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**LATENT PROFILES OF PHYSICAL AGGRESSION AND PROSOCIAL
BEHAVIORS IN INFANCY AND TODDLERHOOD**

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LATENT PROFILES OF PHYSICAL AGGRESSION AND PROSOCIAL
BEHAVIORS IN INFANCY AND TODDLERHOOD

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by

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ABSTRACT

LATENT PROFILES OF PHYSICAL AGGRESSION AND PROSOCIAL BEHAVIORS IN INFANCY AND TODDLERHOOD

Annette Schieffelin

Physical aggression is known to be common and prevalent in infancy and toddlerhood. Individual differences in physical aggression can be relatively stable already in infancy and toddlerhood, and predict a range of negative outcomes later in life. Several studies have identified children who exhibit high levels of aggression throughout their childhood beginning in infancy and toddlerhood. Most research has focused on identifying risk factors associated with such chronic aggression. Surprisingly, there is very little attention paid to the role prosocial behavior plays in the early development of aggression. Yet, some evidence suggests that aggression and prosocial behavior can go hand in hand earlier in the development. Recent studies have even identified different groups of children who demonstrate distinct trajectories of aggression and prosocial behavior beginning in toddlerhood. Despite that both aggression and prosocial behavior emerge during the first two years of life, there is a dearth of studies examining the co-development of aggression and prosocial behaviors during that developmental period. Thus, the goal of this cross-sectional study was to examine whether I could identify distinct profiles of 4- to 15-month-old children based on their physical aggression and prosocial behavior, and whether profile membership would be differentially associated with children's age, motor skills, temper loss, and harsh-parenting.

Participants included a sample of 376 mothers in the US of infants of 4 to 15 months, (6.4% boys; $M_{age} = 9.41$ months), who completed scales measuring infant exploratory and directed aggression, prosocial behaviors, early motor development, temper loss, and harsh parenting. I conducted latent profile analyses. Relying on several fit indices, the present study identified 5 different profiles of children, aged 4-to 15 months, who displayed varied levels of prosocial behavior and/or physical aggression. The study covariates were also differentially related to behavioral profiles. These results highlight the importance of studying the early development of physical aggression together with prosocial behavior to better understand the deficits and skills of different aggressive children. Taking a person-centered approach allows researchers to identify different subgroups of infants who may benefit from different intervention efforts, depending on their unique set of skills and deficits.

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Introduction

Prosocial behavior and physical aggression (PA) emerge before the second year of life and are normative and frequent in very early childhood (Hay, 2005; Tremblay & Nagin, 2005), defined in the current study as children four months to three years of age. Individual differences in PA can be relatively stable already in very early childhood and predict a range of negative outcomes later in life (Broidy et al., 2003; Hay et al., 2014). For example, several studies have identified “chronic aggressors” who exhibit a greater frequency of aggression starting in infancy and are at marked risk for a pattern of stable behavior problems across their childhood (Côté et al., 2006; Huesmann et al., 2009). Most research has identified deficits and risk factors associated with such chronic aggression. Consequences of early onset aggression highlight the importance of identifying not only the deficits but also different strengths and skills of different physically aggressive young children so that they can receive the most effective and informed interventions. Nevertheless, there is very little attention paid to the role prosocial behavior plays in the early development of aggression. This is surprising as prosocial behavior also plays an important role in young children's socio-emotional development (Obsuth et al., 2015), is associated with positive developmental outcomes, and can serve as a protector factor for aggressive children (Bierman et al., 1993; Hawley et al., 2016; Jambon et al., 2019; Hay et al., 2021; Obsuth et al., 2015).

When studied together, although an inverse association between aggression and prosocial behavior is found by elementary school (Obsuth et al., 2015), when examined in early childhood (ages 2 to 3), evidence suggests that aggression and prosocial behavior can go hand in hand earlier in the development (Jambon et al., 2019; Hay et al., 2021). Using person-centered approaches, researchers have identified different groups of young

children who demonstrate distinct trajectories of varied levels of aggression and/or prosocial behaviors starting in toddlerhood (ages 2 to 3; Jambon et al., 2019). Since these individual differences appear early on and are relatively stable, the period from early infancy to toddlerhood marks a critical period for prevention and intervention (Patterson et al., 1992).

However, the existing research has failed to incorporate infants in their studies and focused mostly on children two years of age or older. As such, there is limited understanding on, if and how, physical aggression and prosocial behaviors (co)-occur and (co)-develop in infancy. This is disadvantageous as we may not have an accurate understanding of early social development or a complete understanding of the deficits and skills of different aggressive children early in life. To address this, the current study focuses on infants (ages 4-to-15 months). Specifically, the goal of this cross-sectional study is to use a person-centered approach to examine whether there are identifiable, distinct profiles of 4-month to 15-month-old children based on their physical aggression and prosocial behavior, and whether profile membership would be differentially associated with children's age, gender, motor abilities, temper loss, and harsh parenting.

Development of Early Physical Aggression

Physical aggression (PA) in very early childhood can be defined as “the use of physical force against another person's body” (Hay et al., 2021, p. 9). PA can be classified as being “directed” (kicking, hitting, pushing, swiping at, and throwing objects at people) or “exploratory” (hair pulling, scratching, pinching, and biting) (Del Vecchio et al., 2023, p. 13). PA is developmentally normative and common in very young children particularly in toddlerhood (Lorber et al., 2019; Tremblay & Nagin, 2005;

Tremblay, 2002). Yet a growing body of research suggests that PA is ubiquitous before the first two years of life and is even evident in infants 6 months of age (Hay et al., 2010, 2011, 2014; Lorber et al., 2017, 2019; Naerde et al., 2014). For example, a recent study found that over 90% of young children, ages 6 to 24 months, engaged in at least one act of physical aggression in the past month (Lorber et al., 2019). Additionally, general age trends suggest that depending on the type of physical aggression, the prevalence and frequency of PA increases between 6 and 24 months (Del Vecchio et al., 2016), and becomes increasing more common between 12 and 24 months in parent-report studies (Alink et al., 2006; Nærde et al., 2014). For most young children who exhibit early PA, the mean frequency in its use peaks between the second and third years of life, and continues to decline into later childhood as children acquire skills and learn strategies to regulate their natural aggressive tendencies (Alink et al., 2006; Hay, 2005; Tremblay & Nagin, 2005; Trembley et al., 2010).

While physical aggression is common between the ages of 6 to 24 months, it is important to note that not all infants behave aggressively, and for those who do, the frequency at which they display physical aggression varies (Hay et al., 2010, 2014; Lorber et al., 2017, 2018; Naerde et al., 2014; Tremblay et al., 2004). These meaningful individual differences in physical aggression can be detected in toddlerhood and in infancy, as young as 6 months (Campbell et al., 2006; Côté et al., 2007; Fanti & Henrich, 2010; NICHD Early Child Care Research Network & Arsenio, 2004; Hay et al., 2010, 2014). Researchers have identified different subgroups of infants and toddlers based on the differing frequency and levels of physical aggression (Campbell et al., 2006; Côté et al., 2007; Trembley et al., 2002; Fanti & Henrich, 2010; NICHD Early Child Care

Research Network & Arsenio, 2004). For example, while most of these infants and toddlers make occasional to moderate use of physical aggression (Côté et al., 2006; Tremblay et al., 2002, 2004; Keenan et al., 2006) a minority use PA more frequently (Côté et al., 2006; Tremblay et al., 2002, 2004; Keenan et al., 2006). The smaller proportion of infants who display these higher levels and greater frequency of physical aggression during the first years of life are referred to as "early starters" or "chronic aggressors" (Alink et al., 2006; Lorber et al., 2015; Shaw et al., 2005). These "early starters" are at marked risk for a pattern of stable behavior problems, and this distinct trajectory is in place as early as 6 to 8 months (Lorber et al., 2015; Shaw, Lacourse & Nagin, 2005). While many children learn to regulate and inhibit physical aggression by the time they enter into kindergarten, these "early starters" often do not (Tremblay et al., 1999; NICHD Early Child Care Research Network & Arsenio, 2004).

