

AN ABSTRACT OF THE THESIS OF

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Abstract approved:

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Emotional understanding is important for social connection and fulfilling relationships across the lifespan. Without these skills, relationships with others can feel chaotic, unpredictable, and unattainable, affecting a person's health and well-being. Early childhood is a critical time to learn and practice foundational emotional skills that build into skills needed to manage more complex social interactions. Young children build this skill set through interactions with their caregivers and environment. It is through these interactions that children learn what they need to know about their emotions and the emotions of others within the contexts in which they grow up. Bronfenbrenner's Bioecological Theory and its PPCT model illustrate how children's development is driven by interactions between the child and their environments. In this way, research on children's socioemotional development shows that the quality of relationships between caregivers and children as well as how caregivers view children's emotion-related behavior affects what children know about their emotions and the emotions of others (Arsenio & Lover, 1995; Bernier et al., 2010; Denham et al., 2002). For many children in the US, preschool teachers are an important part of this development, acting as caregivers who teach children about their emotional world (Bernier et al., 2015). Specifically, the quality of the relationship between a child and their preschool teacher affects socioemotional

learning in that close relationships support the development of socioemotional skills such as emotion regulation, while conflictual relationships do not (Hamre & Pianta, 2001). Previous literature has also shown that how preschool teacher attributions for challenging behavior, or the teachers' perceived rationale for challenging behaviors, influence a child's emotional outcomes (Andreou & Rapi, 2010; Bernier et al., 2015). The current study uses secondary data that samples 11 teachers and 63 children in 10 preschool classrooms to assess whether the quality of the teacher-child relationship and teacher behavior attributions for challenging behaviors influence a child's emotional knowledge and regulation. First, connections between teacher-child relationship quality and children's emotion regulation and knowledge are explored. I hypothesize that close relationships with teachers will be positively associated with emotion regulation and knowledge. I also hypothesize that conflictual relationships will be negatively associated with emotion regulation and not associated with emotion knowledge (research question one). Regression analysis results indicate that teacher-reported teacher-child conflict predicts teacher-reported externalizing behaviors when controlling for teaching beliefs and practices as well as the child's age and gender, but not direct assessments of emotion regulation and knowledge. Close teacher-child relationships did not predict differences in emotional knowledge or regulation. Further, since few studies have connected preschool teacher attributions for challenging behavior to emotion knowledge and regulation, I apply a descriptive case study approach to explore these constructs and provide a foundation for connections in future work (research question two). Based on theoretical foundations and some previous research, I posit an exploratory hypothesis that preschool teachers will generally attribute disruptive behavior to internal, stable, and controllable forces (high causal and high responsibility attributions for challenging behavior); further, high attributions will be visually connected to low emotion regulation skills and knowledge. Results from the case study indicate that preschool teacher causal attributions are moderate to high and visually linked to emotion knowledge as well as other classroom and teacher characteristics. Similarly, responsibility attributions are moderate and are visually connected to emotion knowledge and teacher-reported externalizing behaviors as well as other classroom

and teacher characteristics. Results indicate that contextual characteristics of a teacher-child dyad influence relationships and children's socioemotional development.

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Teacher-Child Relationships and Preschool Teachers' Attributions: Relations with
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I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Maya E. Johnson, Author

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Teacher-Child Relationships and Preschool Teachers' Attributions: Relations with Preschool Children's Emotion Regulation and Emotion Knowledge

Early childhood is a critical time to study how children learn about their emotions and the role caregivers play in that learning process (Denham, 2002; Miller & Aloise, 1989). During early childhood, children start to experience increasingly complex social interactions and emotions. They have the opportunity to build their emotional knowledge, extend their emotional understanding to others, and start noticing causes and consequences of emotions (Arsenio & Lover, 1995; Bernier et al., 2010). Children who can effectively regulate their emotions and have high emotional understanding can better manage their emotion-related behaviors in social contexts. This is evident when children with high emotion knowledge and regulation abilities exhibit more pro-social behaviors and understand other's emotions, and their causes and consequences, more easily than other children (Arsenio & Lover, 1995; Flook et al., 2015). Children who do not learn these skills may see others' emotions and actions as unpredictable and find maintaining positive social interactions challenging (Arsenio & Lover, 1995). These children may have difficulty with psychological adjustment and relationships in the future (Denham et al., 2002; Hamre & Pianta, 2001; Lunkenheimer et al., 2007; Trentacosta & Shaw, 2009).

Young children learn how to manage emotions through everyday interactions with their caregivers (Bowlby, 1969; Denham, 2002; Eisenberg & Morris, 2002). Specifically, caregivers' (e.g., parents, teachers) relationships with children and their attributions for child behavior (i.e., the perceived source of children's behavior) contribute to children's emotional development. Extensive literature describes how parents' ideas about young children's externalizing behaviors in general influence their child's emotional understanding and regulation skills (Denham et al.,

2002; Johnston & Ohan, 2005). For example, a parent's positive attributions for their child's challenging behaviors lead to supportive responses to their emotional related behaviors. In turn, repeated supportive responses to intense emotional experiences teach children effective strategies to manage emotions (Williford et al., 2009). Since 86 percent of children are enrolled in preschool by the age of five (National Center for Education Statistics, 2020), teachers play a key role in children's emotional development and should be considered a key player of a child's socioemotional development. Through close relationships and supportive reactions to children's emotional experiences, teachers can set children up for desired long-term outcomes and positive relationships with others (Hamre & Pianta, 2001; Denham et al., 2002).

The aim of this study is to explore how the overall quality of teacher-child relationships (i.e., conflict and closeness) and the way preschool teachers understand children's challenging behavior (i.e., attributions) relate to what children know about emotions (i.e., emotion knowledge) as well as their emotion regulation abilities (i.e., delay of gratification and externalizing behaviors).

Literature Review

Theoretical Framework

Bioecological Theory—PPCT

Bronfenbrenner's Bioecological Theory explains how interactions between children and their environment drive development (Wachs, 2015). One component of this is the bioecological formula which views developmental processes as "a joint function of *process x person x context x time linkages*" (PPCT; Wachs, 2015, p. 812). In other words, a child develops within a multi-dimensional, organized system that affects and is affected by that child. The current study uses the PPCT model as a lens to view how preschool teachers' behavior attributions and teacher-

child relationship quality relates to children's emotion knowledge and regulation skills. In other words, how teachers think about children's behavior, and how they interact with children, influences how those children understand and manage their emotions.

Specifically, the current study focuses on *process* to examine how one aspect of *context*, the *microsystem*, influences child development. Process, one of the core components of the PPCT model, refers to the interactions between children and their environment that facilitate development. Interactions that happen more often are more influential than interactions that rarely occur (Bronfenbrenner & Morris, 2006). For example, many studies find that the overall characteristics of everyday interactions between teachers and children affect what children know about their emotions and how to cope with them. Repeated responsiveness, closeness, and warmth within these relationships support emotion regulation skills and emotional knowledge through modeling and practice (Birch & Ladd, 1998; Hamre & Pianta, 2001; Hatfield et al., 2016).

Context, another core aspect of PPCT, represents a child's external environment as four interrelated systems: the microsystem, the mesosystem, the macrosystem, and the exosystem. Most relevant to the current study is the innermost level, a child's microsystem. The microsystem describes the environments where children spend most of their time, such as their homes or their schools (Bronfenbrenner & Morris, 2006). The microsystem both affects and is affected by the child, who is an active agent in seeking out interactions with their environment as much as they are influenced by their environment. Because of these characteristics of the microsystem, Bronfenbrenner and Morris (2006) write about the importance of capturing development within an ecologically valid observational setting. Preschool classrooms are an important microsystem in early childhood, as 40 percent of three- to four-year-olds and 86

percent of five-year-olds attend preschool in the US (National Center for Education Statistics, 2020). Since teachers are primarily responsible for classroom climate and organization, and thus the proximal processes occurring in this microsystem, the way that teachers understand child behavior may influence children's emotion knowledge and regulation.

Interpersonal Attribution Theory

PPCT describes how the development of socioemotional skills is driven by interactions between children and their caregivers. For example, how a caregiver responds to perceived misbehavior teaches children what to expect and how to act in social settings (Bowlby, 1969; Denham et al., 2002; Hamre & Pianta, 2001). In turn, responses depend on caregiver-level internal variables such as beliefs and attributions. Wiener's (1985) Interpersonal Attribution Theory can be used to understand how preschool teachers think about child behavior and why they respond to challenging behaviors in different ways.

Interpersonal Attribution Theory states that an observer's (e.g., teacher) response to an actor's (e.g., child) behavior is partly based on the observer's *behavior attributions*, the perceived source, rationale, and judgment of responsibility for the actor's behavior. Teacher behavior attributions can be divided into three dimensions: *Locus* describes whether the source of the behavior is perceived to be internal (e.g., ability) or external (e.g., luck) to the child; *stability* describes whether the teacher thinks that the child's behavior is likely to reoccur over time and across contexts; and *control* describes whether the teacher believes the child can control their behavior. Recent work on preschool teacher behavior attributions provides evidence that locus and stability are collapsed into one category, *cause*, leaving two dimensions: *causal attributions* and *responsibility attributions*. Causal attributions describe what the teacher believes is the source of a child's behavior (e.g., internal or external factors) and whether that behavior

will be stable. Responsibility attributions describe whether the teacher believes the behavior was purposeful and if the child deserves blame (Carter et al., 2014; Williford et al., 2009; Wilson et al., 2006).

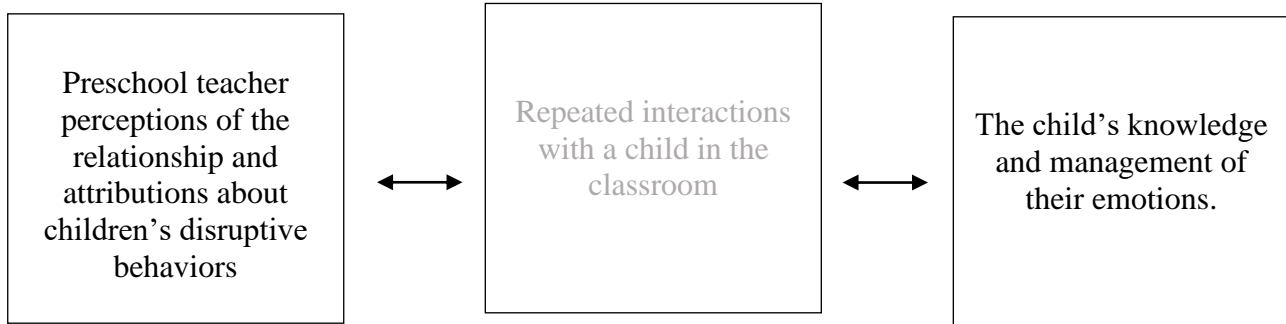
Behavior attributions are semi-stable, global characteristics that mediate the association between an observer's perception of the intentions of an actor and their emotional reaction to the actor's behavior (Dix et al., 1986). Within preschool teacher-child relationships, this means that how teachers think about challenging behaviors in general influences how they react to specific instances of disruptive behavior. Teachers who generally view challenging behavior as controllable and purposeful may punish a child out of frustration. Teachers who generally view the same behavior as uncontrollable may feel sympathy and try to guide the child toward appropriate classroom behavior (Williford et al., 2009). Both reactions may influence that child's socioemotional outcomes. Punitive, reactive, and angry responses to children's intense emotional experiences can teach them that strong emotions are scary and volatile; while calm, sympathetic responses can teach them how to manage their emotions effectively and appropriately, supporting their emotional understanding. Furthermore, the semi-stable nature of behavior attributions means that teachers can change their views, as illustrated in studies that connect changes in behavior attributions to teaching experience and self-reflection (Lucas et al., 2009).

