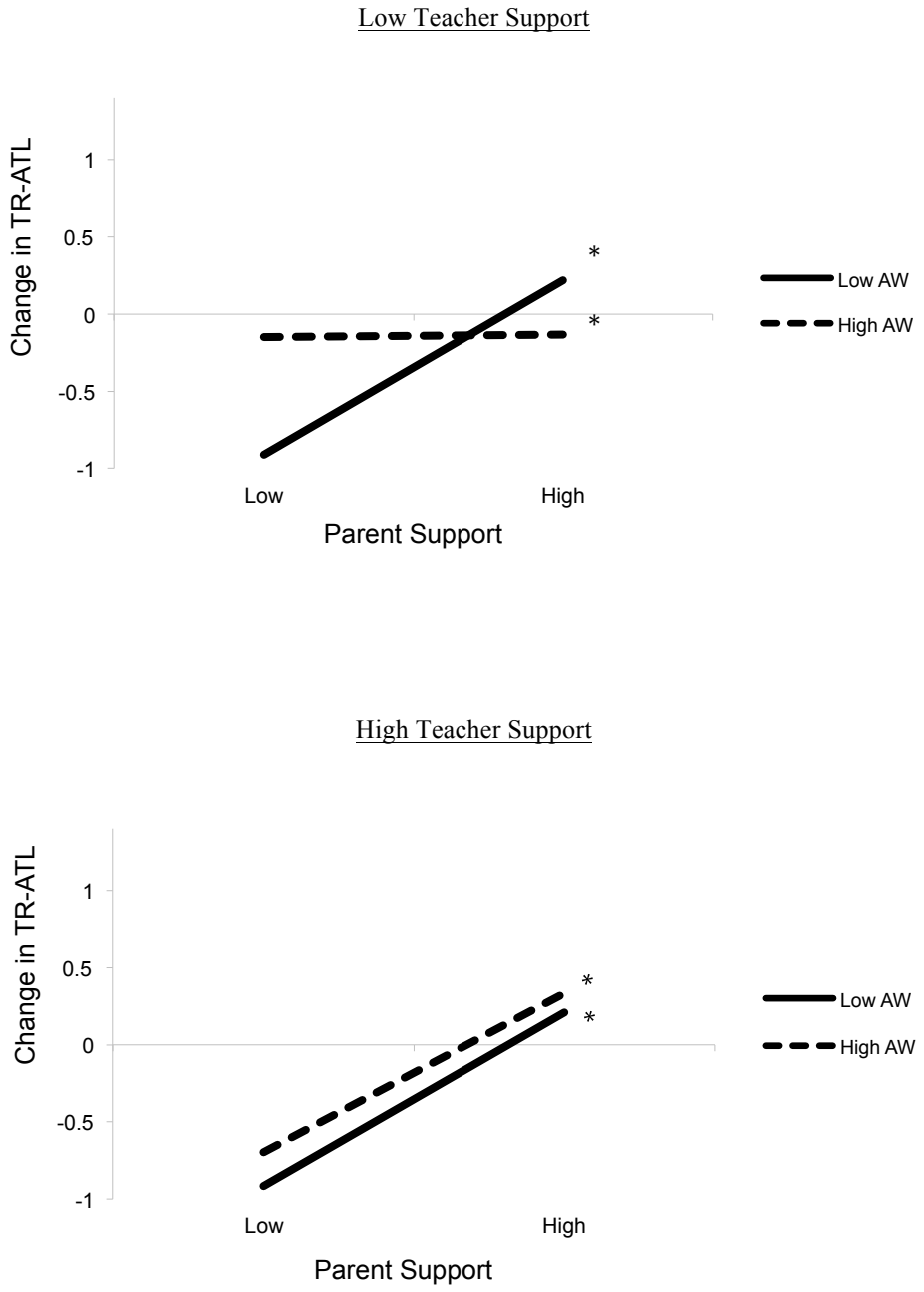

Figure 2. Moderation effect of teacher support on the association between the interaction of anxious-withdrawal and parent support in predicting teacher reported (TR)-Approaches to Learning during child's *first preschool year* (Research Aim 3). "High" and "Low" values for variables are respectively one-half a standard deviation above and below the mean for the standardized version of that variable.
* Slope of the line is significant ($p < 0.05$).