Since these individual differences appear early on and are relatively stable, the period from early infancy to toddlerhood marks a critical period for prevention and intervention (Patterson et al., 1992) and as such is an important period to understand the deficits and skills of different aggressive young children.

The Early Development of Prosocial Behavior

The development of prosocial behavior in very early childhood is important as prosocial behavior is associated with a wide range of positive outcomes across development (e.g., peer acceptance, emotion regulation skills, empathy), and is predictive of later psychological and school adjustment (Malonda et al., 2019; Moriguchi et al., 2018; Jones et al., 2015). The capacity for prosocial behavior is considered a universal developmental milestone (Young and Keenan, 2022; Gross et al., 2015) and a majority of

children begin to display prosocial behaviors such as helping, comforting, sharing, and cooperating with others between the ages of 12 and 24 months (Brownell, 2013; Drummond et al., 2015; Hay et al., 2021; Warneken, 2006; Warneken & Tomasello, 2007; Svetlova et al., 2010; Rheingold, 1982). However, most studies focus on the emergence of prosocial behavior beginning in the first year and second years of life and as such more research is needed on the development and frequency of prosocial behavior earlier in infancy. To-date, one study examining prosocial behavior in children younger than 12-months of age found that some infants display prosocial tendencies between 3 to 8 months of age (Hammond et al., 2017).

Children's prevalence and frequency in the use of prosocial behavior shows patterns of continuity and change over time (Knafo & Plomin, 2006; Hay et al., 2021; Nantel-Vivier et al., 2014). However, relative to the research on early physical aggression, studies on prosocial behavior have focused little on individual differences in very early childhood. While the importance of identifying different subgroups of children who might show different developmental trajectories of prosocial behavior has been acknowledged (e.g., Malti & Dys, 2018), the empirical research has been close to nonexistent in very early childhood. To-date, only one study has utilized a person-centered approach to examine this beginning in toddlerhood. Specifically, Nantel-Vivier and colleagues examined developmental trajectories of mother-reported prosociality from the ages of two to eleven in a large, nationally representative sample (Nantel-Vivier et al., 2014). The study identified three trajectory groups who demonstrated low (28% of the sample), moderate (51% of the sample), and high (22% of the sample) levels of prosocial behavior across time. These findings suggest that meaningful individual differences

emerge in toddlerhood, however, more research is needed. As such, less is known about the individual differences in the frequency of prosocial behavior beginning in infancy and why some infants are more likely or less likely to display these behaviors than others.

Co-Development of Prosocial and Aggressive Behavior in Early Childhood

Even though physical aggression and prosocial behaviors emerge around the same time and are central aspects of social development, they are rarely studied together in infancy and toddlerhood (Romaro, 2005; Hayes et al., 2021). This is problematic because studying these two behaviors separately prevents us from having an accurate understanding of early social development and thus there is a need for a more nuanced understanding of the deficits and skills of different prosocial and/or aggressive children before the age of two. As such, it is useful to understand different strengths and weaknesses in children's early social development of prosocial behavior and physical aggression by examining both behaviors together due to the need to promote the former and reduce the latter through early intervention and prevention efforts.

Different assumptions and perspectives exist on the relationship between physical aggression and prosocial behaviors (e.g., social deficits model vs. "bistrategic"; Hawley et al., 2014; Crick & Dodge, 1994). More specifically, children who exhibit physical aggression at high levels are often considered to have social deficits (Akhtar & Bradley, 1991; Crick & Dodge, 1994). While this "deficit" model of aggression has been established in older children (Kokko et al., 2006; Hay et al., 2021), where robust negative correlations have been found between prosocial and aggressive tendencies, it might not generalize to younger populations (i.e., infancy and toddlerhood) and may not apply uniformly to the development of early aggression.

When these two behaviors are examined together in toddlerhood the associations between early physical aggression and prosocial behaviors have been mixed. Some studies found no association between the two behaviors early on (the correlation may not be significant) (Persson, 2005; Hayes et al., 2021). Others have found that prosocial behavior is positively associated with physical aggression (Garner & Dunsmore, 2011; Gill & Calkins, 2003; Hayes et al., 2021). In other words, they found that toddlers who are more physically aggressive are also more prosocial (Garner & Dunsmore, 2011; Gill & Calkins, 2003; Hay et al., 2017, 2021). These studies argue that both aggressive and prosocial behaviors might have the same core theoretical and temperamental underpinnings (e.g., sociability; Grusec et al., 2011; Persson, 2005).

Researchers have begun to expand on these findings by examining more than just the early associations between these two behaviors (Nantel-Vivier et al., 2014; Jambon et al., 2019). Using person-centered approaches, researchers have identified different groups of children who demonstrate distinct trajectories of aggression and prosocial behavior beginning in toddlerhood. Specifically, Nantel-Vivier and colleagues examined developmental trajectories of mother-reported prosociality and physical aggression in children from the ages of two to eleven in a large, nationally representative sample (Nantel-Vivier et al., 2014). These researchers found three distinct profiles. The most common was a joint trajectory, who exhibited moderate levels of both prosocial behavior and physical aggression from the ages of 2 to 11. This group consisting of 28% of the sample. They also found a proportion of highly physically aggressive children who followed a low prosocial trajectory and vice versa, with highly prosocial children following a low physical aggressive trajectory.

Furthermore, Jambon and colleagues examined the co-development of physical aggression and prosocial behavior across the preschool years (3 to 6 years old). They identified four distinct behavioral trajectories. They found that while most young children demonstrated low-stable aggression with high-increasing prosocial behavior (54.4%), some young children (19%) demonstrated increasing levels of aggression while still exhibiting moderate levels of prosocial behavior. However, they also found a small profile of young children (6.7%) who were on a chronic aggressive trajectory (“chronic aggressors”), who followed a trajectory of persistently high aggression and relatively low-stable prosocial behavior (Jambon et al., 2019).

Overall, these studies found individual differences in the development and trajectories of these two behaviors starting in early childhood, and suggest that not all children who demonstrate moderate levels of physical aggression are deficient in their social skills. Unfortunately, in both studies, they failed to include the period during which physical aggression and prosocial behavior both emerge and are increasingly prevalent (between sixth months and the second birthday; Alink et al., 2006; Kanfo et al., 2008; Nærde et al., 2014). Because the existing research solely focuses on young children who are two years or older, we do not know if these findings generalize to young children before the age of two or if these two behaviors are associated, or co-occur even earlier in development.

Additionally, these existing studies also raise a question of whether prosocial behaviors never emerge among subgroups of highly aggressive children or whether, due to a variety of risk factors, these behaviors disappear from their repertoire already early on (by 2 years of age). Thus, it is important to identify if there are young children display

both behaviors early on as it would be most effective to implement early interventions when such prosocial tendencies have not yet been erased or reduced by the presence of several risk factors (Grusec et al., 2011, p. 560).