Together, PPCT and Interpersonal Attribution Theory can be used to describe how teachers' understanding of children's challenging behavior, combined with the quality of their teacher-child relationships, influence children's emotion knowledge and emotion regulation (Figure 1). The current study reflects this by exploring how teacher attributions for challenging behaviors and teacher-child relationship quality are associated with a child's emotional

knowledge and emotion regulation skills, defined in this study by emotion labeling, delay of gratification, and externalizing behaviors.

Figure 1

PPCT and Interpersonal Attribution Theory used together illustrates how teacher-child relationships impact emotion regulation and knowledge in preschool



Preschool Teachers-Child Interactions and Relationships

Teacher-Child Relationships

Characteristics of the relationship between young children and their teacher influence that teacher's behavior attributions, their responses to externalizing behaviors, and the prevalence of those behaviors themselves (Garner et al., 2014; Thijs & Koomen, 2009). Researchers often characterize relationships between students and teachers by qualities of *closeness*, the prevalence of supportive, warm, and responsive interactions within relationship, and *conflictual* qualities, the prevalence of tense, hostile, punitive, and negative interactions within relationships (Hamre & Pianta, 2001; Pianta, 1994; Saft & Pianta, 2001).

While the prevalence of these types of interactions can be inversely connected, both qualities can exist at some level in every relationship. Close teacher-child relationships in preschool are crucial for positive socioemotional learning outcomes and serve as a protective factor for children, particularly those who display high levels of challenging behavior, against undesired behavioral, health, and emotional outcomes (Hamre & Pianta, 2001; Hatfield & Williford, 2016; Pianta et al., 1995). In these relationships, conflict, disagreement, and

behavioral outbursts are met with supportive and responsive reactions from teachers. In this way, teachers show children through their own actions how to appropriately handle conflict with others and intense emotional experiences. This also provides children with a space to practice effective emotional and conflict management skills. When conflict and emotion-driven behavioral outbursts are met with hostility and punishment, as is the case in those relationships with more conflict, children are not provided a space to practice navigating emotionally intense social situations. This is why young children who tend to have more negative and tense interactions with their preschool teachers are more likely to exhibit poor behavioral inhibition and lower emotion understanding (Birch & Ladd, 1998; Hatfield et al., 2016), with effects lasting through middle school (Hamre & Pianta, 2001). In this way, relationship quality, alongside how teachers perceive and understand a child's behavior, is important for understanding that child's level of emotion regulation and knowledge.

Teacher Behavior Attributions

Most studies on teacher behavior attributions, or the perceived source of a child's behavior, were conducted in elementary schools and high schools (Nemer et al., 2019; Wang & Hall, 2018). Research on child development shows that socioemotional learning starts much younger than kindergarten, so preschool is an important time to explore young children's interpersonal interactions and emotional understanding. One study with preschool teachers shows that teacher causal attributions for misbehavior are negatively associated with teacher-reported closeness (Carter et al., 2014). This suggests that if teachers believe that the source of the disruptive behavior is internal to the child and that the behavior will keep happening, they will be more likely to react harshly and punitively to that child's behavior. Other studies show that in kindergarten, responsibility attributions, whether disruptive behaviors are perceived as

purposeful, have been shown to moderate the association between teacher judgment of a child's misbehavior and closeness of the relationship (Thijs & Koomen, 2009). Beyond early childhood, elementary school teachers tend to attribute disruptive behavior to internal child-controlled causes and rationales such as disobedience or being off task (i.e., high causal and high responsibility attributions; Bibou-Nakou et al., 2000).

Literature on parent behavior attributions for young children's misbehavior may provide insight into preschool teacher-child relationships as well. Black et al. (2001) found that negative or hostile attributions for challenging behavior in young children have a direct negative impact on that parent-child relationship. In other studies, parental-reported causal attributions have been associated with harsh and punitive reactions as well as conflictual parent-child relationships (Johnston & Ohan, 2005; Slep & O'Leary, 1998). Teachers who have hostile attributions may influence children's emotion knowledge and regulation in similar ways.

The way caregivers think about children's challenging behavior and the overall quality of their interactions with a child affect that child's socioemotional development. Andreou and Rapti (2010) found that elementary school teachers' behavior attributions connect to teaching beliefs, discipline practices, and classroom managerial practices. Since socioemotional learning begins much earlier than elementary school, it is worth exploring these how constructs influence children's emotion regulation and emotion knowledge in preschool classrooms, with preschool teachers (Bernier et al., 2015; Denham, 2002).

Child's Emotion Regulation and Knowledge

Emotion Regulation

Self-regulation refers to someone's ability to deliberately control their emotions, behavior, and attention; encompasses many behavioral and cognitive processes; and is a key

predictor of many developmental outcomes including short- and long-term socioemotional health (McClelland et al., 2015; Moffit et al., 2011). This broadly includes the ability to inhibit dominant responses, manage interference from irrelevant stimuli, and maintain attention; however, different lines of research take different approaches to operationalizing this construct. McClelland et al. (2015) describe emotion-related self-regulation, or *emotion regulation*, as the ability for someone to manage their emotions in socially appropriate ways. Research that examines emotion regulation tends to study inhibitory control and hot-self-regulation. These constructs capture the deliberate ability to inhibit dominant emotional reactions and activate other responses in the face of emotionally arousing stimuli, such as the ability to delay gratification or suppress externalizing behaviors (Rademacher & Koglin, 2018).

While there are many ways to describe emotion regulation, most emphasize the goal-directed, purposefulness of inhibiting and controlling one's emotional reactions as well as the behaviors elicited from those reactions (McClelland et al., 2015). Variation in emotion regulation abilities among children is shaped by individual differences and contextual factors. One such individual difference may be emotion knowledge. For instance, Denham et al., (2012, 2014) found that behavior inhibition is related to children's emotion knowledge. Von Salisch et al. (2015) found the same results even after controlling for language skills, which are an important precursor to describing and understanding emotional experiences. Further, children's level of externalizing behaviors such as hyperactivity and aggression have been negatively related to their emotion knowledge (Cook et al., 1994; Denham et al., 2002; Trentacosta & Fine, 2010). Thus, emotion regulation, as defined by inhibition (e.g., delay of gratification) and behavior (e.g., externalizing behaviors) is a unique construct, but is related to emotion knowledge.

Delay of gratification. One approach to conceptualizing emotion regulation in young children is through a delay of gratification task. This process requires the use of both inhibition and endogenous attention, the ability to purposefully attend to a stimulus or purposefully shift attention away from a stimulus (McClelland et al., 2015; Mischel & Ayduk, 2002). Tests that measure this ask children to inhibit an emotional response in the face of an emotionally arousing stimulus to exhibit socially appropriate behavior. For example, the Toy Wrap and Toy Wait assessments ask children to inhibit their excitement and follow directions by waiting to open a wrapped present (Smith-Donald et al., 2007). Children with these skills have positive social interactions and socially appropriate coping strategies (Rubin et al., 1995). Children without these skills often have difficulties with social interactions, display high levels of externalizing behaviors, and are at risk for possible future diagnoses of Attention Deficit Hyperactive Disorder (ADHD) or Oppositional Defiant Disorder (ODD; American Psychiatric Association, 2013; Calkins, 1994; Eisenberg et al., 1993).

Children with the ability to regulate their emotions are often closer to their teachers and peers because they can better understand the emotions of others and tend to exhibit more pro-social behaviors (Flook et al., 2015). For instance, a child's ability to manage their emotions in the face of excitement, frustration, and distress can influence their ability to follow classroom rules such as sharing toys and waiting their turn. Children who can cope with their intense emotions in social situations are often seen by teachers as more socially competent than children who cannot (Denham et al., 2002). While few studies have connected delay of gratification to teacher behavior attributions directly, the link between self-regulation and close teacher-child relationships (e.g., Acar et al., 2021) may allude to a link between delay of gratification and behavior attributions through repeated negative or repeated positive interactions with children.

Externalizing behaviors. Another approach to assessing a child's emotion regulation is through the presence of externalizing behaviors. Young children who have difficulty expressing and coping with their strong emotions may exhibit relatively high and stable levels of impulsivity, hyperactivity, oppositionality, and aggression, otherwise known as externalizing behaviors (American Psychiatric Association, 2013; Archenbach & Edlebrock, 1978). Externalizing behaviors are linked to low emotion regulation skills—these children often lose behavioral control in the face of an intense emotion instead of using coping strategies to manage the emotion (Schoemaker et al., 2012; Razza & Raymond, 2013).

Associations between externalizing or disruptive behavior and teacher-child relationships are well-studied in young children. Children who exhibit externalizing behaviors tend to elicit harsh, punitive reactions from their teachers and have a higher prevalence of conflictual qualities in their relationships with teachers (Doumen et al., 2008; Howes, 2000; Ladd & Burgess, 2001; Spilt & Koomen, 2009). These conflictual interactions can prolong the presence of externalizing behaviors over time, while responsive interactions with teachers promote higher emotion-related behavior inhibition and inhibitory control in preschool children. A higher prevalence of responsive and supportive reactions from teachers to externalizing behaviors can be especially beneficial to children who are having difficulty managing their emotions (Hamre & Pianta, 2001; Hatfield & Williford, 2017; O'Conner et al., 2011; Sutherland et al., 2008).

Many studies have also looked at associations between externalizing behaviors and teacher behavior attributions. Overall, disruptive behaviors are seen by early elementary school teachers as internally motivated and stable over time and context (Bibou-Nikou et al., 2000; McAuliffe et al., 2009). Further, Yoder and Williford (2019) found that preschool teachers' high responsibility attributions and high causal attributions are positively associated with a child's

hyperactivity, inattention, and oppositionality. In other words, teachers generally believe that disruptive behaviors in young children are controllable and purposeful and that children who exhibit more externalizing behaviors are going out of their way to cause trouble. Furthermore, teachers who believe that students can control their behavior tend not to believe that interventions will be successful, leading to frustration and punishment instead of sympathy and guidance (Reyna & Weiner, 2001; Weiner, 1985). This way of thinking about disruptive behaviors contributes to conflictual relationships between caregivers and children (Black et al., 2001). Others have found that teachers come out of preservice teaching with these ideas already in place, but that self-reflection and experience can change how teachers view these behaviors (Lucas et al., 2009; Wang & Hall, 2018).

Sources of individual variation in emotion regulation skills may also contribute to teacher-child relationship quality and teacher behavior attributions. One source of individual differences in these skills is a child's emotional knowledge. Children who can understand and describe their emotional experiences can usually employ more effective emotion regulation strategies, exhibit lower levels of externalizing behaviors, and tend to have warm, positive interactions with their teachers.

Emotion knowledge

Emotion knowledge is a foundational element in emotional understanding (Izard, 1971; Izard et al., 2001) and represents how well children can identify and label emotions. Emotion knowledge is important for social interaction because when preschoolers can identify and understand what causes certain emotional experiences, they can relate this to others' behaviors and predict how interactions with others are likely to proceed (Arsenio & Lover, 1995).

Relatedly, high emotion knowledge negatively predicts future levels of aggression and externalizing behavior (Cook et al., 1994; Denham et al., 2002; Trentacosta & Fine, 2010).

Since 40 percent of three- and four-year-olds and 86 percent of five-year-olds attend preschool in the US (National Center for Education Statistics, 2020), their teachers play an important role in teaching emotion knowledge through the quality of teacher-child interactions (Pianta, 1999). However, only a couple studies connect these two constructs directly. Garner and Waajid (2008) found that preschoolers' ability to label emotions was positively associated with teacher-rated teacher-child closeness but found no link between emotion knowledge and teacher-child conflict. Further, Johns (2021) found that close teacher-child interactions positively predicted change in directly assessed emotion knowledge and teacher-reported social competence in preschoolers, especially for children who exhibited lower emotional competence at the beginning of the study.

