

Prospective relations of preschoolers' prosocial and aggressive affect themes in pretend play with prosocial and aggressive behaviors across contexts

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Abstract

Children's ability to engage in pretend play is important for healthy development. However, relative to cognitive play features, only a handful of studies have examined the influence of affect expression in pretend play on child development. This study evaluated prospective relations of 250 preschoolers' ($M_{\text{age}} = 49.05$ months, $SD = 2.95$; 50% female; 46% Latinx) expressions of prosocial and aggressive affect themes in solitary pretend play with their prosocial and aggressive behaviors in laboratory and school settings two years later. Prosocial and aggressive affect themes in preschoolers' pretend play evidenced specific and positive relations with prosocial and aggressive behaviors in the laboratory two years later, but not with teacher-reported behaviors in school. Multigroup analyses indicated these relations did not vary as a function of child gender, ethnicity-race, or poverty status. This study illustrates the complexity and behavioral significance of children's affect expression in pretend play. Implications for understanding children's play and social development include the need to consider affective (in addition to cognitive) play features, including specific affect themes in pretend play, as a potential window into children's behavioral strengths and vulnerabilities.

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KEYWORDS

affect in play, aggressive behavior, preschoolers, pretend play, prosocial behavior

1 | INTRODUCTION

Children's pretend play is multi-dimensional, consisting of cognitive, affective, and behavioral features, and multi-consequential, with implications for social, academic, emotional, and behavioral competence (Pellegrini, 2009, 2010). Pretend play, wherein children treat one thing "as if" it were another (Fein, 1981; Russ, 2004), provides an important context for children's practice and mastery of varied behaviors, as well as for learning how to express and regulate different emotions (Russ, 2004). Prior studies have shown that children's ability to engage in pretend play correlates with a range of positive outcomes, including emotion regulation, creativity, divergent thinking, and social competence (Fehr & Russ, 2016; Galyer & Evans, 2001; Lindsey & Colwell, 2013; Marcelo & Yates, 2014; Russ & Kaugars, 2001). Further, children's capacity to use and express different emotions while engaging in pretend play is positively correlated with these same adaptive outcomes (Fehr & Russ, 2016; Kaugars & Russ, 2009; Marcelo & Yates, 2014; Yates & Marcelo, 2014). That said, prior studies of children's emotion in pretend play have focused on broadband categories of positive affect (e.g., affection, happiness) and negative affect (e.g., sadness, frustration) rather than on *specific* expressions of affect themes, such as prosocial and aggressive affect themes in play. Moreover, extant research on pretend play has favored cross-sectional, single-outcome study designs using samples of predominantly middle-class children of European descent (e.g., Kaugars & Russ, 2009; Russ & Kaugars, 2001; Russ & Schafer, 2006). The current study sought to advance our understanding of the developmental significance of children's affect in play by drawing on a longitudinal study of a large and diverse community sample to evaluate prospective associations of preschoolers' expressions of prosocial and aggressive affect themes in an observational assessment of solitary pretend play with their prosocial and aggressive behaviors as observed in the laboratory and as reported by teachers in the school setting two years later.

1.1 | The adaptive significance of pretend play in development

For nearly a century, theorists have conceptualized the form and function of children's pretend play from varied perspectives. Even among early evolutionary theorists, opinions ranged from views of play as a means for children to expel excess energy with no significant value in development (e.g., Spencer, 1897), to a context within which children practice and master important skills and behaviors (Groos, 1901). These latter arguments were extended by cognitive theorists, such as Piaget (1952), who viewed play, particularly pretend play, as an important venue in which children practice newly acquired skills, and express and reconcile processes of assimilation (i.e., interpreting new experiences to fit existing schemas) and accommodation (i.e., reconstructing old schemas to account for new experiences). In pretend play, Piaget (1952) argued, assimilation prevails such that children's egocentricity, or the inability to see other people's perspectives, dovetails with reduced environmental constraints to support their practice and consolidation of new skills that would be lost without the rehearsal afforded by play. Extending to the socioemotional domain, psychoanalytic, and psychosocial theorists, such as Freud (1961) and Erikson (1950), argued that pretend play allows children to cope with stressful situations that exceed their capacities in the real world. For example, Freud (1961) described a child's game of peekaboo as a way of reenacting (and ultimately understanding) the uncontrollable departure and return of an attachment figure.