Predictors of Early Physical Aggression and Prosocial Behaviors

Separate lines of research found several key factors that predict an important role in the development and prevalence of physical aggression and/or prosocial behavior in early childhood. When studied together the association between young children's prosocial behavior and physical aggression may be also influenced by certain predictors and individual differences. Better understanding of early risk factors that are differentially associated with behavioral profiles would help to inform early prevention and intervention efforts and further our understanding of the early social development of these two behaviors.

Several studies examined risk factors of early physical aggression. It is well established that specific factors related to child individual (i.e., age and motor ability, temper loss) and parenting characteristics (i.e., parenting style and practices) play an important role in the prevalence and frequency of physical aggression in infancy and toddlerhood (Cote, et al., 2007; Lorber et al., 2014; Tremblay & Nagin, 2005). While there is less of a clear understanding about what factors contribute to the prevalence and frequency of prosocial behaviors before the first two years of life, several studies also found that certain child (i.e., age and motor ability) and parenting related factors are associated with the prevalence of early prosocial behavior.

Child age is an important factor in the prevalence and frequency of early PA and prosocial behavior. Age trends related to PA and prosocial reflect increases in the

prevalence and/or frequency of PA between the ages of 6 and 24 months (Lorber et al., 2019) and increases in the frequency of prosociality during toddlerhood (Hammond et al., 2015). Additionally, as infants age, motor abilities develop and certain cognitive, social-emotional abilities “come online” which can predict individual differences in the frequency of both behaviors. More specifically, before 12 months of age, various motor abilities come online for infants, and by around 12 months of age, the average infant reaches the milestone of walking independently (World Health Organization Multicentre Growth Reference Study Group, 2006). Consequently, studies have found that the development of motor abilities, including increased locomotion, are associated with anger and frequency of PA in early childhood (Adolph et al., 2019; Hay et al., 2011, 2014; Tremblay & Nagin, 2005). Researchers have even argued that as infants' motor skills develop, they naturally and inevitably will use physical aggression against others (Tremblay & Nagin, 2005). Similarly, to early PA, increases in motor abilities and locomotion, are also associated with the emergence and frequency of prosocial behavior in infants and toddlers (Hammond et al., 2015; Hay & Cook, 2007). As such, I expected that profiles with higher high levels of physical aggression and/ or prosocial behavior would be associated with increased age and motor abilities as compared to a profile of infants with the lowest levels of both behaviors.

Differences in young children's characteristics related to capacity for anger and proneness to temper loss are especially related to the frequency and prevalence of PA in infancy and toddlerhood. More specifically, anger, the extreme end of which is referred to as temper loss (Wakschlag et al., 2012), comes online within the first six months of infancy (Lewis, 2008; Thompson, 2015) and some young children have a greater capacity

for anger and are more prone to frequently losing their temper. Higher rates of temper loss in early childhood are predictive of the use of early PA (Wekschlag et al., 2012; Fanti & Henrich, 2010; Lorber et al., 2014; Nærde et al., 2014). Thus, I expected that profiles that involve high levels of physical aggression would also show high levels of temper loss compared to low aggression/high prosocial profiles.

Additionally, infants' rapid development of goal directed behavior during this same period (Tomasello, Carpenter, Call, Behne, & Moll, 2005), combined with certain infant's higher capacity for anger, both play a role in supporting the growth of anger, and in turn, use of physical aggression. More specifically, as infants age, they are better able to generate and then engage goal directed-behavior (e.g., identify they want a toy or object and then reach for it) (Lorber et al., 2014; Hay et al., 2021) and are also able to recognize when they are being blocked from reaching their goal (e.g., the parent moves the toy or object further away from infant). Consequently, as a result infants may be more likely to experience frustration when thwarted and react with the use of physical aggression. For example, Lorber et al. (2014) found in infants ranging from 8 months to 24 months, those who more frequently exhibited aggressive behavior (e.g., hitting, kicking) were more motorically active, and tended to exhibit more anger when blocked from reaching their goal.

Lastly, parent-child interactions, specifically negative parenting practices, are a predictive of the prevalence and frequency of PA in early childhood. Harsh parenting contributes to the development and maintenance of physical aggression in young children (Dodge, Coie & Lyman, 2006; Tremblay, 2000; Patterson et al., 1992), with harsher parenting leading to more frequent and higher levels of PA. This association has

been found in infants as young as 10 months of age and is well documented in toddlerhood (Belsky, Hsieh, & Crnic, 1998; Côté, Vaillancourt, Lelance, Nagin, & Tremblay, 2006; Del Vecchio & O'Leary, 2006; Leadbeater, Bishop, & Raver, 1996; Martin, 1981). Harsher parenting practices also increase the probability that young children will follow chronic aggression trajectories across the development (Côté et al., 2006; Nantel-Vivier., 2014; Tremblay, 2004). In contrast, less is known about the role harsh parenting practices play in early prosocial development before the second year of life. However, based on existing studies the findings are mixed. There is some evidence that harsh parenting undermines prosocial behavior (Romaro, 2005; Eisenberg & Fabes, 1998; Deater-Deckard et al., 2001) and some evidence that there is no significant association between the two (Daniel et al., 2016; Jambon et al., 2019).

When prosocial behavior and physical aggression are studied together in the same sample in toddlerhood, when compared to nonaggressive children, higher levels of exposure to harsh disciplinary practices are associated with an increased likelihood of following a moderate or high physical aggression trajectories regardless of prosocial behaviour trajectory. This suggests that young children who experience high aggression only or both aggressive and prosocial tendencies (Nantel-Vivier et al., 2014), may not differ from nonaggressive youth in the amount of support they receive from parents but are more likely to receive harsh disciplinary practices (e.g., spanking). Thus, I expected that profiles with moderate to high levels of physical aggression will be associated harsher parenting practices irrespective of levels of prosocial behavior (Jambon et al., 2019; Nantel-Vivier et al., 2014).

Current Study

Despite empirical evidence that both physical aggression and prosocial behavior emerge before the first two years of life and can co-occur (may be associated) in early childhood, there is a dearth of studies examining differences in (co) development of aggression and prosocial behaviors during this developmental period. Empirical research focused on identifying subgroups of young children who may display prosocial behavior and/or physical aggression is close to nonexistent in infants younger than 18 months (Gross et al., 2015; Newton, Thompson, & Goodman, 2016). As such, we have a limited empirical understanding of whether and how prosocial behaviors, and/or physical aggression may (co)-occur early in infancy and what factors contribute to individual differences in the early development of these behaviors. Understanding early on different behavioral profiles and the predictors contributing to different profiles of aggression and/or prosocial behavior is essential to inform intervention and prevention efforts that have traditionally targeted risk factors and deficits that contribute to chronic aggression and pervasive conduct problems.

Thus, the aims of this person-centered, cross-sectional study were (1) to examine whether we could identify distinct profiles of 4- to 15-month-old children based on their levels of physical aggression (exploratory and directed) and prosocial behaviors and (2) whether profile membership would be differentially associated with children's age, gender, motor skills, temper loss, and harsh parenting. Due to the paucity of current research involving this age range of infants, the present study generated hypotheses from previous empirical work. First, based on prior research with older infants (12 months of

age) and toddlers (aged 3-6), and children (aged 2-10) (e.g., Hayes et al., 2021; Jambon et al., 2019; Nantel-Vivier et al., 2014), I hypothesized approximately four distinct infant behavioral profiles would emerge from the data. These would include: 1) a profile of infants who display *low aggression and low prosocial behavior* (low on prosocial and aggression), 2) a profile of infants who display *moderate to high aggression, low prosocial* (high aggression), 3) a profile of infants *moderate to high on both aggression and prosocial behaviors* (prosocial and physically aggressive), 4) a profile of infants *moderate to high on prosocial and low on aggression* (mod to high prosocial).