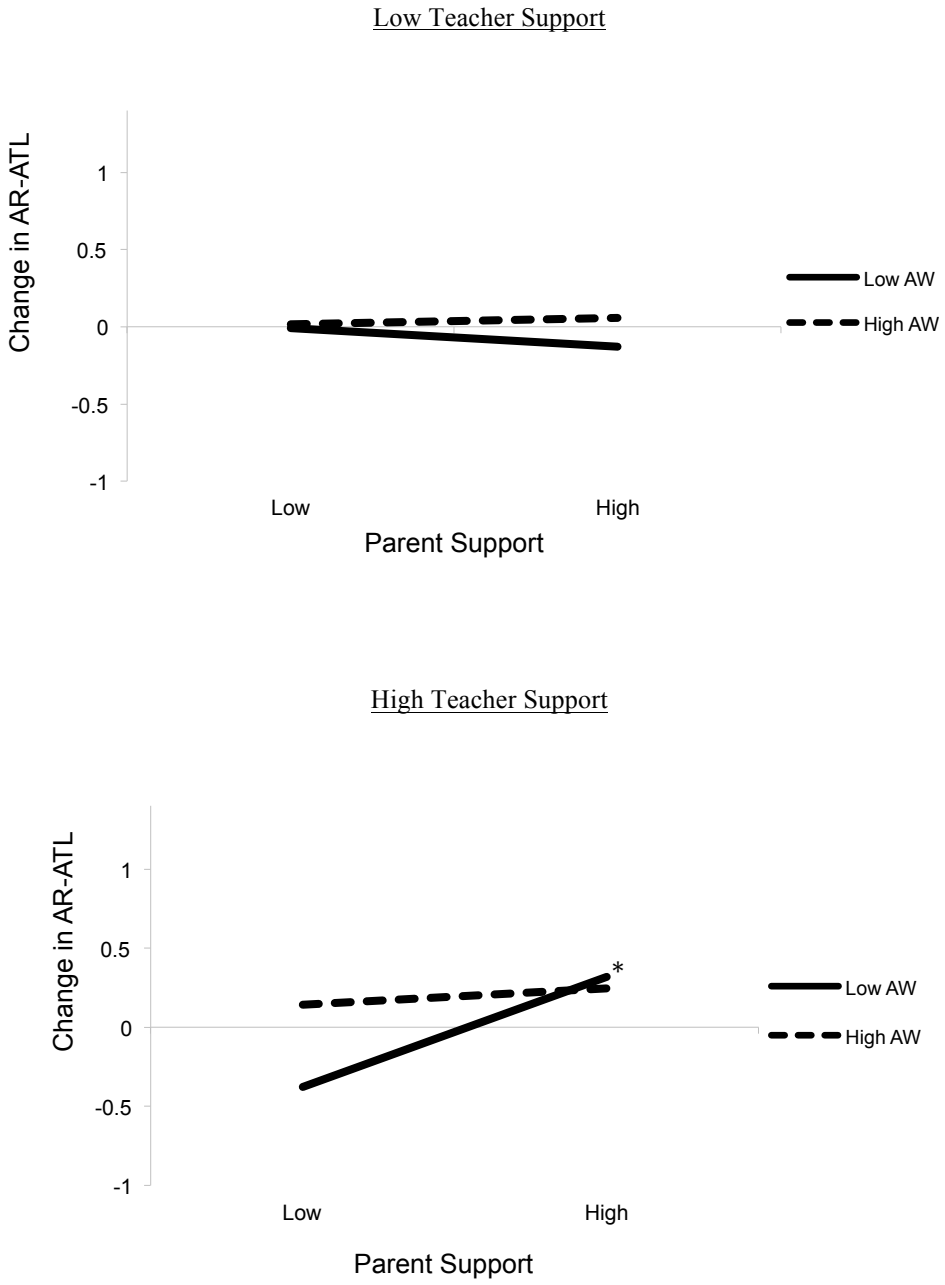

Figure 3. Moderation effect of teacher support on the association between the interaction of anxious-withdrawal and parent support in predicting assessor reported (AR)-Approaches to Learning during child's *first preschool year* (Research Aim 3). "High" and "Low" values for variables are respectively one-half a standard deviation above and below the mean for the standardized version of that variable.
* Slope of the line is significant ($p < 0.05$).