Although both cognitive and affective features and functions of pretend play were considered to varying degrees in classical theory, most contemporary theory and research emphasized cognitive play features until

Russ (2004) encouraged greater consideration of children's expression of affect themes in play. Incorporating theory and research in developmental and clinical psychology, Russ (2004) proposed an integrative model that considers varied facets of pretend play, including cognitive (i.e., play organization, generation of different ideas and themes, fantasy or make-believe), affective (i.e., expression of affect themes in play, enjoyment of play), interpersonal (i.e., expression of empathy, ability to express emotions, and desires to others), and problem solving/conflict resolution processes (i.e., finding a solution to presented problems). Using this new framework, Russ developed the Affect in Play Scales for children (APS; Russ, 2004) and preschoolers (APS-P; Kaugars & Russ, 2009), which are semi-structured play tasks that evaluate both cognitive and affective processes in children's solitary pretend play. Cognitive pretend play features include the quality of imagination in the narrative, the complexity of the play, the organization of the play narrative, and the child's comfort when engaging in pretend play. Affective pretend play features include both positive (e.g., nurturance and affection, happiness) and negative (e.g., aggression, anxiety) affect themes expressed within the pretend play context via either behavior (e.g., the big dog hugs the little dog) or narrative (e.g., the child describes how one animal is planning to attack another animal but does not enact the attack), with or without accompanying affective facial expressions.

Empirical studies of children's pretend play based on Russ' (1993, 2004) model suggest that both cognitive and affective play features evidence significant and potentially distinct relations with a range of developmental outcomes, such as academic achievement (Wallace & Russ, 2015), coping (Marcelo & Yates, 2014), divergent thinking and creativity (Russ, Robins, & Christiano, 1999; Russ & Schafer, 2006), emotion knowledge and regulation (Kaugars & Russ, 2009; Seja & Russ, 1999), empathy and theory of mind (Dore & Lillard, 2015), social competence (Kaugars & Russ, 2009), and executive functioning (Carlson & White, 2013). However, despite increased consideration of broadband dimensions of positive and negative affect themes in play, few studies have evaluated relations between specific affect themes expressed in pretend play and children's behavioral development. Moreover, few studies have examined the potential significance of children's affect in play beyond the laboratory setting.

The current study sought to evaluate if and how preschoolers' expressions of prosocial and aggressive affect themes during a solitary pretend play observation predicted affectively matched behavioral outcomes as observed in the laboratory and as reported by teachers in the school setting two years later. In the APS and APS-P, prosocial affect themes are coded when characters express affection or nurturance to each other, such as giving hugs or tending to a wound, or the child narrates prosocial themes even in the absence of acting on the toys (e.g., describing one character's love for another character). Aggressive affect themes are coded when the characters express verbal and/or physical aggression to each other, such as calling each other names or hitting each other. In addition, aggressive affect can be coded in the absence of behavior, as when the child describes, but does not enact, aggressive behavior (e.g., planning an attack). Although prior studies have emphasized broadband positive and negative affect themes in children's play, specific prosocial, and aggressive affect themes in children's play may take on particular salience as children transition into formal school settings where they encounter increased, and increasingly complex, interpersonal exchanges with peers (Bukowski, Buhrmester, & Underwood, 2011; Furman & Rose, 2015; Rubin, Bukowski, & Parker, 2006).

1.2 | Prosocial and aggressive affect themes in pretend play and behavioral development

Research examining relations between children's broadband affect themes in pretend play and behavioral development suggests that both positive and negative affect themes in pretend play are correlated with children's adaptive functioning. For example, Marcelo and Yates (2014) found that broadband positive affect themes in play predicted increased externalizing behavior problems, whereas Butcher and Niec (2005) found that broadband negative affect themes in play were positively related to disruptive behaviors. Evidence that both positive and negative broadband affect themes relate to children's behavioral development has prompted suggestions for

increased emphasis on the role of affective balance between positive and negative themes, as well as on specific affect themes, such as prosocial and aggressive themes in pretend play.