I make no firm hypotheses for how profile membership would significantly differ and be differentially associated with each predictor variable: infant age, gender, motor ability and locomotion, temper loss, and parenting practices (e.g., harsh/ over-reactive discipline practices.) However, based on previous research with young children (Jambon et al., 2019; Hayes et al., 2021), I anticipate that profiles with higher levels of physical aggression and lower levels prosocial behaviors will be associated with more developed motor abilities, greater frequency of temper-loss, and have parents who engage in harsher parenting practices compared to the profile of infants who demonstrate low levels of physical aggression with low and/or average levels of prosocial behavior.

Conversely, I anticipate that profiles with average or higher rates of prosocial behaviors will be associated with older age, greater motor ability, and lower rates of temper loss. I also predict that profiles with moderate to higher levels of physical aggression will be associated with harsher parenting practices, irrespective of levels of prosocial behavior (Jambon et al., 2019; Nantel-Vivier et al., 2014). I also expect that the difference between infants who are highly aggressive vs. both prosocial and physically

aggressive will primarily be due to harsher parenting practices and greater frequency of temper-loss. Lastly, based on prior research (Trembley, 2005), I predict that a profile with lower levels of physical aggression and prosocial behavior will be associated with younger age, less developed motor abilities, and less frequent rates of temper loss.

Methods

Participants

The study participants included 377 mothers of infants ages 4 to 15 months (46% boys; $M_{age} = 9.41$ months, $SD = 3.63$) recruited through Qualtrics, a web-based recruitment service and survey host. Several recruitment quotas were established to ensure an even representation of participants across the 4- to 15-month age spectrum and an overall a sample that was reasonably representative of the United States population. Participants were recruited until each quota was filled. Except for the child's age, the quota targets were each based on the 2020 United States Census data. Of the 377 mothers who participated in the study, 22% identified as Spanish, Latina, or Hispanic of any race, 72% identified as White, 16%, as African American or Caribbean American, 5% as Asian, 2% as American Indian or Alaska Native, 0.8% as Native Hawaiian or other Pacific Islander. Most mothers (84%) were married or lived with a partner. Forty percent of mothers were employed full-time, and 32% had earned a bachelor's degree or higher. Annual family income was assessed in ranges (\$14,999 to \$120,000 or more) and 66% of participants had an annual family income greater than \$30,000.

Procedure

Research participants were recruited through the Qualtrics Panel from several sources (e.g., social media, web publishers, member referrals). To be included in the present study, the participant needed to be a mother who was at least 18 years of age with at least one child between the ages of 4- and 15 months, who resided in the United States and was comfortable completing the surveys in English. Each mother also had to first complete a 5-item, validation screener to ensure eligibility to participate in the study. For

the questionnaires, demographic items were presented first followed by the remainder of the battery in a randomized order.

Measures

Physical aggression. Infant exploratory (e.g., "bite someone"; $\alpha = .82$) and directed physical aggression (e.g., "kick someone"; $\alpha = .90$) subscales (Del Vecchio et al., 2023) were used from the physical aggression (PA) subscale of the Child Behavior Record (CBR; Lorber et al., 2019). The PA subscale consists of ten items that measure the frequency of physical aggression (e.g., "hit or smack someone") in infants and toddlers. Caregivers rate the frequency of the behaviors over the past 2 weeks, from 1 = Never to 6 = Many times each day. Items were recoded so that higher scores reflect greater frequency of exploratory and directed physical aggression. The five items measuring exploratory aggression and the five items measuring directed aggression were each averaged to find the mean scores, with higher scores reflecting the greater frequency of each physically aggressive behavior.

Prosocial behavior. Prosocial behavior was measured with four items from the Child Behavior Record (CBR Lorber et al., 2019) that tap the frequency of children's prosocial behaviors (e.g., "Play nicely with someone; "share a toy with someone"; "try to help someone"). The four items were averaged, and higher scores reflect more frequent prosocial behaviors ($\alpha = .70$)

Early motor development. The Early Motor Questionnaire (EMQ; Libertus & Landa, 2013) is a parent-report measure of early motor development organized around different contexts a child encounters during everyday situations. The items included on the EMQ describe motor behaviors typically emerging within the first 2 years of life. We

used 28 items from the Gross Motor sub-scale, which included questions about gross movements (e.g., "what the child can do while lying on his/her back," "when placed into a crawling position", "when placed into a sitting position", "when placed into a standing position," and "when moving around freely") and captures infant locomotion. The EMQ uses a 5-point scale ranging from "Sure that child does NOT show behavior" to "Sure that child shows this behavior." One item was reverse scored and then the 28 items were averaged so that higher average scores reflect greater degrees of motor ability, including development of locomotion ($\alpha = .95$).

Temper loss. Frequency of child temper loss was measured using the temper loss scale of the Multidimensional Assessment of Preschool Disruptive Behavior Infant-Toddler Version Short Form (MAP-DB; $\alpha = .91$; Wakschlag et al., 2014; 2016), which is a developmentally sensitive measure that asks about the frequency, quality, and severity of many temper tantrum behaviors over the past month. The Temper Loss scale was designed to assess behaviors from normative to intense anger expression (i.e., tantrums in the face of frustration to more intense, dysregulated tantrums). The Temper Loss scale has strong psychometric properties, and it is also associated with emotional and behavioral problems (Wakschlag et al., 2014; 2012). The Infant-Toddler Short Form includes 4 items about temper loss (e.g., "keep on having a temper tantrum even when you tried to help him/her calm down"; Wakschlag, 2016) that are appropriate for infants and toddlers. Parents rate the frequency of the behaviors in the past month, from 0=Never to 5=Many times each day. The 4 items were averaged and higher scores reflect more frequent child temper loss ($\alpha = .80$)

Harsh discipline. Harsh parenting was measured with 5 items from the Parenting Scale - Short Form (PS:SF: Arnold, et al., 1993; Lorber et al., 2014) that assesses parenting responses to child misbehavior (e.g., "When my child misbehaves... "I raise my voice or yell"). Three items were reverse scored and then items were averaged so that higher average scores reflect greater degrees of harsh discipline. The PS: SF has been validated against child behavior problems and observations of parent discipline (Arnold et al., 1993). Cronbach's alpha for this sample was .74.

Data Analytic Strategy

All statistical analyses were performed with SPSS Version 28.0. and Mplus Version 8.0 (Muthén & Muthén, 2012–2019). The missingness of the data was examined before conducting any analyses. Only one case had missing data on two of the variables; due to this one case having missing data on the aggression and prosocial variables, the main analyses were conducted with 376 participants.