No published studies have explored how preschool teacher behavior attributions link with a child's emotion knowledge, though some parenting literature may provide a starting place. Parental emotional socialization practices, which include attributions and reactions to a child's emotion related behaviors, influence that child's development of emotion knowledge and understanding (Denham et al., 2009). For example, Garner and Toney (2020) write that maternal attributions affect a child's emotional understanding. Young children of mothers who hold hostile attributions for challenging behavior have difficulty learning how to predict and respond to emotions and had lower emotion knowledge. Furthermore, emotion knowledge can be theoretically related to teacher behavior attributions through teacher-child relationship quality, as it is well documented that close, responsive relationships support emotional understanding (Hamre & Pianta, 2001; Johns, 2021; Pianta, 1999).

As a final note, it is worth considering that the relationships between children and their teachers are not unidirectional. Curby and colleagues (2014) test the bidirectionality of teacher-child relationships in preschool. They find that a teacher's emotional support positively influences and is positively influenced by a child's positive engagement with teachers. Additionally, Curby et al. (2014) find a significant bidirectional association between classroom organization and children's negative engagement, indicating that when classroom management skills were lower, children were observed to display increased off-task and conflictual behaviors. Taken with the research and theories on preschool teacher attributions and adult-child relationships, these findings show that teacher perceptions of their relationships with children are predictive of children's emotional understanding and are also influenced by individual differences in children's emotion related behaviors. This makes sense as bioecological theory also argues that development is driven by a person's interaction with the environment whereby the environment is also affected by the person (Bronfenbrenner & Morris, 2006).

Covariates and Other Considered Factors

There are several other factors that influence teacher-child relationships and interactions and children's socioemotional development. Factors such as teaching beliefs and practices, the child's age, and the child's gender may explain both teacher-child relationship quality as well as children's emotion knowledge and regulation skills. Additionally, because teacher attributions and interactions with children play out within a classroom environment, it is important to understand how classroom characteristics are related to how teachers view, and respond to, challenging behavior.

Factors That Affect Teacher-Child Relationships

Teaching Beliefs and Practices. Teaching beliefs and practices are associated with teacher-child relationship quality. For example, Carter et al. (2014) found that authoritarian teaching beliefs, those that take an adult-directed perspective, are positively associated with responsibility attributions, but not causal attributions. They also found that developmentally inappropriate teaching practices, such as using physical restraint, sending a child home, and singling out a child or group of children for misbehavior, were associated with both causal and responsibility attributions. Further, research on parenting has found that inappropriate discipline practices and parenting beliefs are associated with lower-quality parent-child interactions (Black et al., 2001), so the same may be expected for teacher-child relationships (Carter et al., 2014).

Child's Age. Another possible source of influence on a child's emotional outcomes is the child's age. Early childhood is characterized by huge amounts of change in a child's cognitive functioning, allowing children to practice and grow their emotion regulation skills (Jones et al., 2003; Posner & Rothbert, 1998; Reck & Hund, 2011). Language development, specifically emotional vocabulary, is also growing rapidly during these early years and is positively linked to emotion knowledge and regulation (Ogren & Johnson, 2020). Older children, who have more experience and more practice identifying, labeling, and managing their emotions in more complex social situations, typically know more emotion words and are better at delay of gratification tasks than younger children. Therefore, this may be an important factor to control for when assessing how teacher-child relationships influence emotion knowledge and regulation.

Child's Gender. Another source of influence on variability in externalizing behaviors and delay of gratification could come from a child's gender. There is robust literature in the field of child development that shows that boys are more prone to externalizing behavior problems than girls (Hill et al., 2006; Hinshaw et al., 2021). This can also be seen in how most research on

externalizing behaviors or ADHD symptoms in young children focuses on young boys, while girls remain widely underrepresented (Hill et al., 2006; Hinshaw et al., 2021). There may be a few explanations for gender differences in externalizing or challenging behavior. Some researchers suggest these differences can be explained by socialization as girls are taught to overcontrol (e.g., internalizing behaviors), while boys are taught to under control (e.g., externalizing behaviors; Keenan & Shaw, 1997, 2003). However, recent findings suggest that gender differences may be detected in caregiver-reported levels of externalizing behaviors but not in direct assessments (Gestsdottir et al., 2014; Wanless et al., 2013). This finding suggests that teacher- and parent-reported measures, while providing insight into overall socio-emotional patterns that cannot be detected by a short, one-time direct assessment, may harbor caregiver's gendered biases and expectations (Allen et al., 2014; Gestsdottir et al., 2014; McCabe, 2022; Wanless et al., 2013), making differences appear stronger than in other methods of measurement.

Classroom Characteristics That Affect Teacher Attributions

Because teacher's attributions and responses to challenging behavior play out within classroom environments, characteristics of the classroom are important to consider. Classroom characteristics include percentage of boys in the classroom, the number of children with Individualized Family Service Plans (IFSPs) in that classroom, average age of the children in that classroom, and the teacher-reported overall behavior within that classroom. If a classroom has a high number of boys or children with IFSPs, teachers may experience or expect more challenging behavior and rate overall classroom behavior accordingly (Conway, 1989; Emerson & Einfeld, 2010; Georgiou, 2008; Hill et al., 2006; McCabe, 2022; Woolfson et al., 2007; Vlachou et al., 2014). Further, teachers are responsible for implementing accommodations in the classroom for children with IFSPs. In this way, classroom organization and teaching practices

are influenced which, in turn, are associated with teaching attributions and beliefs (Andreou & Rapti, 2010) as well as children's socioemotional outcomes (Hatfield et al., 2016; Hatfield et al., 2022). Moreover, the average age of the children in that classroom can affect classroom levels of disruptive, externalizing behaviors. As stated above, age and language development have been robustly connected to externalizing behaviors and emotion knowledge in previous literature in that children with more experience recognizing their emotions, and more words with which to describe their emotions, are better at labeling and managing them (Jones et al., 2003; Ogren & Johnson, 2020; Posner & Rothbert, 1998; Reck & Hund, 2011). Finally, teacher characteristics, such as years of teaching experience and teacher's education level could also influence how teachers view and manage challenging behavior. For example, both are connected to causal attributions where newer teachers or more educated teachers are more likely to attribute failure or challenging behaviors to internal causes (Andreou & Rapti, 2010; McMahon, 2013; Wang & Hall, 2018; Georgiou, 2008).

Current Study

The current study aims to examine how teacher-child relationship quality and teachers' behavioral attributions affect children's emotion regulation and knowledge. The first goal of this study is to explore how teacher-child closeness and conflict are associated with emotion regulation and emotion knowledge. The second goal is to understand descriptively how teachers' causal and responsibility attributions for challenging behavior connect to children's emotion regulation and emotion knowledge. Therefore, two research questions will be explored:

Research question 1) Is teacher-child relationship quality associated with preschooler delay of gratification, externalizing behaviors, and emotion knowledge? Because previous research shows that close relationships between preschoolers and their teachers support

emotional understanding and regulation skills, I hypothesize that close relationships will be positively associated with the ability to inhibit behavioral responses to emotional experiences (i.e., delay of gratification), positively associated with emotion knowledge, and negatively associated with the child's level of externalizing behaviors (Doumen et al., 2008; Garner & Waajid, 2008; Howes, 2000; Ladd & Burgess, 2001; Spilt & Koomen, 2001). Based on related literature, I also hypothesize that conflictual relationships will be associated with lower levels of emotion regulation (i.e., delay of gratification and externalizing behaviors; Acar et al., 2021; Birch & Ladd, 1998; Hamre & Pinata, 2001). However, previous work has found mixed results on the link between caregiver-child conflict and emotion knowledge. While Garner and Waajid (2008) found no link between conflictual teacher-child relationships and emotion knowledge, some studies on parenting have found a connection. But, when broken down into individual parenting behaviors, only neglectful parenting, and not punitiveness or conflict, predicted emotion knowledge (Sullivan et al., 2010). Therefore, I hypothesize that conflictual teacher-child relationships will not be associated with emotion knowledge.

Research question 2) Are teacher behavioral attributions for challenging behavior associated with children's emotion regulation, in terms of delay of gratification and externalizing behavior, and with emotion knowledge? Given the sample size of teachers in the current study (11 teachers within 10 classrooms), research question two is approached using a descriptive case study structure to understand characteristics among similar and unique attribution styles (Daly, 2007). Results will function as a pilot study to lay a foundation for future work. Since literature on parenting shows connections between parental socialization practices such as attributions of challenging behavior and children's emotion knowledge and emotion regulation (Denham et al., 2009; Garner & Toney, 2020), I posit an exploratory hypothesis that attributions will be high,

and that both high causal attributions and high responsibility attributions, or the belief that children can control and are responsible for their disruptive behaviors, will be descriptively linked to lower levels of emotion regulation and emotion knowledge behaviors (Carter et al., 2014; Yoder & Williford, 2019).

Method

Procedures

This project uses secondary data from a study that explored how classroom quality influences children's school readiness skills (e.g., self-regulation) and stress response system activity (see Hatfield et al., 2022).

In 2015 recruitment letters introducing the study were mailed to licensed child care centers in two counties in the Pacific Northwest and follow-up phone calls were made after anticipated receipt of the letter. Preschool teachers were invited to participate if their primary language of instruction was English and if they enrolled at least six children three to five years in age (this was confirmed in the initial phone call). If the director of the center and the teacher agreed, the lead researcher met with them to discuss the project further and attempt to obtain consent. Teachers who consented distributed family recruitments packets to families in their class. Families who consented were eligible to participate if the child attended preschool for at least 20 hours over the last four weeks, the family and child could speak and understand English, the child did not have a diagnosed language disability, and the child was not taking steroid-derivative medication daily. For the current study, parents completed a family questionnaire (e.g., demographics), teachers completed surveys (e.g., demographic questionnaire, the Preschool Teacher Attribution measure), and children completed a variety of direct assessments (e.g., the Preschool Self-Regulation Assessment — Toy Wrap Task).

Participants

Fifty-one families with preschool-age children ($M_{age} = 50.79$ months, $SD_{age} = 8.77$, 59.2% girls) and 11 teachers within 10 classrooms (one set of co-teachers) participated in direct assessments as well as teacher and family surveys. Most children were White/Caucasian (77.6%) as reported by a parent. On average, families reported that their child's overall health was excellent ($M = 3.73$ on a four-point Likert scale), 14.9% of families reported that their child had experienced a stressful event in the past month (e.g., health issues, family in the process of moving), and no children were reported as being eligible for disability services. 98 percent of children in the sample had experience with child care within the last year. 10.2 percent of children were dual language learners (e.g., French, Finnish, Chinese, Arabic). Most of the parent respondents reported being married and living together (87.8%) and were White (81.6%) with 57.4% of families making more than \$8,000/month. Table 1 describes child and family demographics in more detail.

While teachers were somewhat diverse in age ($M_{age} = 38.67$, $SD_{age} = 12.00$), education level, and years of experience; 80% of teachers identified as White, 100% of teachers identified as women, and all classrooms were taught primarily in English in preschool classrooms within child care centers. Teacher yearly salary ranged from \$15,000 to \$24,000 a year. Teachers also reported on classroom characteristics to better understand classroom context: Median class size for this sample was 18 children, overall children only misbehaved occasionally ($M = 2.63$, $SD = 0.81$ on a four-point Likert scale where high scores describe more misbehavior), and five classrooms reported having one or more children who have an IFSP. Of note, no children with an IFSP were the consented children in the current sample. Table 1 describes teacher demographics in more detail.