Mirroring the relatively sparse literature on children's prosocial development (see Batson & Powell, 2003 for review) as compared to the wealth of literature on childhood aggression (see Eisner & Malti, 2015 for review), only a handful of studies have evaluated if and how children's expression of prosocial affect themes in play may relate to different developmental outcomes. Moreover, the few studies that do exist have focused on relations of prosocial themes in the context of social, dyadic, or peer play (e.g., did the target child share toys with their play partner) rather than during pretend play. Likewise, research has examined these relations with positive behavior outcomes generally (e.g., child temperament, empathy; DiLalla, 1998; Strayer & Roberts, 2004), rather than with prosocial behaviors specifically. That said, preliminary findings from social play observations, wherein prosocial themes in dyadic play are positively related to positive behavioral outcomes, suggest that prosocial affect themes in children's solitary pretend play may engender prosocial behaviors outside the play context.

Comparatively more is known about the development and adaptive implications of aggressive behaviors in childhood, yet there remains considerable debate regarding the behavioral significance of aggressive affect themes in children's pretend play. In a study based on social play observations, Dunn and Hughes (2001) found that "hard-to-manage" preschoolers engaged in higher levels of violent fantasy play with their peers than did comparatively "easy-to-manage" preschoolers. Further, violent fantasy play with peers predicted more disruptive behaviors and fewer prosocial behaviors two years later. Similarly, Strayer and Roberts (2004) found that aggressive play during five-year-olds' same-sex group play were positively related to aggressive behaviors outside the play context, as assessed across laboratory observations, teacher ratings, and parent reports. Importantly, as with studies of prosocial play themes, these and other studies have focused on aggressive *behaviors* in social peer play contexts, rather than on aggressive affect themes in solitary pretend play. To our knowledge, only one study has examined relations between aggressive affect themes in children's solitary pretend play and children's aggressive behaviors. Fehr and Russ (2013) found that preschool-aged children's expression of aggressive affect themes during a solitary pretend play observation conducted in the school setting were associated with less physical aggression and more prosocial behaviors as assessed using concurrent teacher reports of children's classroom behaviors.

Given that efforts to understand emotion processes in behavioral development can facilitate early risk identification and amelioration (van Lier & Deater-Deckard, 2016), this study sought to evaluate prospective relations between children's expressions of prosocial and aggressive affect themes in their pretend play and children's later prosocial and aggressive behaviors in both laboratory and school settings. As noted earlier, the current study focused on school-aged outcomes in light of the growing salience of prosocial and aggressive behaviors during this developmental period (Dodge & Coie, 1987; Eisenberg, Fabes, & Spinrad, 2006; Fehr & Russ, 2013).

1.3 | The current study

Building on growing research interest in the development and adaptive significance of affective play features, the current study addressed important gaps in our understanding of how preschoolers' expression of prosocial and aggressive affect themes in pretend play correspond to children's prosocial and aggressive behaviors outside the play context as observed in the laboratory and as reported by teachers two years later. We hypothesized that prosocial affect themes in play would predict more prosocial and fewer aggressive behaviors in both laboratory and, to a lesser degree, school settings. Similarly, we hypothesized that aggressive affect themes in children's pretend play would be associated with fewer prosocial and more aggressive behaviors. Moreover, we anticipated that we would obtain stronger relations between observed play and observed behavior in the laboratory as compared to teacher reports from the school setting due to their shared method and context of assessment.

Advancing beyond studies of broadband positive or negative affect themes in social play contexts, this study employed a standardized observational assessment of children's solitary pretend play to address an ongoing confound in much of the play literature wherein studies of social play (e.g., parent-child, peer-peer) have been used to understand behavioral outcomes leaving the relation between specific play features and such outcomes poorly understood. Moreover, whereas prior studies of pretend play and its adaptive implications have typically used fairly small and homogenous samples largely comprised of middle-class children of European descent who were examined at a single time point, this investigation employed a large and diverse community sample of children who were followed over time. Importantly, we evaluated these relations using multiple methods across different informants and settings (i.e., examiners in the laboratory and teachers at school) while holding relevant covariates constant, and probing effects by gender, ethnicity-race, and poverty status. We evaluated effects by child gender because elements of pretend play (Gosso, Morais, & Otta, 2007; Lindsey & Colwell, 2003) and both prosocial and aggressive behaviors (Belacchi & Farina, 2018; Coyne, Linder, Rasmussen, Nelson, & Birkbeck, 2016; Endendijk et al., 2017; Manring, Christian Elledge, Swails, & Vernberg, 2018) have been shown to vary by child gender, such that females are generally more prosocial and less physically aggressive than males whereas males are generally less prosocial and more physically aggressive than females (Loeber, Capaldi, & Costello, 2013; Zimmer-Gembeck, Geiger, & Crick, 2005). Although very few studies have considered the role of the ethnicity-race in play-behavior relations, some research suggests that play processes (Yates & Marcelo, 2014) and behavioral outcomes (Adriaanse, Veling, Doreleijers, & van Domburgh, 2014; Kawabata & Crick, 2013) vary across ethnic-racial groups. Extending beyond child-specific factors, we evaluated the hypothesized relations by poverty status given that some studies have found that play features vary across socioeconomic groups (McLoyd, 1982, 1983).