First, descriptive statistics and correlations among the variables were examined. Next, I conducted latent profile analyses (Muthén & Muthén, 1998-2017) to identify the presence of latent profiles based on directed and exploratory aggression and prosocial scores. To ease the interpretation, we standardized all three variables. I began with a one class model and increased the number of until the smallest class contained less than approximately 5% of the total sample. Continuing to generate models past this point would indicate a strong possibility of overfitting the data (Nylund et al., 2007). I examined 1- to 5- class solutions. The most optimal number of classes was decided based on model fit indices, as well as the interpretability and meaningfulness of the solution. The most optimal class solution was selected based on several fit indices: Bayesian

Information Criterion (BIC; Schwartz, 1978), entropy, the Lo-Mendell-Rubin Adjusted LTR Test (Adj LMR-LRT), and bootstrapped Likelihood ratio Test (BLRT; McLachlan & Peel, 2000). For the BIC, lower values indicate a better model fit. Entropy is an index (values ranging from 0 to 1) indicating how accurately the model defines the classes (Wang et al., 2017). Entropy values greater than .80 suggest high separation of classes (Celeux & Soromenho, 1996). For the 2- to 5-class solutions, the adjusted LMR-LRT and BLRT were used to determine whether a model with k classes significantly improved model fit over a model with $k-1$ classes (Nylund et al., 2007). A significant p value suggests that the k -class model fits the data better than the $k-1$ model (Ferguson et al., 2019). After establishing the most optimal class solution, I conducted a multinomial logistic regression using the R3STEP method (which guarantees that the inclusion of covariates does not influence the formation of classes) provided in Mplus (Asparouhov & Muthen, 2013) to examine differences between latent groups regarding covariates (child age, motor skills, temper loss, harsh parenting, and gender). Gender was entered as a control variable.

Results

Descriptive Statistics and Preliminary Analyses

Descriptive statistics and Spearman's rank correlations among the primary variables appear in Table 1. Prosocial behavior was not significantly associated with exploratory or directed aggression. Motor ability was significantly associated with prosocial behavior ($r_s = 0.21, p < .001$) and directed aggression ($r_s = 0.35, p < .001$). However, it was not associated with exploratory aggression. Temper loss was significantly associated with both exploratory ($r_s = 0.50, p < .001$) and directed aggression ($r_s = 0.64, p < .001$), but there was not a significant association between temper loss and prosocial behavior. There was a positive correlation between harsh parenting and exploratory ($r_s = 0.35, p < .001$) and directed aggression ($r_s = 0.43, p < .001$). Harsh parenting was also significantly associated with temper loss ($r_s = 0.46, p < .001$).

Latent Profile Analysis

Identification of Profiles

Relying on several fit indices that appear in Table 2. I decided that a 5-class solution provided the most optimal fit (Figure 1). Fit indices for all the models are displayed in Table 2. According to all the fit indices (except for the entropy), more classes provided a better model fit (Figure 1). More specifically, the 5-class solution had the lowest BIC-value and provided a better fit to the data than the 4-class solution. The entropy for model 5 was also high (.91). Finally, a new class emerged in the 5-class solution that was in line with prior research and expectations.

Interpretation of Classes

The standardized means of directed and exploratory aggression, and prosocial behavior for each profile are displayed in Table 3 and Figure 1. The largest class (49.4% of the sample; *Low aggression-slightly above average prosocial*) demonstrated low levels of both types of aggression and slightly above average levels of prosocial behavior. The second largest class, 23.4% of the children (*Average aggression-prosocial*) displayed mean levels of all three types of behaviors. Fourteen-point four percent of the children (14.4% of the sample; *Moderately high aggression-average prosocial*) had relatively high levels of aggression (above the sample mean) and mean levels of prosocial behavior. Eight-point one percent of the children (8.1% of the sample; *High aggression-prosocial*) demonstrated the highest levels of aggression and prosocial behavior (all three scores were above the sample mean). Finally, 4.7% of the sample (*Low aggression-prosocial*) showed low levels of all three types of behaviors.

Comparison of Profiles and Predictors of Class Membership

Results from multinomial regression analyses are presented in Table 4. As expected, infants who displayed low levels of aggression and prosocial behavior had lower motor skills compared to all the other classes. Also, younger infants were more likely to be classified in the *Low-aggression-prosocial* class compared to the *Low-aggression-slightly above average-prosocial* and *Average aggression-prosocial* classes. Gender was not associated with class membership.

Temper loss differentiated between all the classes, with one exception. Overall, the higher the frequency of temper loss, the greater the likelihood of being classified in profiles with higher levels of aggression. For instance, infants who demonstrated high levels of all three types of behaviors had higher scores on temper loss compared to all the

other classes. Infants who were the members of the *Moderately high aggression-average prosocial* class were higher on temper loss compared to the *Average aggression-prosocial* and low aggression classes. Children who were the members of the low aggression classes (but who differed in terms of prosocial behavior) did not differ in terms of their rates temper loss. Parents who engaged in higher rates of harsh parenting had infants who were more likely to be members of the *High aggression-prosocial*, the *Moderately high aggression-average prosocial*, and *Average aggression-prosocial* classes compared to the *Low aggression-average prosocial* class.

Discussion

The aims of the present study were to use a person-centered approach to identify distinct profiles of 4- to 15-month-old children based on their levels of physical aggression (exploratory and directed) and prosocial behaviors and to examine whether profile membership would be differentially associated with children's age, motor skills, temper loss, and harsh parenting. Based on previous research, I hypothesized that there would be four distinct profiles of infants. I expected there would be profiles of infants who displayed either purely prosocial behaviors (high prosocial) or purely physically aggressive behaviors (high physically aggressive). I also anticipated a profile of infants who would display moderate to high levels of both behaviors (prosocial and physical aggression) and a profile that would display low levels of both behaviors (low prosocial and physically aggressive). Based on findings from previous studies, I expected that profile membership would be differentially associated with infant age, motor abilities, temper loss, and harsh parenting practices.

Latent Profiles

In support of the first main hypothesis, the present study identified five different profiles of young children, aged 4-to 15 months who displayed varied levels of prosocial behavior and/or physical aggression. The identified behavioral profiles both support and further the existing developmental literature and have important practical implications. As expected, the largest profile (*Low aggression-slightly above average prosocial*) demonstrated slightly above average levels of prosocial behavior with low levels of both types of aggression (Jambon et al., 2019; Nantel-Vivier et al., 2014). The second largest profile (*Average aggression-prosocial*) displayed average levels of prosocial behavior and both types of physical aggression (Jambon et al., 2019; Nantel-Vivier et al., 2014;

Hayes et al., 2021). I also identified a profile who displayed moderately high physical aggression with average levels of prosocial behavior, a profile with higher levels of physical aggression and prosocial behavior (all three scores were above the sample mean), and a profile with low levels of both behaviors (*low prosocial-aggression*). These results are consistent with previous literature that has found individual differences exist in the prevalence of physical aggression and prosocial behaviors in young children and that these behaviors may co-occur for some children in early childhood (Hayes et al., 2021; Jambon et al., 2019; Nantel-Vivier et al., 2014).

Contrary to my hypothesis, previous findings in toddlers, aged 2-3 years old (Jambon et al., 2019; Nantel-Vivier et al., 2014; Tremblay, 2002), and the social deficits model of aggression (Akhtar & Bradley, 1991; Crick & Dodge, 1994) the current study did not identify a profile of infants who displayed high levels of aggression and low levels of prosocial behavior. Rather, three out of the five classes included infants who demonstrated average to high levels of physical aggression with average to high levels of prosocial behaviors. These profiles provide initial evidence that when prosocial behavior and physical aggression are studied together, this deficits framework may not provide an accurate account of early social development. In fact, such findings are at odds with the deficit perspective that aggression and prosocial behavior are the opposite ends of a dimension of social competence, at least in very early childhood. As such, these identified profiles provide a richer understanding of the social development of different profiles aggressive young children as these findings offer new insights into different strengths and of aggressive infants.