Measures

Preschool Teacher-Child Relationship Quality and Teacher Attributions of Misbehavior

Student Teacher Relationship Scale. Teacher-child relationship quality was measured by a teacher-report questionnaire, the Student-Teacher Relationship Scale (STRS; Hamre & Pianta, 2001; Pianta, 2001; Pianta & Nimetz, 1991). Teachers completed one STRS questionnaire for each participating child in their classroom (co-teachers were instructed to complete them together). Previous work identified three categories of teacher perception of relationships for children ages three to eight: close, conflictual, and dependent (Pianta, 2001). The current study focuses on only close and conflictual since those two factors have the strongest theoretical connections to teacher attributions (Carter et al., 2014). Eight items are used to rate the level of closeness (e.g., “I share an affectionate warm relationship with this child”) and seven items to examine conflict (e.g., “This child easily becomes angry at me”) on a five-point response scale (1 = “definitely does not apply” to 5 = “definitely applies”). Average scores for close and conflictual relationships will be used in the analyses in line with previous work (Hamre & Pianta, 2001). Further, the STRS is reliable and valid in many studies across many contexts. Pianta and Hamre (2001), found high internal consistency within subscales (e.g., closeness) as measured by Cronbach’s alpha. They also found strong associations with measures assessing similar constructs, suggesting high construct validity (Hamre & Pianta, 2001). The STRS has also been validated in multiple languages and among racially diverse samples (Fraire et al., 2013; Koomen et al., 2012). In the current study, Cronbach alphas for close ($\alpha = .85$) and conflictual ($\alpha = .89$) subscales are high.

Preschool Teacher Behavior Attributions. The Preschool Teacher Attributions scale (PTA; Carter et al., 2014) is a teacher report questionnaire used to measure teacher-level

behavior attributions in terms of causal attributions and responsibility attributions. This measure was adapted for preschool teachers from the Attributional Style Measure for Parents (O'Brien & Peyton, 2002 as cited in Carter et al., 2014).

The PTA asks teachers to reflect on and describe their personal experiences with three common classroom situations. Teachers record how they felt about the situation by responding to statements that measured their causal attributions and responsibility attributions in that personal experience scenario. According to Nemer et al. (2019), remembering and reflecting on a personal experience is an important part of the assessment as many measures that give hypothetical situations of challenging behaviors are less accurate in representing actual teacher reactions (Carter et al., 2014; Lucas et al., 2009). Situation One asks teachers to “think about a time recently when a child in your classroom didn’t do something you wanted done (such as picking up toys at the end of an activity, staying in line during hand washing, etc.), even after you asked several times,” and provides statements on why they think the child behaved that way (e.g., “the reason the child didn’t do what I asked is not likely to change,” on a scale of 1 = “strongly disagree” to 6 = “strongly agree”), and whether the child was responsible (e.g., “the child was able to control whether or not he or she did what I asked,” on a scale of 1 = “strongly disagree” to 6 = “strongly agree”). Situation Two asks teachers to “think about a time recently when a child in your classroom hit, pushed, yelled at, or otherwise behaved aggressively with another child,” and asks teachers to rate their causal attributions (e.g., “the reason the child behaved aggressively is something that comes up often with this child,” on a scale of 1 = “strongly disagree” to 6 = “strongly agree”) and responsibility attributions (e.g., “the child deserved to be disciplined for behaving aggressively,” on a scale of 1 = “strongly disagree” to 6 = “strongly agree”). Situation Three asks teachers to “think of a time recently when a child in your classroom refused to go

along with a daily routine (settling down to eat lunch, getting ready to go outside, lying quietly at rest time, etc.),” and asks teachers to rate their causal attributions (e.g., “the reason the child didn’t go along with the routine is something that comes up often with this child” on a scale of 1 = “strongly disagree” to 6 = “strongly agree”) and responsibility attributions (e.g., “the child didn’t go along with the routine on purpose rather than unintentionally,” on a scale of 1 = “strongly disagree” to 6 = “strongly agree”).

Carter et al. (2014) conducted a confirmatory factor analysis of eight attribution dimensions (purposefulness, globality, stability, motivation, internal/external locus, blame, negative intent, and controllability) within the PTA, and found that teacher behavior attributions fit into a two-factor model. These two factors are causal (globality, stability, internal/external locus) and responsibility (purposefulness, motivation, blame, and negative intent). Scores across all three scenarios are averaged, to create one aggregated score for causal attributions (where lower scores indicate that teachers generally perceive challenging behavior as external and unstable), and one for responsibility attributions (where lower scores indicate that teachers generally perceive challenging behavior as uncontrollable). Each factor (or subscale) in Carter et al. (2014) had high internal consistency as measured by Cronbach’s alpha (*causal* = .77 and *responsibility* = .85) and associations with teacher beliefs and practices which provide support for construct validity. The average score for causal and responsibility attributions will be used in the analysis of the current study in line with previous research using this measure (e.g., Yonder & Williford, 2019). In the current study, Cronbach alphas for causal ($\alpha = .70$) and responsibility ($\alpha = .56$) are low with a sample size of 10 teachers.

Child’s Self-Regulation Skills and Emotion Knowledge

Using multiple perspectives and methods to observe children immersed in their own world is useful when exploring development (Wachs, 2015). So, child outcomes are assessed with both direct assessments (delay of gratification and emotion knowledge) and teacher report questionnaires (externalizing behaviors).

Delay of Gratification. Delay of gratification was measured through direct assessment, the Toy Wrap activity from the Preschool Self-Regulation Assessment (PSRA, Murray & Kochanska, 2002; Smith-Donald, 2007). This direct assessment occurred at the end of a series of direct assessments in the larger study. In Toy Wrap, the child is asked not to peek while the assessor wrapped a “surprise.” The assessor recorded if the child peeked, at what times they peeked (in seconds), and whether they peeked more than five times. The child’s latency to peek in seconds (how many seconds before the child peeked the first time within a 60-second time frame), the number of times the child peeked in 60 seconds, and whether the child peeked (i.e., yes or no) will be used in the analysis, where children who can wait longer to peek and have few (or zero) number of peeks have a greater ability to exhibit delay of gratification and regulation. Smith-Donald (2007) shows that PSRA lab tasks are reliable and valid in classroom settings while Murray and Kochanska (2002) show that Toy Wrap is a reliable and valid measure of behavior inhibition.

Externalizing Behaviors. Externalizing behaviors are assessed by combining scores from two teacher reported questionnaires, the Attention Deficit Hyperactive Disorder Rating Scale-IV (ADHD RS-IV; Dupaul et al., 1998) and the Oppositional Defiant Disorder Rating Scale (ODDRS; Hommersen et al., 2006) in line with previous operationalizations of externalization behaviors (e.g., Hatfield & Williford, 2017). The ADHD RS-IV consists of 18 items rated on a 4-point Likert scale with each item corresponding to symptoms of ADHD as laid

out by the DSM-IV (American Psychiatric Association, 1994). Nine items assess inattention (e.g., “fails to give close attention to details or makes careless mistakes in schoolwork,” where 0 = “never or rarely” and 3 = “very often”), and nine items assess hyperactivity (e.g., “fidgets with hands or feet or squirms in seat,” where 0 = “never or rarely” and 3 = “very often”). The ODDRS consists of eight items corresponding to symptoms of ODD as laid out by the DSM-IV (American Psychiatric Association, 1994) rated on a 4-point Likert scale (e.g., “actively defies or refuses to comply with adult request or rules,” where 0 = “never or rarely” and 3 = “very often”). Both measures are psychometrically sound, valid, and reliable. McGoey et al. (2007) found high internal reliability and high test-retest reliability within the ADHD RS-IV, as well as high validity, showing that this measure correlates strongly with other measures of ADHD in young children. The ODDRS was also found to have high internal reliability and test-retest reliability and high construct validity (Hommersen et al., 2006). A sum score of the combined 26 items is used in the current analysis, with higher scores representing higher reported externalizing behaviors (Yonder & Williford, 2019). In the current study, internal consistency was high ($\alpha = .93$).

Emotion Knowledge. Emotion knowledge is measured through direct assessment of the child’s ability to identify and label basic emotions. In this assessment, children were shown photos of children with different facial expressions: *happy*, *sad*, and *angry* by a trained assessor within a variety of direct assessments in the larger study. They were then asked by the assessor to identify the emotion in the picture. Researchers recorded a) how the child identified the emotion and b) whether that identification was correct. This measure mirrors other emotion-labeling tasks that have been validated and shown to be reliable, such as the emotion-labeling portion of the

Affective Knowledge Test (Denham, 1986). Overall accuracy on a scale of 0 - 3 will be used in the analysis, where lower scores indicate lower emotion knowledge.

Covariates and Additional Factors

Additionally, to better understand underlying associations between constructs, it is important to examine other possible sources of influence on key variables. Several characteristics of the classroom and teachers as well as the demographic makeup of the children in the classroom could explain variance of scores in student-teacher relationship quality, teacher attribution for challenging behavior, and children's emotional outcomes.

Covariates for Teacher-Child Relationships and Emotions. Research question one focuses on predicting differences in children's emotion knowledge and emotion regulation, and considers three key covariates: child gender, child age, and teaching beliefs. Teachers completed a modified Authoritarian Beliefs: Modernity Scale (Schaefer & Edgerton, 1985), on a 16-item questionnaire asks teachers about the extent to which teachers endorse authoritarian, or adult-directed, beliefs and interactions with young children. Teachers are asked to rate their agreement with statements such as “children have a right to their own point of view and should be allowed to express it” and “children should always obey their teacher” on a five-point response scale (where 1 = “strongly disagree” and 5 = “strongly agree”). High scores in this measure indicate stronger adult-centered, authoritarian beliefs while low scores indicate stronger child-centered beliefs. This adapted educator version of the Modernity Scale demonstrates good construct reliability and is associated with teacher's classroom practices and emotional support (Driscoll & Pianta, 2010; Pianta et al., 2005). In the current study, internal consistency measured by Cronbach's alpha ($\alpha = .87$) is high.

Furthermore, child age is measured in months and reported by parents in the family questionnaire. Child gender is treated as a binary (girl or boy) as reported by parents in the family questionnaire (parents were given two options: girl or boy in the survey).

Additional Factors to Consider for Teacher Attributions and Emotions. Several classroom, teacher, and child characteristics were considered in the case-study analysis for research question 2, in addition to the covariates described above for research question 1. Each construct is discussed briefly below.

Percentage of Boys in Classroom. To assess how many children were in classrooms, teachers were asked “As of today, how many children are enrolled in your classroom?” Relatedly, teachers were also asked “As of today, how many boys are there in your classroom?” For both questions, teachers filled in an open-ended response with a numeric value. The percentage of boys in the classroom was derived by dividing the number of boys reported by the number of children reported.

Number of IFSPs. To assess how many children with IFSPs there were in a classroom, teachers were asked “As of today, how many children in your classroom have an IFSP?” Teachers filled in the open-ended question with a numeric value.

Years of Teaching Experience. To assess teaching experience, teachers were asked “How many years of experience do you have working in the field of early care and education?” on a four-point scale (where 1 = “Less than 3 years” and 4 = “more than 10 years”).

Teacher Education Level. To assess teachers’ education level, teachers were asked “What is your current education level?” on a six-point response scale (where 1 = “High school diploma or GED” and 6 = “Doctoral Degree”).

Classroom Behavior. Average classroom behavior was assessed in the teacher questionnaire. Teachers were asked “At this point in the year, how would you rate the behavior of the children in your class?” on a five-point response scale where 1 = “The group behaves exceptionally well” and 5 = “The group misbehaves very frequently and is almost always difficult to handle.”

Data Analysis

Analyses were conducted with SPSS version 28 (IBM SPSS, 2021). Of note, this sample contained one set of co-teachers who filled out the Student-Teacher Relationship Scale (STRS) and Child Behavioral Checklist (CBC) together but the demographic information as well as the Teaching Beliefs and Practices (TBP) scale and the Preschool Teacher Attribution (PTA) scale separately. Therefore, for linear regressions used to examine research question one (where TBP is a covariate), the TBP score is averaged between the co-teachers. The PTA co-teacher scores were left as separate as research question two employs a descriptive case study design with the teachers rather than classrooms as the unit of analyses.