2 | METHOD

2.1 | Participants

Participants were part of an ongoing longitudinal study of child development among 250 preschoolers (50% Female; $M_{\text{age_wave 1}} = 49.05$ months, $SD = 2.95$) from diverse ethnic-racial groups (46% Latinx, 24.4% Multiethnic-racial, 18% Black, 11.2% White, and .4% Asian). Families were recruited to participate in a study of children's early learning and development via flyers placed in community-based child care centers. Caregivers completed a brief intake screening by phone before scheduling a 3-hr laboratory assessment. Exclusionary criteria included children with diagnosed developmental disabilities and delays ($n = 3$), children who were not able to understand English ($n = 4$), and children outside the target age range of 45–54 months (not tracked). These exclusions were necessary given the complexity of the assessment protocol and the lack of sufficient funds to provide interpreter services for the child assessments at the start of this study.

Caregivers were biological mothers (91.4%), foster/adoptive mothers (3.6%), and grandmothers or other kin caregivers (5.0%). On average, caregivers were 32-years-old ($SD = 7.68$ years) at the wave 1 assessment and 34-years-old ($SD = 7.29$ years) at follow-up. Mirroring the child sample, caregivers identified with diverse ethnic-racial groups (56.3% Latinx, 18.6% Black, 17.7% White, 5.6% Other/Multiethnic-racial, and 1.9% Asian). Caregiver education levels were variable (19.8% had not completed high school, 17.3% had a high school diploma or GED, and 62.9% had some kind of technical training or college coursework), and just over half were employed (55.6%). The majority of caregivers were married (61.6%) or in a committed relationship (18.8%) at the start of the study. Poverty status was determined based on the caregiver's reported income divided by the appropriate poverty threshold for the household size and the number of children under 18 in the home (U.S. Census Bureau Housing & Household Economics Statistics Division, 2007). Nearly half the sample (40.4%) resided at or below 130% of the poverty line, which is the federal cut-off for subsidies such as food stamps.

Preschooler–caregiver dyads completed a 3-hr assessment in a child-friendly university laboratory. Caregivers completed narrative assessments, a semi-structured clinical interview, and standardized questionnaires whereas the child completed measures of intelligence, self-regulation, representation, and play. A follow-up assessment was completed with 215 dyads (86%) two years later ($M_{\text{age_wave2}} = 73.27$ months; $SD = 2.59$) during which time the children completed a range of novel tasks, including observational measures of prosocial and aggressive behavior. Of the 35 child–caregiver dyads who did not complete the follow-up assessment, 28 missed that particular time point for varied reasons but returned for later assessments, and 7 withdrew from the study citing varied reasons (e.g., loss of custody, busy schedules). At wave two, teacher data were available for 155 of the 215 children (72.09%) from 139 different teachers (92.9% Female; 70.3% White, 20% Latinx, 4.5% Multiethnic-racial, 3.2% Black, 1.9% Asian) who completed a series of questionnaires about the child's prosocial and aggressive behaviors in the school setting. Teachers generally reported a high degree of familiarity with the children in the study, having instructed them for an average of 8.14 months ($SD = 7.26$) for 5.6 hr per day ($SD = 1.36$). Of the 215 participants who completed the follow-up assessment, 60 children were missing teacher data as a result of caregiver's refusal to authorize school data collection ($n = 2$), children not being in school ($n = 1$), inability to locate the teacher ($n = 1$), incomplete data returned ($n = 12$), or teachers failure to complete the assessment (i.e., teacher non-response; $n = 44$). Given that the obtained teacher participation rates were comparable to other survey-based studies (Izzo, Weissberg, Kaspro, & Fendrich, 1999; Youngstrom, Findling, & Calabrese, 2003), and there were neither significant differences between children with and without teacher data, nor between children who completed the follow-up assessment and those who did not, we used the full sample in all analyses.