Furthermore, these profiles, especially the profile of infants who are high on aggression and prosocial behavior, further our current understanding of “chronic aggressors” (Alink et al., 2006; Lorber et al., 2015; Shaw et al., 2005). The finding that high levels of prosocial behavior also emerge among the subgroup of highly aggressive children may suggest that “chronic aggressors” found in other studies may not always lack prosocial tendencies. More specifically, this profile may offer some insight into the question of whether prosocial behaviors never emerge among subgroups of highly aggressive children, or whether, due to a variety of risk factors, these behaviors disappear from their repertoire already early on (possibly by two years of age; Jambon et al., 2019). If this is true, prevention and intervention efforts would be more cost-effective if they were implemented when such prosocial tendencies have not yet been erased (Grusec et al., 2011) and will be important for prevention efforts to continue to foster prosocial tendencies as children develop while simultaneously reducing physical aggression.

The current study findings also shed important light on the early development of prosocial behavior in young children before the age of 15-months. The largest identified profile consisted of young children who demonstrated slightly above average levels of prosocial behavior with low levels of both types of aggression. These findings are consistent with previous studies and further suggest that while physical aggression is common in infancy and toddlerhood (Hay, 2005; Tremblay & Nagin, 2005; Tremblay et al., 2002; Côté et al., 2006), many young children refrain from using aggression at high frequency (Tremblay et al., 2002) and may demonstrate more prosocial tendencies. Moreover, the finding that every profile of young children, besides the low prosocial and low aggression group, displayed average to above average levels of prosocial behavior

further provides evidence that prosocial behavior is common and universal in early childhood (Young and Keenan, 2022; Gross et al., 2015). As such it is important for parents to continue to utilize parenting and environmental strategies to continue to foster these prosocial tendencies.

The finding that prosocial behavior is common and that different profiles of aggressive infants were also prosocial is promising as the presence of prosocial behavior with aggression can be protective. In fact, studies in toddlerhood have found that compared to purely aggressive children, possessing prosocial skills with aggression can be protective and mitigate the deleterious effects of aggression on young children's social-adjustment (e.g., peer rejection; Bierman, Smoot, & Aumiller, 1993; Hawley et al., 2014; Jambon et al., 2019).

Predictors of Profile Membership:

The current study findings support the second main hypothesis that profile membership would be differentially associated with infant age, motor abilities, temper loss, and harsh parenting practices. As expected, all predictors, except for child gender, were significantly associated with membership across different profiles.

In line with the study's hypothesis, infants who displayed low levels of all three types of behaviors had less developed motor skills compared to all the other groups, suggesting that the emergence of social behaviors require a certain level of motor skills (e.g., an ability to interact with and move around in one's environment; Lorber et al., 2014; Hay et al., 2021). These findings are also consistent with empirical research highlighting the association between motor ability and frequency of PA and prosocial behaviors in separate lines of research (Adolph et al., 2019; World Health Organization

Multicentre Growth Reference Study Group, 2006; Hammond et al., 2015; Hay & Cook, 2007). More specifically, that as infants mature and more motor abilities come online, infants may interact with their social environment more frequently using either prosocial behaviors or both physically aggressive and prosocial behaviors (Lorber et al., 2014; Hay et al., 2021). While I expected these findings, these results are novel as motor ability related to association with the (co) development of PA and prosocial behavior has not been examined in young children ages 4-to-15 months.

As expected, age also served as a significant predictor variable when compared to each distinct profile. More specifically, children who were younger were more likely to belong to the low physical aggression and prosocial behavior profile compared to the *Low-aggression-slightly above average-prosocial* and *Average aggression-prosocial* classes. These findings indicate that age is important when predicting membership to profiles that have low levels of both behaviors. The results however may also be partially explained by the high correlation between age and motor abilities. Contrary to my hypothesis and previous research (Lorber et al., 2019), children who were older were not more likely to belong to profiles with average to high levels of aggression or prosocial behaviors. It is possible, however, that age would significantly differentiate between average to high aggression profiles compared other profiles, if in a future study the sample included slightly older children (i.e., two to three year old children) as around this age the development of different skills (i.e., emotional, cognitive, and physical) has been found to contribute to more frequent use of aggression and/or prosocial behaviors (Adolph & Robinson, 2015; Thelen, 2013; Tomasello et al., 2005; Zachry & Mitchell, 2011; Hammond et al., 2015; Lorber et al., 2019).

In support of my hypothesis, temper loss was associated with profile membership such that the higher the frequency of temper loss, the greater the likelihood of being classified in profiles with higher levels of aggression. In other words, infants who were the members of the *High Aggression-Prosocial* and *Moderately high aggression-average prosocial* class were higher on temper loss compared to the *Average aggression-prosocial* and low aggression classes. The current findings suggest that the frequency of temper loss and physical aggression go hand in hand, which extends existing research that has found that temper loss is associated with the development and frequency of physical aggression in early childhood (Dodge, Coie & Lyman, 2006; Tremblay, 2000; Patterson et al., 1992; Tremblay, 2005).

Additionally, these findings may support the assumption that most aggressive acts in infancy and toddlerhood are due to developing agency and in response to frustration when children's goals (e.g., wanting something that is prohibited) are blocked (Lewis, 2008). The results also show that young children who are characterized by higher levels of temper loss do not only resort to aggression but also prosocial behavior (Dodge, Coie & Lyman, 2006; Tremblay, 2000; Patterson et al., 1992; Tremblay, 2005). While less is known about the association between temper loss and prosocial behavior in infancy, this findings may be explained by the belief that physical aggression and prosocial behavior in young children share common developmental underpinnings such as sociability, which leads them to interact more with their social environment (Grusec et al., 2011; Persson, 2005) Consequently, temper loss might be one of the characteristics of more sociable infants (Grusec et al., 2011; Persson, 2005). However, future studies are needed to explore this further.

Lastly parents who engaged in higher rates of harsh parenting had infants who were more likely to be the members of *High aggression-prosocial*, the *Moderately high aggression-average prosocial* and *Average aggression-prosocial* classes when compared to the *Low aggression-average prosocial* class. Hence, infants who are prosocial without resorting to physical aggression may be less likely to have parents who model negative behaviors such as physical aggression. This is also in line with Jambon et al. (2019) who found that prosocial children were less likely to expose to interparental conflict. It is also in line with several studies that found that young children who are physically aggressive in early childhood (Olson et al., 2017; Tremblay et al., 2004), and who exhibit both aggressive and prosocial tendencies (Nantel-Vivier et al., 2014; Jambon et al., 2019), are more likely to experience aggressive modeling in the form of harsh disciplinary practices than nonaggressive children. As expected, harsher parenting practices was not associated with profile membership to the class with low prosocial behavior. This finding suggests that the presence of harsh parenting alone does not appear to always hinder prosocial development (Padilla-Walker, 2014) and there may be another important parenting covariates (i.e., parenting strategies, warm, sensitive parenting), and/or child characteristics that differentiate between classes with varying levels of prosocial behavior. Future longitudinal studies would be needed to evaluate this and whether harsh parenting is associated with a greater likelihood of belonging to profiles with stable/increasing levels of aggression and decreasing levels of prosocial behavior.