Preliminary analyses

Preliminary analysis focused on understanding patterns in the data (e.g., missingness, range; Kang, 2013) and examination of regression assumptions for models used in the exploration of research question one (e.g., normality, homoscedasticity, and multicollinearity (Poole & O’Farrell, 1971). First, there was some missingness in the data. Out of 51 children, three children were missing family questionnaire data, two were missing delay of gratification direct assessments and three were missing emotion knowledge direct assessments. Analyses were run to examine whether there were patterns in missingness or if data were missing at random. T-tests and chi-squared tests were run on any variable with over 5% missing data to look for

patterns in demographics (i.e., child's age, child's gender, child's race or ethnicity, language spoken, family's income, and parental education level). Analyses showed no systematic pattern in missingness of key variables (all $ps > .05$).

Next, regression models used to explore research question one was examined for assumptions of homoscedasticity, linearity, normality, and collinearity to determine interpretability of regression results (Poole & O'Farrell, 1971). First, scatter plots were used to test models for homoscedasticity of residuals and linear associations between predictors and outcomes. Q-q plots were used to examine the normality of residuals. A Durbin-Waston test was used to detect multicollinearity, where scores approaching 2 indicate that there is no multicollinearity present in the model.

There were two cases where significant violations of regression assumptions occurred: when models tested outcomes for children's delay of gratification (PSRA - Toy Wrap) and children's emotion knowledge. As indicated in the measurement section, three variables were explored for the Toy Wrap task. One variable describes if the child peeked at the gift or not in 60 seconds (yes/no), one variable describes how many times the child peeked at the gift in 60 seconds, and one variable describes the latency of the first peek (in seconds) for each child within the 60 second time window. Preliminary analyses focused on identifying which of these measurements best described the distribution of scores obtained. In every model that tested the delay of gratification child outcome, normality and homoscedasticity assumptions were violated in a way that suggests that scores from this task should be treated as dichotomous. Therefore, logistic regression analysis were used to show how key predictors influence whether the child peeked or not within 60 seconds (no = 0, yes = 1; Agresti, 2006).

Similarly, preliminary analysis (e.g., descriptives and violation of normality and homoscedasticity) showed that the emotion knowledge variable should also be treated as a dichotomous variable with every child labeling either two or three emotion depictions correctly. Therefore, logistic regression was used to analyze how predictors influence emotion knowledge as well. Linear regression was used in all other models that predict externalizing behaviors as no violations of regression assumptions were observed with those variables.

Analytic Plan

First, descriptives of key variables and participant demographics were explored prior to the primary analyses to gather baseline information from which to interpret results for all variables. Analyses were conducted to explore central tendency and variation in the sample in terms of a) teacher demographics, b) teacher attributions of disruptive behavior and average teacher-child relationship quality, c) child demographics, and d) child emotion regulation and knowledge outcomes. The next section outlines specific analytic plans for research question one and research question two, given the varying sample sizes and analytic approaches.

Teacher-Child Relationships. Research question one, whether teacher-child relationship quality is associated with preschooler delay of gratification, externalizing behaviors, or emotion knowledge, was answered using regression analyses. First, Pearson correlations were run with continuous variables to explore bivariate associations among outcomes, predictors, and possible covariates. Then, chi-squared tests were used to explore bivariate associations between dichotomous predictors and dichotomous outcome variables. Next, t-tests were used to examine group differences in key continuous variables between girls and boys (e.g., child's gender), between children who peeked or not during the Toy Wrap assessment (e.g., delay of gratification), and between children who correctly labeled two or three emotions in the emotion

knowledge assessment. Finally, regression analysis was conducted. Two linear regression models were used to examine the influence of teacher-child conflict and closeness on teacher reported externalizing behaviors. Four logistic regression models were used to model how teacher-child conflict and closeness influence delay of gratification and emotion knowledge. All regression models included the child's age and gender as well as teachers' teaching beliefs and practices as covariates. Given the sample size at level 2 (classroom/teacher; $n = 10$), multi-level modeling was not considered as previous research indicates that estimates would be biased with this sample size (Mass & Hox, 2006).

Teacher Attributions for Challenging Behavior. The sample size of teachers limits the analysis that can be conducted to show how teacher attributions for challenging behavior influence child emotional outcomes. Therefore, research question two, whether teacher behavioral attributions for challenging behavior is associated with delay of gratification, externalizing behavior, and emotion knowledge, was explored using a descriptive case study approach and analysis. Descriptive analysis has been used previously to understand characteristics of groups of early educators (Henry, 2021; Yonder & Williford, 2019). Further, case study approaches are often used to describe how cases differ from each other. This approach emphasizes that the context of the observations (attributions) influences the interpretation of those observations (Daly, 2007). The current study uses descriptive analysis to understand observed teacher attributions within context of teacher and classroom characteristics. Additionally, a case study approach allows for grouping descriptive observations of classroom and teacher characteristics into cases of high or low scores of both causal and responsibility attributions to examine the uniqueness of each case (Daly, 2007).

Reports of classroom and teacher characteristics as well as teacher attributions for challenging behavior were gathered from the teacher and family surveys. A summary table was created that presents classroom characteristics (e.g., teacher demographics, attributions, and teaching beliefs and practices), classroom average of child outcome scores (e.g., delay of gratification, externalizing behaviors, and emotion knowledge) and child demographic makeup of the classroom. Teacher reported observations were classified as classroom or teacher characteristics, while the demographic makeup of the children in the classroom was derived by averaging child and family observations within each classroom. Several factors (i.e., teachers' training and licenses) were considered but were pruned out by relevance. Classrooms were sorted by both causal (Table 5a) and responsibility attributions (Table 5b) and categorized into low and high scores based on a mean split. Patterns found among classroom, teacher, and child demographic characteristics between low and high attribution categories allude to patterns that could be examined in future studies with appropriate sample sizes.

Results

First, univariate and bivariate descriptives of key variables are presented in Table 2. Then, linear regression and logistic regression are used to examine how student-teacher relationship quality influences a child's delay of gratification, externalizing behaviors, and emotion knowledge (research question one presented in Table 3 and Table 4). Finally, a summary table describes classroom and teacher characteristics that may influence attributions of challenging behavior as well as the child emotion outcomes (research question two presented in Table 5).

Teacher-Child Relationship Quality

Descriptives statistics (see Table 1) show that the children in the sample had high levels of emotion knowledge (79.2% of children were able to correctly identify and label all three emotions — happy, sad, and angry). Scores in the delay of gratification task show that few children peeked during the task (36.7% of children peeked during the assessment). Further, teachers reported that externalizing behaviors are somewhat low and varied ($M = 19.00$). Teachers also reported that, overall, they were close with children ($M = 4.11$) and describe overall low conflict with children ($M = 1.86$). Finally, teachers in the sample reported that they hold a balance between child- and adult-directed beliefs and practices, with a slight trend toward child-directed, more authoritative beliefs and practices (given the mean is lower than 3; $M = 2.49$).

Correlations and t-tests were then used to examine bivariate associations between key variables and to help select covariates used in the regression model. Correlations show that a child's age, delay of gratification, emotion knowledge, and student-teacher closeness were not significantly correlated with any other key variable (Table 2); however, the correlation between child's age and externalizing behaviors was moderate ($r = -.29$) indicating that these variables shared a moderate amount of variance between them. Correlations also show that externalizing behaviors are positively associated with both student-teacher conflict and teaching beliefs and practices in that higher externalizing behavior scores correlate with more teacher-reported conflict and with more authoritarian, adult-centered, teaching beliefs and practices. Additionally, t-tests show that teacher-reported externalizing behaviors differed between boys and girls, with boys exhibiting significantly higher externalizing behaviors ($M = 24.39$) than girls ($M = 15.53$, $t(44) = 2.53$, $p = 0.015$). T-tests were also used to look for further associations between dichotomous variables and continuous variables and found no mean differences in age,

externalizing behaviors, conflict, closeness, and teaching beliefs and practices between children on emotion knowledge or with delay of gratification. These results indicate that overall, teaching beliefs and practices, child's age, and child's gender should all be included in regression analysis as covariates to keep models similar. More details about univariate and bivariate descriptives for key variables are presented in Table 2.

Research question one, whether teacher-child relationship quality is associated with preschooler delay of gratification, externalizing behaviors, and emotion knowledge, was examined using linear and logistic regression (See Table 3 and Table 4, respectively). Three models were executed to understand if student-teacher closeness predicts a child's delay of gratification, externalizing behaviors, and emotion knowledge while controlling for child's age and gender as well as teaching beliefs and practices. Similarly, three regression models were executed to explore if student-teacher conflict predicts a child's delay of gratification, externalizing behaviors, and emotion knowledge while controlling for influence from the child's age and gender as well as teaching beliefs and practices.

First, linear regression was used to examine how teacher-reported teacher-child conflict and closeness predicted teacher-reported externalizing behaviors while controlling for the child's age, gender, as well as teaching beliefs and practices. The analysis shows that student-teacher conflict predicts reported externalizing behaviors while teacher-child closeness did not predict externalizing behaviors. Further, the child's age predicted levels of externalizing behaviors, where older children were less likely to exhibit externalizing behaviors, when controlling for teaching beliefs and practices as well as when controlling for either student-teacher conflict or student-teacher closeness. Table 3 reports linear regression results in more detail.

Second, logistic regression was conducted to examine associations between teacher-child relationship quality and dichotomous outcome variables of delay of gratification and emotion knowledge direct assessment scores while controlling for covariates. Teacher-child conflict did not predict the likelihood of scoring either a 2 or 3 in the emotion labeling direct assessment, nor did teacher-child conflict predict the likelihood of peeking at the gift during the Toy Wrap assessment. Teacher-child closeness also did not predict the likelihood of scoring either a 2 or 3 on the emotion labeling task or the likelihood of peeking during the Toy Wrap task. In other words, teacher-child relationship quality in terms of closeness or conflict was not associated with emotion knowledge or delay of gratification. Table 4 presents logistic regression results in more detail.

Teacher Attributions for Challenging Behavior

Research question two examines initial patterns to further explore and uncover possible associations between preschool teachers' attributions for misbehavior (e.g., casual attributions and responsibility attributions) and children's delay of gratification skills, externalizing behaviors, and emotion knowledge utilizing a descriptive case study approach. Tables 5a and 5b provide a summary of descriptives of characteristics between key constructs (e.g., casual attribution, child gender).

Table 5a describes classrooms sorted in ascending order by causal attribution scores, or by how much teachers believe that child challenging behavior is due to internal characteristics of that child and whether challenging behavior is stable and consistent across contexts. Overall, teachers' causal attributions were moderate to high ($M = 4.05$, $SD = 0.53$, where scores ranged from 3.17 to 4.92 on a five-point response scale) meaning that, in general, teachers attribute preschoolers' challenging behavior to internal, consistent, and stable factors. However, there was

slight variation of scores between teachers, as categorized by a mean split; teachers in the lower half display scores between 3.17 and 4.00 and those in the high half display scores between 4.33 and 4.92. In both Table 5a and 5b, gray rows represent teachers who exhibit high causal attributions relative to the rest of the sample.

Relatedly, Table 5b describes classrooms sorted in ascending order by responsibility attribution scores, or by how much they believe child challenging behavior is purposeful and controllable. Overall, teachers reported moderate responsibility attributions ($M = 3.04$, $SD = 0.54$, where scores range from 2.08 to 3.75 on a five-point response scale). In other words, teachers in this sample generally believe that preschoolers have some control over their behavior and that misbehavior is somewhat purposeful. As with causal attribution scores, low responsibility attribution scores relative to the rest of the sample (scores between 2.08 and 2.83) and high responsibility attribution scores relative to the rest of the sample (scores between 3.33 and 3.75) are categorized by a mean split. Gray rows still indicate teachers that scored high in causal attributions to track how causal and responsibility attributions may be related to each other, and to track which teachers may have differential attribution scores relative to the rest of the sample.

First, causal attributions were visually related with some classroom and teacher characteristics as well as demographic makeup of the class. Classrooms where teachers scored low on causal attributions (or tend to believe that challenging behavior is due to external, instable factors) were visually linked to classrooms with more children with IFSPs and had children with higher emotion knowledge. There were no visual patterns of difference in categorization of teaching experience, teacher education level, percentage of boys in the classroom, level of classroom behavior, teacher's teaching beliefs and practices, student-teacher relationship quality

(closeness or conflict), teacher-reported externalizing behaviors, or children's delay of gratification scores.