2.2 | Measures

2.2.1 | Affect themes in pretend play

At wave one (age 4), children completed the Affect in Play Scale–Preschool version, which is a five-minute standardized play measure that was adapted from the Affect in Play Scale (APS) for school-aged children (Russ, 1993, 2004) to measure cognitive and affective processes in preschoolers' pretend play whereas the APS uses two human puppets to inspire play, the APS-P uses a standardized set of toys that are designed to activate a range of aggressive, neutral, and affiliative play themes. Children were presented with the following toys in a scripted fashion: five small stuffed animals (i.e., hippo, bear, big dog, little dog, shark), three plastic cups, one small car, four plastic zoo animals (i.e., elephant, giraffe, zebra, and tiger), and one small, colored, squishy ball with bumps (see Kaugars & Russ, 2009; Russ, 2004 for details).

After presenting the toys to the child, the examiner narrated a play vignette in which the bear toy looked in one cup and found good food to eat, and then, looked in another cup and found food they did not like. The examiner then instructed the child to keep playing and make up a story. Children were encouraged to play freely for five minutes. If children did not play after the first 30 s, they were encouraged to "go ahead, play with the toys and make up a story." The same prompt was used again if the child continued not to play for an additional 60 s. Examiners repeated each child utterance to facilitate coding accuracy and encourage ongoing play, as is often done in play assessments with young children (Emde, Wolf, & Oppenheim, 2003).

APS-P administrations were video recorded and transcribed verbatim for coding by the first author and research assistants who were trained by the developer of the APS-P, Dr. Sandra Russ, using video-recorded training cases. Dr. Russ remained an active consultant on the project for the duration of the coding process, and 30% of the cases were double coded to evaluate the interrater reliability. *Prosocial affect themes* included expressions of affection, nurturance, empathy or sympathy in verbal (e.g., "Hippo and Elephant are friends," "Big dog gave little dog cookies," "Tiger helped the dog clean his room") or nonverbal (e.g., one animal putting a bandage on another animal; characters feeding each other) play patterns. *Aggressive affect themes* included expressions of fighting,

destruction, or harm to a character or object in verbal (e.g., “I’ll kill you;” “I’m going to beat you up”) or non-verbal (e.g., having animals attack each other; using or referencing weapons) play patterns. Affect themes were rated as present/absent during each 10-s interval and composited across the five-minute play observation to yield measures of prosocial ($M = 0.84$, $SD = 1.93$, $ICC = 0.90$) and aggressive ($M = 4.95$, $SD = 5.21$, $ICC = 0.90$) affect themes in play. As noted earlier, affect themes could be coded based on the child’s play narrative (e.g., a bear stating an intention to help a character tomorrow) in the absence of the character actually enacting the behavior. The APS-P has demonstrated strong reliability and validity in preliminary studies with diverse samples (Fehr & Russ, 2013; Kaugars & Russ, 2009; Mazzeschi, Salcuni, Di Riso, Lis, & Bonucci, 2009). Further, evidence points to concurrent validity between the APS-P and Russ’ well-established APS scale (Mazzeschi, Salcuni, Parolin, & Lis, 2004).

2.2.2 | Observed prosocial behaviors

At wave two (age 6), children completed an adaptation of O’Connor and colleagues’ (1979) “last snack” sharing task. Mid-way through the visit, the examiner mentioned that they were hungry and asked if the child would like a snack. Children were given three snack choices, each consisting of approximately the same number of smaller pieces (i.e., Goldfish™, Teddy Grahams™, fruit snacks). After the child selected a preferred snack, the examiner said, *Oh, those are my favorite too. I think I’ll have that too!* The examiner then left to retrieve the snacks and returned with only one saying, *I sure am hungry, but there was only one snack left. It’s okay. You can have it.* If the child spontaneously shared the snack within 20 s of distribution, the examiner “accidentally” dropped the shared snack. If the child offered a second snack, the examiner politely declined noting that they would get something to eat soon. If the child did not share within 20 s, the examiner prompted the child by asking *is it good?* If the child did not share within the following 20 s, the examiner directly prompted the child by asking to try one of the snacks.