Strengths and Limitations of Current Study

There are several strengths of the current study. By using a person-centered approach to examining aggression and prosocial behavior together and moving beyond

commonly used variable-centered statistical approaches (i.e., correlations or regression), the current study was able to uncover aspects of early social development by providing a more nuanced understanding of early social functioning and development. More specifically, this is the first research study to utilize a person, centered approach to examine and identify latent profiles of physical aggression and prosocial in children ages 4 to 15 months and the associated predictors of infant profile membership. As such, this novel research contributes to our limited knowledge about how these two important aspects of social-emotional development in children before the age of two. Additionally, while observational data can be beneficial, the study's methodological design (e.g., use of maternal self-report) reduced the demand characteristics of the study. In other words, one may expect that mothers would be more likely to report on harsh parenting practices occurring at a home when it is anonymous and they are not in the presence of an experimenter. Lastly, the overall study sample size was relatively large, and the sample was representative of the US population at the time of the study.

While there were strengths to the current study, several limitations are also important to consider. The cross-sectional design of the study prevented the ability to make inferences about individual differences in developmental trajectories of PA and prosocial behavior across time. A longitudinal study design would help us to further the current findings by identifying distinct trajectories of these different profiles of physical aggression and prosocial behavior across development and how variables such as temper loss and parenting. may influence stability and/or differences in these developmental trajectories over time. This would be especially important to study as previously discussed, it would provide a better understanding of the early social development of

“chronic aggressors” as I only found profiles of infants with PA who also displayed prosocial behaviors. Furthermore, studies have suggested that possessing prosocial skills can mitigate the deleterious effects of aggression on children’s social-adjustment (e.g., peer rejection; Bierman, Smoot, & Aumiller, 1993), and that some aggressive children also use prosocial behaviors in social interaction (“bi-strategic” children”) throughout development (Hawley et al. 2016). A future longitudinal study would help us to see if over time, prosocial behaviors in combination with aggression do in fact serve as a protective factor and if this profile is stable beginning in infancy (between 4-to-15 months of age).

Another possible limitation of our study was that the smallest profile class was less than 5% of the sample (Ferguson et al., 2019). When selecting which class solution to retain, smallest class size is important to consider. However, it is not the most important criteria and must be examined in the context of other fit indices as well as the interoperability of the overall profile. While picking a class solution with a class size under 5% may limit the overall generalizability and, or, the replicability of these findings in smaller samples, the model fit statistics and current hypotheses based on previous research supported the decision to retain the 5-class solution. In other words, the 5-class solution had excellent fit indices, could be discriminated from the 4- class solution and was supported by our hypothesis and previous empirical findings and contributed to our understanding of early social development. However, future studies should employ a larger sample and test replicability.

In terms of measures, there were two limitations to the study. First, the current study’s measure of prosocial behavior is a limitation as it only included 5-items of

prosocial behavior and it does not incorporate all dimensions of prosocial behavior (i.e., helping, sharing, and comforting; Radke-Yarrow et al., 1983). Different forms of prosocial behavior do not necessarily always correlate with each other in early childhood (Eisenberg & Fabes, 1998; Radke-Yarrow et al., 1983) and develop at a different pace (Brownell, 2013; Dunfield and Kuhlmeier., 2013; Warneken & Tomasello., 2009). As such in terms of future research, it would be useful to extend current findings by including a different measure of prosocial behavior to examine profile membership based on different dimensions of prosocial behavior.

Second, the study only examined harsh parenting without including measures of positive parenting (e.g., parental warmth, reinforcement strategies etc.). In future studies, it will be important to study both aspects of positive and negative parenting because 1) positive parenting practices, such as warm and sensitive parenting as well ones that rely on supportive scaffolding, are associated with the development of prosocial behavior in early childhood (Daniel et al., 2016; Laible et al., 2016; Gross et al., 2015; Hammond & Carpendale, 2015); 2) caregivers who are characterized by the use of negative practices, such as harsh practices, are not necessarily low in warmth; and 3) low levels of negative parenting alone do not necessarily promote the development of prosocial behavior and high levels of harsh parenting alone do not always lead to less frequent prosocial behavior (Daniel et al., 2016; Nantel-Vivier et al., 2014; Jambon et al., 2019).

Conclusions and Implications

Infancy and early toddlerhood represent a critical period in which young children develop different ways of interacting with the social world. As such learning more about the heterogeneity of the early (co)-development of physical aggression and prosocial

behavior in children younger than 15-months is useful for research, educational and clinical practice. The current study contributes to existing developmental research by replicating and expanding upon previous studies in slightly older children in a younger sample. It also expands development theory by providing novel information about the early development of physical aggression and prosocial behaviors as it is the first study to provide evidence for the development of both physical aggression and prosocial behaviors in children between 4-to-15 months and to examine predictors of the (co)-development of both behaviors. The findings also provide evidence against the social deficits model in aggressive children younger than 15-months.

The current study has important practical and clinical implications. The period from infancy to toddlerhood marks a critical period for prevention and intervention (Patterson et al., 1992), as behaviors are still malleable at the child and the family level. The study findings demonstrates that in very young children prosocial behavior is very common and in fact, infants who displayed average to high levels of PA also display average to high levels of prosocial behavior. As such, early intervention efforts do not necessarily need to target *teaching* prosocial skills (as they emerge naturally) as once thought but rather should target factors and include strategies to help to support the continuation of the development of prosocial behaviors so they would not get lost later on. Furthermore, intervention and prevents efforts should also aim to prevent and/or reduce physical aggression. One approach to do this is to target parenting practices early on as young children's ongoing exposure to dysfunctional parenting (e.g., corporal punishment or harsh parenting) is often stable (MacKenzie et al., 2015) and associated with adverse health outcomes, including chronic aggression across development.

Pediatricians, providers or psychologists can also play an important role by educating parents about how to respond to physical aggression and other behavior problems with healthy discipline strategies. Pediatricians or other providers should try their best to educate parents about useful parenting strategies (i.e., limit setting, redirecting behavior, labeled praise) that help parents avoid responses as threatening, yelling, and spanking etc. (Chavis et al., 2013; Sege et al., 2018; Scholer et al., 2010).

Additionally, it will be important to teach parents about aspects of positive parenting that can help to promote or maintain prosocial behaviors (Jambon et al., 2019). For example, if a young child has caregiver who does not tolerate physical aggression, utilizes positive parenting strategies and scaffolding prosocial behavior, it is more likely that as the child develops, they will acquire use means other than physical aggression to obtain what he or she wants, or for expressing frustration (Daniel et al., 2016; Laible et al., 2016). In other words, providers should teach parent's strategies to provide warm and sensitive parenting (Daniel et al., 2016; Laible et al., 2016) as well as parenting practices that rely on scaffolding and encouragement (Gross et al., 2015; Hammond & Carpendale, 2015) as these enhance the likelihood of prosocial behavior in early childhood.

In addition to parenting practices, early intervention and prevention efforts may want to address early temper loss (Lewis, 2008; Wakschlag et al., 2012). For instance, although most children learn to regulate their frustration and negative emotions as they age (Alink et al., 2006; Hay, 2005; Tremblay & Nagin, 2005; Nærde et al., 2014), it is possible that young children who have difficulties with emotion regulation continue to have difficulties, have fewer opportunities to practice their early prosocial skills (e.g., due

to other peers rejecting them from social interactions) and are thus more likely to be at risk for becoming less prosocial over time.