Classrooms where teacher held low responsibility attributions were visually linked to higher child-centered teaching beliefs and practices, higher child's emotion knowledge, lower externalizing behaviors among children, and have children who are older on average. Teaching experience, education level, percentage of boys in the classroom, average classroom behavior, student-teacher relationship quality (e.g., closeness and conflict), and delay of gratification task scores were not visually linked to responsibility attributions. Finally, responsibility attributions seemed to be only somewhat visually related to causal attributions, as shown by classrooms highlighted in gray.

Discussion

Theories of human development reflect how interactions between a child and their environment drive development. Children learn and grow within an environmental context that shapes who they are and who they will become (Bronfenbrenner & Morris, 2006). In this way, interactions between caregivers and children impact children's emotional development — what they know about their emotions, how to manage their emotions, and how to use their emotions (Bowlby, 1969; Denham & Kochanoff, 2002; Wachs, 2015). Early childhood is an especially critical time to explore interactions and children's emotional development as this is when children learn to recognize their emotions as well as the causes and consequences of their emotions and emotional reactions (Arsenio & Lover, 1995; Bernier et al., 2010; Denham & Kochanoff, 2002; Miller & Aloise, 1989). A wealth of literature focuses parental influences on emotional development, but because 86% of children enter preschool or child care by the age of five (National Center for Education Statistics, 2020), it is important to examine the influence of

preschool contexts and preschool teachers' relationships with children as well. While previous studies have explored how the quality of teacher-child relationships affects child's emotional development and emotional management (Bernier et al., 2015), few studies have examined how teacher's internal factors, such as teacher attributions for challenging behavior, influence how children learn about and manage their emotions (for an exception see, Carter et al., 2014). The current study aimed to examine these connections in two ways. First, regressions were used to explore how the relationship quality between teachers and preschoolers influences children's emotional knowledge and regulation. Second, this study aimed to explore how the way teachers view challenging behavior (i.e., attributions) influences a child's emotion regulation and knowledge and what contextual factors may influence how teacher view challenging behavior through descriptive case study analysis.

Teacher-Child Relationship Quality

The first aim of the current study examines whether teacher-child conflict and teacher-child closeness influence children's emotional knowledge and regulation. I hypothesized that relationships that have a higher prevalence of conflictual interactions, interactions that are hostile and punitive, would be negatively associated with emotion regulation but not emotion knowledge. I also hypothesized that relationships with a higher prevalence of close interactions, those that are responsive, supportive, and warm would be positively associated with emotion regulation and knowledge. Results from linear regression analysis partially support my hypothesis, where teachers who report that their relationship with a child is conflictual also report that that child exhibits less of an ability for emotion regulation represented by more aggressive, impulsive, and hyperactive behavior. However conflictual relationships with teachers

did not predict direct assessment of emotion regulation or emotion knowledge and relationships that were higher in closeness did not predict either emotion regulation or emotion knowledge.

Teacher-Child Conflict

In line with previous research, regression results showed that teacher-child relationships that are characterized by a higher prevalence of conflictual interactions predict teacher reported measures of emotion regulation (externalizing behaviors). Doumen et al. (2008) and others (e.g., O’Conner et al., 2011), found that teacher-reported conflictual relationships in kindergarten are connected to higher teacher-reported externalizing behaviors, specifically aggressive behaviors. The current study finds that these results still hold even when controlling for a child’s age and gender as well as a teacher’s teaching beliefs and practices. However, there were no associations found between teacher-child conflict and the direct assessment of emotion regulation (i.e., delay of gratification). Few studies have examined the connections between delay of gratification and teacher-child relationship quality, though they can be theoretically connected through other studies that show how emotion regulation in general is influenced by teacher-child conflict. Acar et al. (2021) shows that teacher-reported teacher-child conflict in preschool is associated with lower overall self-regulation direct assessment scores, when also accounting for temperament reactivity. Acar et al. (2021) uses many direct assessments (e.g., PSRA, which includes a gift giving delay of gratification task) to assess preschooler self-regulation, which is related to emotion regulation, but includes both hot and cold regulation, while emotion regulation is primarily described as hot self-regulation (McClelland et al., 2015). The wider variety of regulation tasks in Acar et al. (2021), as well as their inclusion of temperament (a person characteristic, Bronfenbrenner & Morris, 2006) may make their regulation construct more nuanced, creating more variability in scores to detect effects; however, this form of measurement

does not show how delay of gratification by itself is related (or not) to teacher-child relationship quality. The findings in Acar et al. (2021) in conjunction with the current study suggest that different facets of emotion regulation or self-regulation are differentially affected by interactions with teachers in a preschool context.

Similarly, emotion knowledge direct assessments were not predicted by teacher-child conflict in the current study. Previous studies have found mixed results in how conflictual relationships are associated with emotion knowledge. Garner and Waajid (2008) find that teacher-reported relationship conflict is not associated with emotion situation knowledge in preschoolers. In this article, researchers ask preschoolers to identify a wide range of emotional facial expressions after hearing a story about the expression. This measurement approach allows for more variability in how children respond to emotional expressions and more room for measuring children's interpretation of causes and consequences of emotions, an important aspect of emotion knowledge. Even with a measurement approach with more sensitivity to differences in children's emotion knowledge than in the current study, teacher-child conflict did not associate with children's emotion knowledge. Garner and Waajid also examine the influence of a child's gender, age, and socioeconomic status and find that girls, older children, and children in a higher socioeconomic status exhibited higher emotion knowledge. However, the current study did not see these results among children's age and gender, nor assessed emotion knowledge with this level of situational nuance. It seems that when children have more information about the emotion, such as the causes and consequences of emotional expression, there are more differences in how they respond, leaving room to detect age and gender differences.

Additionally, while parenting literature shows that conflictual relationships influence what children know about their emotions (Denham and Kochanoff, 2002), the actual caregiving

behaviors may be important. Literature on caregiver-child relationships tends to focus on negative and positive relationship characteristics. Negative caregiving characteristics include interactions that are tense, hostile, punitive, or uninvolved (Denham & Kochanoff, 2002; Pianta, 1994). Breaking up negative interactions into conflictual or uninvolved interactions may show how specific parenting behaviors differentially influence emotion knowledge. Further, accounting for qualities of relational closeness *and* conflict in the same model may also be of benefit to further understand the associations with regulation. Sullivan et al. (2010) examined emotion knowledge between four- and five-year-old children who had and had not experienced parental neglect. They measure emotion knowledge by giving children context and facial expressions to label and examine overextension of intense negative emotions of anger and sadness. They find that neglectful parenting predicted lower emotion knowledge but was not associated with overextension of intense negative emotions when controlling for children's age and IQ. Taken with what researchers know about caregiver-child conflict and emotion knowledge (Denham & Kochanoff, 2002; Garner & Waajid, 2008; Gottman et al., 1996) it seems that though children are learning something different about their emotions within relationships and contexts that are conflictual and tense rather than responsive and warm, they are still learning something. It is when there are no interactions, or dismissive interactions only, between children and caregivers that affects how much they know about their emotions. Therefore, there may be a difference between assessing *what* children know about emotions (e.g., overextension of intense negative emotions such as sadness or anger, or whether emotions should be feared or seen as chaotic) and *how much* children know about emotions (e.g., emotion knowledge deficits). These nuanced results suggest that additional research within contexts (e.g., home and school),

within types of interactions and specific caregiving behaviors, and with a more nuanced definition of emotion knowledge is warranted.

Teacher-Child Closeness

Relational closeness between teachers and children was not predictive of emotion regulation or knowledge in the current study. This is contrary to previous studies with similar research designs. Whittaker and Harden (2010) find that teacher-reported teacher-child closeness in Head Start predicted lower teacher reported externalizing behaviors. Specifically, children that have closer relationships with teachers in a Head Start setting show less aggressive behavior and externalizing problems as well as attention problems. Whittaker and Harden (2010) write that teacher-child relationships with higher frequencies of warm, responsive interactions may be more influential to for children with higher externalizing behaviors, which may be true in Head Start settings, meaning that while close relationships are important for all children, the effects may be bigger for children with higher prevalence of these behaviors. Because the prevalence of externalizing behaviors in the current study was somewhat low, the influence of close teacher-child relationships may be smaller. Differences in results also suggest that aspects of the PPCT model (Bronfenbrenner & Morris, 2006), such as characteristics of the educational setting (context) and demographic characteristics of the sample (person) may explain differences in findings.

As with teacher-child conflict, few studies have connected delay of gratification tasks with teacher-child closeness directly, though connections through other forms of emotion regulation have been identified. Acar et al. (2021) report that self-regulation as described by PSRA direct assessments in preschoolers is positively associated with teacher-reported closeness without controlling for other constructs. As with teacher-child conflict, Acar et al. (2021)

connects emotion regulation to teacher-child relationship quality through the combination of hot and cold self-regulation tasks, which does not allow delay of gratification task to be directly connected to relationship quality. The current study does make this direct connection but may not have enough variability of scores to detect an effect. Future research should focus on parsing out types of emotion regulation and examining how each connects to characteristics of children's environment. Additionally, research indicates that the ECE setting (or context) may afford the increased possibility of teacher-child closeness influencing children's emotion regulation skills (Acar et al., 2021; Whittaker & Harden, 2010); thus, differences in results may be due to differences in context given theory (Bronfenbrenner & Morris, 2006).

Further, emotion knowledge was not found to be connected to conflictual teacher-child relationship quality, contrary to previous literature. While Garner and Waajid (2008) found no connection between teacher-child conflict and emotion knowledge, their results indicate that teacher-child closeness in preschool children predicts direct assessment of emotion knowledge, even when controlling for child's gender, age, and socioeconomic status. Again, differences in results between Garner and Waajid (2008) and the current study could be explained through the measurement of emotion knowledge. The measure of emotion knowledge used in Garner and Waajid (2008) is more nuanced than the measure used in the current study — their assessment widens the range of emotions tested and gives context to the emotions depicted. It is possible that the current study did not use a measure that is sensitive to a child's full range of emotion knowledge (especially given that all children in the study labeled at least 2/3 of the labeled correctly), and future research should consider measures of emotion knowledge that provide situational cues to the facial expressions children are being asked to label.

Through these findings, it is apparent that teacher-child relationship quality and classroom characteristics, as well as person characteristics (gender), affect what children know about their emotions and how to manage them. If these interactions with caregivers are responsive, children learn how to manage their emotions effectively, decreasing externalizing behaviors and developing emotion regulation skills. In this way, close relationships with teachers, where teachers guide emotional management, are essential to children's socioemotional wellbeing (Denham & Kochanoff, 2002; Pianta, 1999). Further, these findings suggest that educational context matters in how children learn how to manage and use their emotions as social cues. The next section of this paper further discusses the contextual characteristics in which teacher-child relationships, and children emotional development, play out, through the discussion of teacher attributions.

Teacher Attributions for Challenging Behavior

The PPCT model (Bronfenbrenner & Morris, 2006) illustrates how characteristics of a child's microsystems (e.g., homes, classrooms), influence their socioemotional development. Thus, the second aim of this study is to understand how classroom and teacher characteristics may be descriptively linked to how teachers view children's challenging behaviors (teacher attributions for misbehavior) and to understand descriptive links between these views and children's emotion skills. This aim specially focuses on two types of attributions identified by previous literature causal attributions and responsibility attributions. Here, causal attributions refer to teacher's views about the source (e.g., is the behavior caused by an external such as a child's reaction to stressful experiences or an internal source such as a child's innate ability) and stability (e.g., how likely is this behavior to reoccur over time and context) of externalizing behavior. Responsibility attributions describe a teacher's judgement of whether the behavior was

purposeful and whether the child deserves to be blamed for that behavior. I posited an exploratory hypothesis that causal and responsibility attributions would be high and that they could be descriptively linked to children's emotional functioning. In other words, the belief that young children can control their actions and are to blame for misbehavior because it comes from a place of negative intent would foster lower emotion knowledge and poorer emotional management in preschoolers. This exploratory hypothesis was supported in the current study but limited by the case study design and sample size. Emotion regulation was visually linked to responsibility attributions and emotion knowledge was visually connected to both causal and responsibility attributions.