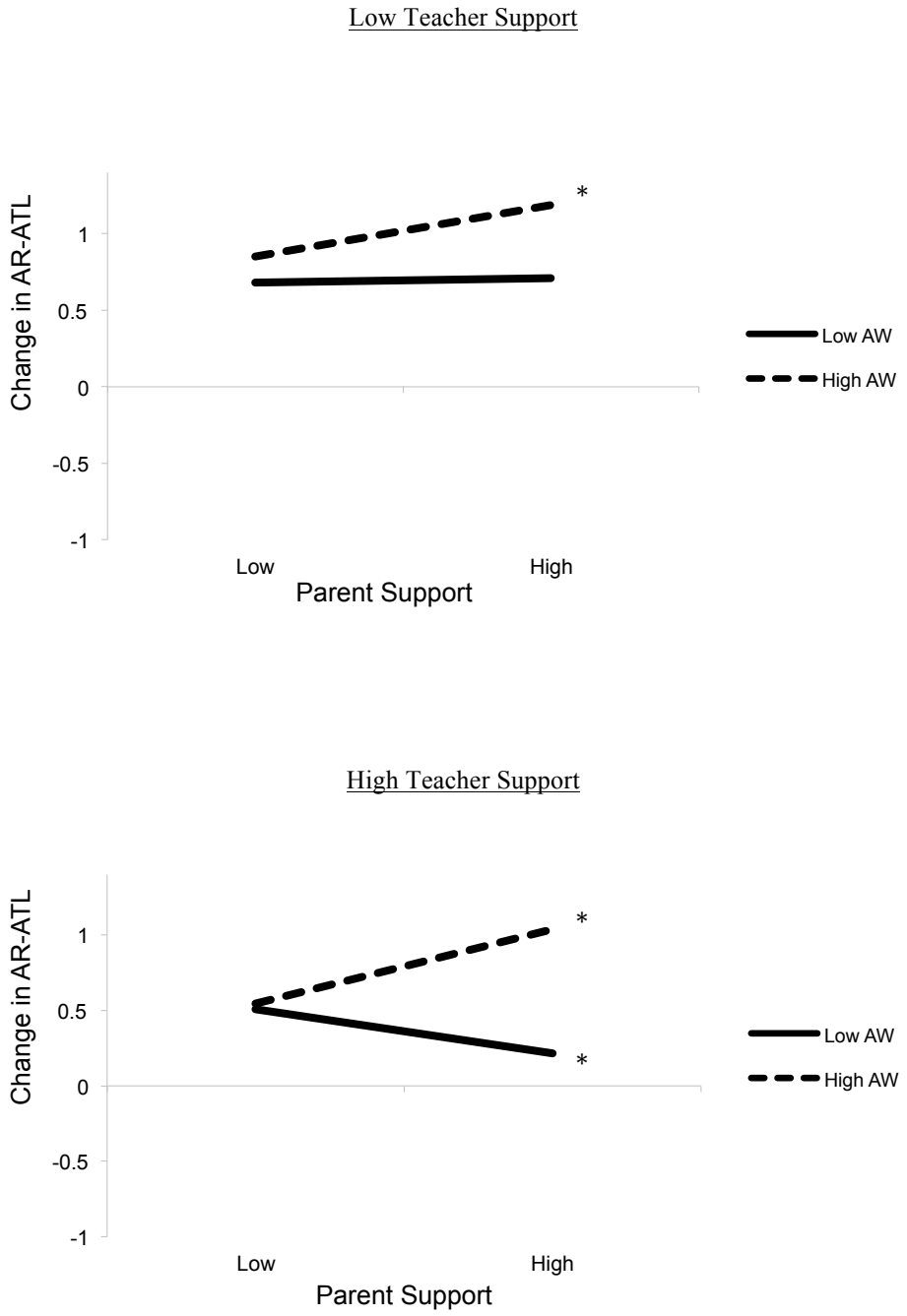

Figure 4. Moderation Effect of Teacher Support on the Association between the Interaction of Anxious-Withdrawal and Parent Support in Predicting Assessor Reported-Approaches to Learning during the *second preschool year* (Research Aim 3). "High" and "Low" values for variables are respectively one-half a standard deviation above and below the mean for the standardized version of that variable.
* Slope of the line is significant ($p < 0.05$).

[i] Other terms synonymous with *anxious-withdrawal* include *social reticence, anxious solitude,* and *shyness;* these terms will be used interchangeably depending upon the term used in the referenced article.
[ii] These terms will be used interchangeably depending upon the one utilized by the authors of the referenced article.
[iii] The broad term *academic competence* captures constructs also encompassed by approaches to learning (i.e., motivation and engagement), however, it also includes measures of academic achievement (e.g., DiPerna, Volpe, Elliot, 2001) and so is not considered a pure measure of approaches to learning. Hence, this construct was not considered equivalent and therefore not included in this list.
[iv] The terms "parents" and "caregivers" will be used interchangeably to describe the primary adults responsible for caring for the child in the home environment.

[vi] Efforts were made to identify methods for obtaining and exporting from *Mplus* the cluster-level values for the between level, random slopes coefficients in order to use them to test assumptions at the between level. However, methods for doing so were not identified as of the writing of this study. Given that maximum likelihood with robust standard errors was used in analysis, undetected violations of the normality and constant variance assumptions are not expected to have biased results from regression models.