In conclusion, the current study demonstrates that it is important to examine prosocial behavior and physical aggression together to get a better understanding of young children's social development as a whole. Moreover, taking a person-centered approach allows researchers to identify different subgroups of infants who may benefit from different intervention efforts, depending on their unique set of skills and deficits.

Table 1
Descriptive statistics and correlations for variables

Measure	1	2	3	4	5	6	7	8
1. Exploratory Aggression	-							
2. Directed Aggression	.77** *	-						
3. Prosocial Behavior	.04	.08	-					
4. Temper Loss	.50** *	.64** *	.06	-				
5. Motor Ability	.05	.21** *	.35* **	.23* **	-			
6. Harsh Parenting	.35** *	.43** *	.02	.46* **	.09	-		
7. Child Age	-.04	.04	.13* *	.07	.49** *	-.01	-	
8. Child Gender	-.03	-.10	-.08	- .12*	-.08	-.08	.02	-
<i>M</i>	1.3	1.2	3.4	1.03	12.3	2.5	9.4	1.5
<i>SD</i>	1.3	1.4	1.1	1.2	27.5	1.2	3.6	.51
<i>Min</i>	.0	.0	.0	1	-56	1	4	1
<i>Max</i>	5	5	5	5	56	7	15	3

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2
Evaluating Class Solutions

Model Fit and Diagnostic Criteria								
Models	Smallest class count (n)	Smallest class size (%)	Entropy	BIC	BLRT	BLRT P-Value	VLMR-LRT	A LMR-LRT P-Value
1 Class	376	100%	-	-	-	-	-	-
2 Class	87	23.1%	0.927	3236.70	-	0	-	0
					1600.56		1600.56	
3 Class	36	9.4%	0.904	2811.80	-	0	-	0.00
					1376.25		1376.25	3
4 Class	30	8%	0.915	2686.17	-	0	-	0.00
					1301.58		1301.58	9
5 Class	18	4.7%	0.914	2617.22	-	0	-	0
					1255.24		1255.24	

Note: N = 376. Bold text indicates model met fit criteria. BIC = Bayesian information criterion; BLR=parametric bootstrap likelihood ratio; VLMR= Vuong-Lo-Mendell-Rubin-Likelihood Ratio; A LMR-LRT= Lo-Mendell-Rubin adjusted likelihood ratio test; BLR (parametric bootstrap likelihood ratio).

Table 3
*Standardized Score Means of Physical Aggression and Prosocial Behavior
 Variables by Profile*

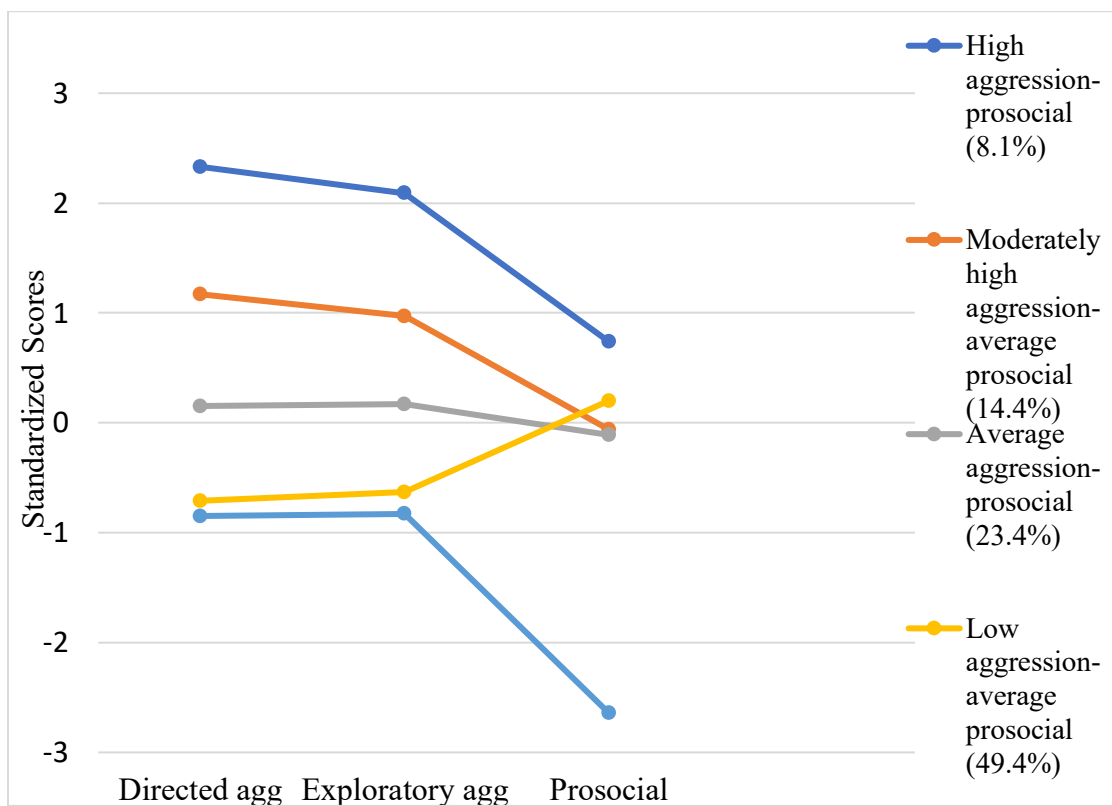
	Directed Aggression	Exploratory Aggression	Prosocial Behavior
<i>Low Aggression- Prosocial</i>	-0.85	-0.83	-2.64
<i>Moderately High Aggression-Average Prosocial</i>	1.17	0.97	-0.06
<i>Low Aggression- Average Prosocial</i>	-0.71	-0.63	0.20
<i>Average Aggression- Prosocial</i>	.15	.17	-0.11
<i>High Aggression- Prosocial</i>	2.3	2.1	0.74

Table 4
Multinomial Logistic Regression Predicting Profile Membership

	Low agg- pros vs. High agg- pros	Mod. high agg- avg pros vs. High agg- pros	Low agg- avg. pros vs. High agg- pros	Avg. agg- pros vs. High agg- pros	Mod. high agg vs. Low agg- pros	Lo w agg - pros	Avg. agg- pros vs. Low agg- pros	Low agg- avg. pros vs. Mod. high agg	Avg. agg- pros vs. Mod high agg	Avg. agg- pros vs. Low agg- avg. pros
Predictor s	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>
Motor skills	-.08*	-.01	-.02	-.01	.06*	.06*	.06*	.00	.00	.00
Age	-.10	.13	.19	.16	.24	.29*	.26*	.05	.03	-.02
Gender	.06	.39	.76	.53	.33	.70	.46	.37	.13	-.24
Temper Loss	- 4.27** *	- 1.22* *	- 3.01** *	- 2.14** *	3.06** *	1.26	2.14* *	- 1.80** *	- .92* *	.88* *
Harsh parenting	-.34	-.28	-.95**	-.49	.06	- .61	-.15	- .67***	-.21	.46* *

Note. Logit coefficients (unstandardized) are presented. Low agg-pros = Low aggression-prosocial; High agg-pros = High aggression-prosocial; Mod. high agg = Moderately high aggression-average prosocial; Avg. agg-pros = Average aggression-prosocial; Low agg-avg. pros = Low aggression-average prosocial. * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 1
Latent Profile Analysis- 5 Class Solution



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