Teacher Attributions and Emotion Knowledge and Regulation

In this sample, causal attributions were moderate to high ($M = 4.05$), meaning teachers believed that challenging behavior in preschool is mostly due to internal, stable factors—that there is something about the child that causes them to exhibit externalizing behaviors. Similarly, responsibility attributions were moderate ($M = 3.04$, where no teacher scored above a 3.75), meaning teachers in this sample tended to believe that preschoolers were only somewhat to blame for, or in control of, their challenging behavior. Of note, responsibility attributions appear somewhat associated with causal attributions. This suggests that teachers may vary in responsibility and casual attributions, and that just because teachers view child behavior as internal and stable does not necessarily mean they believe that a child is in control or to blame for their behavior. A summary table was created to explore initial patterns and possible associations between preschool teachers' attributions for misbehavior (i.e., casual attributions and responsibility attributions) and children's delay of gratification skills, externalizing behaviors, and emotion knowledge. Classroom and teacher characteristics were also considered.

This approach lays the groundwork for possible future investigations into contextual and person characteristics that influence teacher attributions for misbehavior and ultimately child emotional knowledge and regulation.

Classrooms where both causal and responsibility attributions were low, or where teachers believe externalizing behaviors are uncontrollable reactions to the environment that are unlikely to reoccur across contexts, were visually linked to classrooms where children had higher emotion knowledge. Though few articles examine this connection, emotion knowledge can be theoretically connected to teacher attributions for challenging behaviors. Young children learn about emotions through interactions with their caregivers, including through how that caregiver reacts to their emotion related behavior (Denham & Kochanoff, 2002). Teacher's emotional reactions to challenging behavior are in turn influenced by internal factors, such as their beliefs and attributions about child behavior. For example, Wang and Hall (2018) write that teacher attributions influence discipline practices through emotional reactions to the challenging behavior. Teachers who attribute student misbehavior to external factors (e.g., reactions to a stressful environment) are more likely to feel sympathy and practice emotional coaching. These teachers take the time to talk to children about how they are feeling and help children recognize emotional cues in the environment. Teachers who attribute challenging behavior to internal factors (e.g., ability, personality) tend to react to challenging behavior with anger or fear, prompting dismissive or punitive reactions. In a way that mirrors how conflictual or uninvolved relationships affect children's emotional development, how teachers view and react to emotional behavior can either help or hinder the development of emotion knowledge.

While responsibility attributions were visually connected to emotion regulation in terms of teacher-reported externalizing behaviors, causal attributions were not. Emotion regulation can

be theoretically connected to teacher attributions in a way similar to emotion knowledge. Children learn and develop through interactions with their caregivers, including through how their teachers react to their emotional behaviors. Teachers who react with sympathy guide children through appropriate emotional management practices while teachers who react with anger or fear punish or dismiss children's emotional experiences (Wang & Hall, 2018). As noted, harsh, punitive discipline in response to children's emotion related behaviors can lead to worsening externalizing behaviors over time as children learn to fear their emotions, making them harder to manage or cope with (Denham & Kochanoff, 2002).

That externalizing behaviors were visually linked to responsibility attributions, but not causal attributions, may come from the differences in assumptions made by each set of beliefs. Teachers with high causal attributions believe that challenging behavior is stable and internal to the child — that the behavior is caused by something fundamental to who that child is (e.g., their personality), and therefore is unlikely to change with guidance from caregivers. Teachers with high responsibility attributions tend to believe that challenging behavior comes from purposeful, negative intent and that children are trying to behave poorly to get a reaction out of the caregiver. In this way, it would make sense if causal attributions resulted in teachers dismissing children's emotional experiences out of a belief that they cannot be changed while responsibility attributions, a teacher's judgement about a child's negative intent or the purposefulness of the action, result in teachers punishing children's emotional experiences out of anger and frustration. For example, Reyna and Weiner (2001) write that teachers who perceive challenging behavior as controllable and stable may be less likely to believe positive change can be made and are less likely to seek out effective solutions and interventions. This reasoning would also mirror what

researchers know about how conflictual versus dismissive caregiver-child relationships influence emotion regulation and knowledge (Garner & Waajid, 2008; Sullivan et al., 2010).

Another explanation for the differential ways emotion regulation connects to attributions is through how teachers report about the children in their class. Higher teacher-reported responsibility attributions were visually linked to higher teacher-reported emotion regulation but not to direct assessments of emotion regulation (delay of gratification). When teachers complete a behavior rating scale, they are asked to provide information about their judgements of a child's behavior (Sattler, 2014, as cited in Yonder & Williford, 2019). These judgments are subject to influence from internal factors like attributions and beliefs. If teachers tend to believe that children can control themselves and that any challenging or misbehavior is caused by a child's negative intent, they may be more likely to report more challenging behaviors or have stronger reactions to challenging behaviors. Future research should explore how attributions for challenging behavior influence how teachers report on children's behavior.

Teacher Attributions and Additional Classroom Characteristics

The PPCT model would also suggest that other classroom and teacher characteristics influence teacher's internal attributions for challenging behavior as well as children's emotional development (Bronfenbrenner & Morris, 2006). Classrooms where teachers had lower causal attributions, believing that challenging behaviors are caused by reactions to a stressful environment, were visually linked to classrooms with more children with IFSPs. In their review of the correlates of mostly elementary-level teachers' interpersonal attributions, Wang and Hall (2018) write that teacher and classroom demographic characteristics contribute to how teachers view challenging behavior. Further, some research on parenting shows that parents of preschoolers with Autism Spectrum Disorder are more likely to attribute misbehavior to

uncontrollable factors than parents with neuro-typically developing children because they know about their child's diagnosis (Berliner et al., 2019). Similarly, teachers of children with IFSPs must organize their classroom in a way that accommodates the child's education plan, and so may be more aware of the causes of children's challenging behavior. These findings suggest that a teacher's classroom organization can affect how teachers view the causes of challenging behavior, and therefore, how they manage challenging behavior. Sample size of the current study limits the effects that can be found, especially if effects are medium or small effects (Cohen, 1992; Dupont & Plummer, 1998).

Classrooms where teachers held low responsibility attributions, believing that preschool children could not control and are not to blame for their challenging behaviors, were visually linked to child-centered teaching beliefs and practices and with classrooms with children who are older. Carter et al. (2014) have similarly connected teaching beliefs and practices to responsibility attributions in that teachers who hold lower responsibility attributions often exhibit more child-centered beliefs and practices. The findings of the current study mirror these findings and add evidence that the beliefs that teachers hold about children are linked to the way they perceive child behavior and the reactions they have to child behavior. Further, teachers of classrooms with younger children descriptively attributed challenging behavior to purposeful reactions with negative intent. This may be related to the child's developmental level because younger children tend to have less experience in previous child care settings and tend to exhibit more externalizing behavior and, therefore, more challenging behavior (Systema et al., 2001).

Limitations and Future Directions

There are three main limitations to the current study: sample limitations, measurement limitations, and limitations related to theory. These limitations hold implications for interpretation and generalizability of findings.

First, the sample size puts restrictions on the size of the effect that can be detected given one exists, or power, affecting the accuracy of the results (Cohen, 1992; Dupont & Plummer, 1998). Larger samples may be able to detect small effects more accurately. Further, sample size limited my ability to account for nesting within classrooms (Maas & Hox, 2005). Often, children within the same classroom will have similar characteristics by virtue of interacting with the same environment and peers. Future studies should take nested effects into account when exploring how teacher-child relationships and classroom characteristics affect children's socioemotional development.

Additionally, analysis was conducted on a non-diverse sample where participants (both teachers and families) were predominantly White. Wang and Hall (2018) write about research that shows that the teachers' and children's identities, as well as whether identities of teachers and children match, matter when conceptualizing teacher-child relationships and how teachers view the children they care for. For example, many researchers write about teacher's adultification of Black children in educational settings. Adultification can be characterized by teachers' anger bias (mis-labeling Black children's emotions as anger and aggression; Halberstadt et al., 2020) and by teachers holding adult-like expectations for Black children more often than White children. In this way children's appearance and identities shape the expectations and attributions that teachers have for that child's behavior which shape the type of relationships teachers have with children in their classrooms. Developmentally inappropriate expectations for children's behavior, expecting children to behave in a way they are not ready

for, can cause conflict between teachers and children (Cooke & Halberstadt, 2021). Future research on teacher-child relationships and teacher attributions should include children and teachers' identities, which is also in line with PPCT (Bronfenbrenner & Morris, 2006) and be conducted with more diverse samples to explore nuances within findings from the current study.

Second, the current study contains some limitations due to measurement. Although multiple measurement perspectives were taken for outcome variables (teacher-reported and directly assessed measurements), only teacher self-report measures were used to collect data on predictors (i.e., relationship quality and teacher attributions). As mentioned throughout, using only one form of measurement introduces bias into measurements that could be examined with other types of observations such as direct observations (Wachs, 2015). For example, according to Lenex et al. (2020), teacher reports of emotion regulation are a good source of information that cannot be derived from short, one-time direct assessments. This measure can tell researchers about a child's overall externalizing behaviors and social functioning; however, teacher-reported externalizing behaviors also hold teachers' biases and expectations. This can be seen in the current study in how gender differences were found in teacher-reported externalizing behaviors in a way that is consistent with "intuitive" knowledge on differences between boys and girls — that boys tend to exhibit more externalizing behaviors than girls and that masculine play is seen by teachers as more aggressive and impulsive than feminine play (McCabe, 2022), but not in the delay of gratification and emotion knowledge direct assessments. This suggests that both self-reported and directly assessed measures should be considered to create a fuller picture since these measurements may tell researchers about different aspects of a construct. In future work, teacher-child relationships can be directly observed and coded by researchers and teacher attributions could be explored with interviews rather than by self-report questionnaires.

Relatedly, another limitation is in the measurement of teacher attributions for challenging behavior. Measuring causal attributions (i.e., a teacher's view of source and stability of behavior) and responsibility attributions (i.e., teacher's judgment of a child's purposeful negative intent) does not consider factors that lead to why a teacher may hold those views. The beliefs that people hold and the way they react to their environment, and to others, is often colored by previous experiences. For instance, trauma experiences may be especially important to consider when exploring teacher-child relationships and teacher's attributions to disruptive behavior. Many children come into preschool with experiences of adversity and trauma (Statman-Weil, 2015). Much of the research on how trauma affects teacher-child relationships focuses on children's trauma and how teachers can implement trauma-informed teaching practices in classrooms, but few articles and programs address how teacher's own trauma could impact how they respond to children who have, or are currently, experiencing adversity in their lives. Future research should examine how the presence of trauma and adversity affects both sides of the teacher-child relationship as well as how trauma experiences may influence the attributions teachers make and the reactions teachers have to children's disruptive behavior. Finally, the study design is not conducive to studying all aspects of the PPCT model (Bronfenbrenner & Morris, 2006), including (but not limited to) how time with respect to the enduring exposure to proximal process (e.g., interactions between children and teachers) may change or be stable in the classroom microsystem. Many researchers have argued that teacher-child relationships should be written about in terms of bi-directional, dyadic processes. Curby et al. (2014) explore longitudinal, reciprocal associations between teacher's emotional support, classroom organization, and children's positive engagement and find that these associations are bidirectional. Husby et al. (2022) explore reciprocal associations between conflictual teacher-

child relationships and children's behavior problems. They find that children's externalizing behaviors prompted teacher-child conflict and that teacher-child conflict also prompted externalizing behaviors. These findings suggest that aspects of teacher-child relationships are reciprocal and that child characteristics affect teachers just as teacher characteristics affect children. Future work should consider reciprocal effects of teacher-child dyads.

Conclusion

Findings from the current study contribute to research on preschool teacher-child relationships, and to the field of research in early education and care, in two major ways. First, understanding children's relationships with their teachers is crucial for understanding children's socioemotional development. Teachers are caregivers who can make a difference in children's lives and close relationships with teachers are essential to how children understand their emotions and the emotions of those around them. Early education training should focus on helping teachers reflect on their beliefs about children's behavior and on their relationships with children so that they can be intentional about how they interact with children. Further, the experiences and relationships that teachers and children have are nested within macro-level environments that are affected by sociopolitical factors (e.g., policy, funding, political climate). These factors affect the resources and training programs teachers access. Finally, this study emphasizes how important environmental characteristics are to understanding children's relationships with teachers. Environmental characteristics shape the context of relationships which shape the relationships themselves. Overall, study findings illustrate that children's environment and relationships are what shape what they know and how they behave.

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Table 1*Descriptives statistics for child, parents, and teacher demographics*

	n	%
Child	51	
Race/Ethnicity	49	
White	38	77.60%
Latino	1	2.00%
African American	1	2.00%
Asian/Pacific Islander	3	6.10%
Other or mixed race/ethnicity	6	12.30%
Dual Language Learner	5	10.20%
Parent	51	
Race/Ethnicity	49	
White	40	81.60%
Latino	1	2.00%
Asian/Pacific Islander	3	6.10%
Other or mixed race/ethnicity	5	10.20%
Education	49	
Some college, no degree	3	6.10%
AA, AS, or 2-year degree	3	6.10%
Bachelor's degree	10	20.40%
Master's degree	23	46.90%
Doctoral degree	10	20.40%
Caregiver Marital Status	49	
Married, living together	43	87.80%
Married, but separate	2	4.10%
Not married, living with a partner	1	2.00%
Divorced	2	4.10%
Single, never married	1	2.00%
Monthly Household Income	47	
\$500-999	1	2.10%
\$1,000-1,999	1	2.10%
\$2,000-3,999	4	8.50%
\$4,000-5,999	9	19.10%
\$6,000-7,999	5	10.60%
\$8,000-9,999	12	25.50%
More than 10,000	15	31.90%

Teacher	11	
Race/Ethnicity	10	
White	8	80.00%
Persian	1	10.00%
American Indian/Alaska Native	1	10.00%
Education	11	
HS Diploma	1	9.10%
Child Development Associate	1	9.10%
Associate's degree	2	18.20%
Bachelor's degree	6	54.50%
Master's degree	1	9.10%
Annual Salary	11	
\$15,000-20,000	3	27.00%
\$20,000-24,999	8	73.00%
Years of Teaching Experience	11	
Less than 3 years	1	9.10%
3-5 years	1	9.10%
5-10 years	5	45.50%
More than 10 years	4	36.40%

Table 2
Univariate and bivariate descriptives for child's age, relationship quality with their teacher, and emotion regulation and knowledge skills

	Mean (SD)	Range	1	2	3	4	5	6
1. Child's Age (Months)	50.79 (8.77)	36-67	--					
2. Labeled Three Emotions	79.2%	2-3	-0.01	--				
3. Peeked during Toy Wrap Task	36.7%	0-1	-0.18	-0.16	--			
4. Externalizing Behavior	19 (12.25)	0-49.00	-0.29	0.12	0.09	--		
5. Student-Teacher Conflict	1.86 (.71)	1.00-4.00	-0.01	0.17	0.20	.61**	--	
6. Student-Teacher Closeness	4.11 (.59)	2.45-4.91	-0.10	0.02	-0.02	-0.23	-0.16	--
7. Teaching Beliefs and Practices	2.49 (.55)	1.88-3.81	-0.29	0.08	0.18	.33*	0.15	-0.20

* $p < 0.05$; ** $p < 0.01$.

Table 3

Linear regression models of teacher-child relationships quality predicting children's teacher reported externalizing behaviors

	B (SEB)	Beta	p
Student-Teacher Conflict			
Intercept	16.24 (11.95)		
Child Age	-.41 (-.34)	-.34	.01
Child Gender -- Boy	4.75 (2.77)	.22	.10
Teaching Beliefs and Practices	.79 (2.48)	.04	.75
STRS – Conflict	9.46 (2.43)	.51	<.001
Student-Teacher Closeness			
Intercept	42.82 (21.19)		
Child Age	-.50 (.19)	-.41	.01
Child Gender -- Boy	6.28 (3.54)	.29	.09
Teaching Beliefs and Practices	2.06 (3.10)	.11	.51
STRS – Closeness	-2.07 (3.00)	-.12	.50

Table 4

Logistic regression models of teacher-child relationships quality predicting children's direct assessments of delay of gratification and emotion knowledge

	B	SEB	Wald	Sig.	Odds Ratio (e ^B)
Relationship Quality Predicting Emotion Knowledge					
<i>Conflict</i>					
Constant	-1.19	3.46	.12	.73	.31
Child's Age	.01	.05	.05	.82	1.01
Child's Gender -- Boy	-.99	.83	1.43	.23	.37
Teaching Beliefs and Practices	.34	.82	.17	.68	1.40
STRS – Conflict	.79	.75	1.10	.29	2.19
<i>Closeness</i>					
Constant	-2.31	6.62	.17	.68	.10
Child's Age	.01	.05	.01	.91	1.01
Child's Gender -- Boy	-.67	.82	.71	.40	.50
Teaching Beliefs and Practices	.68	.86	.64	.43	2.00
STRS – Closeness	.42	.81	.27	.60	1.53
Relationship Quality Predicting Toy Wrap					
<i>Conflict</i>					
Constant	.58	2.99	.04	.85	1.79
Child's Age	-.04	.04	.98	.32	.96
Child's Gender -- Boy	.16	.72	.05	.83	1.17
Teaching Beliefs and Practices	.14	.64	.05	.82	1.15
STRS – Conflict	.35	.62	.32	.57	1.42
<i>Closeness</i>					
Constant	2.31	4.41	.28	.60	10.09
Child's Age	-.05	.04	1.21	.27	.96
Child's Gender -- Boy	.17	.73	.05	.82	1.19
Teaching Beliefs and Practices	.17	.64	.07	.79	1.18
STRS – Closeness	-.23	.64	.13	.72	.79

Table 5a*Classroom and teacher characteristics and classroom demographic makeup organized by low and high causal attribution scores*

Teacher and Classroom Characteristics							Teacher Predictors			Child Characteristics**					
TID		Yrs T. Exp	Edu Lvl	% of Boys	# of IFSPs	Class Behav	TBP	Causal Attrib.	Respons. Attrib.	STRS Close	STRS Conflict	% E. know	% peek	Ext. beh.	Cage
LOW ATTRIBUTIONS	5	>10	Bachelor's Degree	44.4	1	3	--	3.17	2.83	3.73	1.54	100	28.60	26.29	53.0
	1	>10	Bachelor's Degree	38.1	2	2	1.88	3.5	2.08	4.34	2.19	60	40	1	58.2
	3*	3-5	Bachelor's Degree	40.0	--	3	1.63	3.58	2.58	4.70	1.81	100	33.30	22.67	47.0
	4	5-10	Bachelor's Degree	50.0	--	3	2.56	3.83	3.42	4.15	2.1	100	42.90	23.14	44.5
	9	> 10	HS diploma	57.9	1	3	2.44	3.83	2.67	4.14	2.39	100	33.30	20.67	59.0
	7	5-10	Bachelor's Degree	59.1	2	2	3.81	4	3.71	4.00	1.96	100	50	19	46.3
HIGH ATTRIBUTIONS	10	5-10	Associates Degree	66.6	0	3	3.06	4.33	3.33	3.98	2.23	40	80	27.2	39.8
	11	> 10	CDA	50.0	1	2	2.44	4.42	2.67	4.12	1.36	100	0	8.33	66.0
	2*	< 3	Bachelor's Degree	40.0	--	3	2.56	4.5	2.83	4.70	1.81	100	33.30	22.67	47.0
	6	5-10	Associates Degree	60.0	0	1	2.31	4.5	3.75	4.11	1.2	40	0	11	57.0
	8	5-10	Master's Degree	52.9	0	4	1.88	4.92	3.58	4.23	1.46	75	50	24	42.8

*Co-teachers reported demographics, teaching beliefs and practices, and attributions separately but teacher-child relationship quality and child's externalizing behaviors together. ** reflects average of children who were directly assessed. TID = Teacher ID; Yrs T. Exp. = Years Teaching Experience; Edu Lvl = Education Level; % of Boys = Percentage of Boys in Classrooms; # of IFSPs = Number of IFSPs; Class Behav = Classroom Behavior; TBP = Teaching Beliefs and Practices; Causal Attrib. = Causal Attributions; Respons. Attrib. = Responsibility Attributions; % E. know. = % of children with 3/3 correct in Emotion Knowledge task; % peek = Toy Wrap Assessment (Percent Who Peaked); Ext. beh. = Teacher Reported Externalizing Behaviors; Cage) = child age in months

Table 5b*Classroom and teacher characteristics and classroom demographic makeup organized by low and high responsibility attribution scores*

Teacher and Classroom Characteristics							Teacher Predictors			Child Characteristics**					
TID		Yrs T. Exp	Edu Lvl	% of Boys	# of IFSPs	Class Behav	TBP	Causal Attrib.	Respons. Attrib.	STRS Close	STRS Conflict	% E. know.	% peek	Ext. beh.	Cage
LOW ATTRIBUTIONS	1	> 10	Bachelor's Degree	38.10	2	2	1.88	3.5	2.08	4.34	2.19	60	40	1	58.2
	3*	3-5	Bachelor's Degree	40.00	--	3	1.63	3.58	2.58	4.7	1.81	100	33.30	22.67	47.0
	9	> 10	HS Diploma	57.90	1	3	2.44	3.83	2.67	4.14	2.39	100	33.30	20.67	59.0
	11	> 10	CDA	50.00	1	2	2.44	4.42	2.67	4.12	1.36	100	0	8.33	66.0
	5	> 10	Bachelor's Degree	44.40	1	3	--	3.17	2.83	3.73	1.54	85.70	28.60	26.29	53.0
	2*	< 3	Bachelor's Degree	40.00	--	3	2.56	4.5	2.83	4.7	1.81	100	33.30	22.67	47.0
HIGH ATTRIBUTIONS	10	5-10	Associates Degree	66.60	0	3	3.06	4.33	3.33	3.98	2.23	40	80	27.2	39.8
	4	5-10	Bachelor's Degree	50	--	3	2.56	3.83	3.42	4.15	2.1	100	42.90	23.14	44.5
	8	5-10	Master's Degree	52.90	0	4	1.88	4.92	3.58	4.23	1.46	75	50	24	42.8
	7	5-10	Bachelor's Degree	59.10	2	2	3.81	4	3.71	4	1.96	100	50	19	46.3
	6	5-10	Associates Degree	60.00	0	1	2.31	4.5	3.75	4.11	1.2	40	0	11	57.0

*Co-teachers reported demographics, teaching beliefs and practices, and attributions separately but teacher-child relationship quality and child's externalizing behaviors together. ** reflects average of children who were directly assessed. TID = Teacher ID; Yrs T. Exp. = Years Teaching Experience; Edu Lvl = Education Level; % of Boys = Percentage of Boys in Classrooms; # of IFSPs = Number of IFSPs; Class Behav = Classroom Behavior; TBP = Teaching Beliefs and Practices; Causal Attrib. = Causal Attributions; Respons. Attrib. = Responsibility Attributions; % E. know. = % of children with 3/3 correct in Emotion Knowledge task; % peek = Toy Wrap Assessment (Percent Who Peaked); Ext. beh. = Teacher Reported Externalizing Behaviors; Cage = child age in months