Children’s prosocial sharing behavior was rated on a 7-point scale with the highest score of 6 assigned to children who shared the snack spontaneously with the examiner and offered to share a second time after the examiner “accidentally” dropped the snack (5.7%), a score of 5 to children who shared spontaneously the first time, but did not share the second time (4.3%), a score of 4 to children who shared only after the prompt (*Is it good?*) and shared again after the snack drop (2.9%), a score of 3 to children who shared after the prompt, but not after the drop (1.4%), a score of 2 to children who shared after the examiner’s direct request (*Can I have one?*) and after the snack drop (46.9%), a score of 1 to children who shared after the examiner’s request, but not after the snack drop (35.9%), and a score of 0 to children who did not share at all (2.9%; ICC across 100% of cases = 0.96).

2.2.3 | Observed aggressive behaviors

At wave two (age 6), children were observed during an adapted administration of Bandura and Walters (1963) Bobo Doll Task in which the child was presented with a playroom that included a variety of toys, including a clown punching doll. After inviting the child to play with any of the toys in the room, the examiner lightly tapped the clown upon exiting the room and the child was observed for the ensuing five minutes. Independent observers rated the force, location, and frequency of the child’s video-recorded aggression toward the clown to yield a global aggression rating that ranged from *no aggression* (0; 24%), to “mild aggression” (1; e.g., hitting the clown on the body with an open hand and less forceful than average; 22.4%), to *moderate aggression* (2; e.g., punching the clown on the body or slapping the face using a moderate degree of force; 29.2%), to *aggression* (3; e.g. kicking the clown and hitting its face with close fists; 6.4%), to *extreme aggression* (4; e.g., repeated, strong punches or kicks to the face, stomping on the doll after it hit the ground; 2.4%; ICC across 100% of cases = 0.92). Prior studies have used the Bobo Doll Task to evaluate observed aggression (Ferguson, Maguire, & Lemar, 2018), and have documented

significant relations between aggressive behavior during the Bobo Doll Task and both observed and reported levels of aggressive behavior in real-world settings (Bendersky, Bennett, & Lewis, 2006; Drewes, 2008).

2.2.4 | Teacher-rated prosocial behaviors

At wave two (age 6), teacher reports of the child's prosocial behaviors were collected using the five-item Prosocial Scale from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997, 2001). Prosocial behaviors (e.g., is helpful if someone is hurt/upset/feeling ill) were rated on a 5-point Likert scale from never (1) to almost always (5; $\alpha = 0.90$). The SDQ has been validated for use with similarly diverse samples (e.g., Hughes & Im, 2016; Spilt, Hughes, Wu, & Kwok, 2012).

2.2.5 | Teacher-rated aggressive behaviors

At wave two (age 6), teacher reports of the child's physically aggressive behaviors were collected using Dodge and Coie's (1987) measure of reactive (e.g., gets angry easily and strikes back when teased or threatened; $\alpha = 0.90$) and proactive aggressive behaviors (e.g., gets other kids to gang up on a peer they do not like; $\alpha = 0.91$). Teachers rated each of 12 items using a 5-point Likert scale from never (1) to almost always (5). A composite measure of reactive and proactive aggression was used in the current study to parallel the aggressive affect themes that were included in the APS-P coding scheme ($\alpha = 0.91$). This measure has been validated for use with similarly diverse samples (e.g., Baker, Raine, Liu, & Jacobson, 2008; Bass et al., 2018; Fung et al., 2018; Jambon & Smetana, 2018; Metin Aslan, 2018; Nivette, Eisner, Malti, & Ribeaud, 2014).

2.3 | Data preparation and analysis

All data were examined for nonnormality (Afifi, Kotlerman, Ettner, & Cowan, 2007). Children's prosocial affect themes in play evidenced positive skew and kurtosis (pre-transformation skew = 4.70 and kurtosis = 33.24), and was transformed using the square root transformation (Tabachnick & Fidell, 2007) to render parametric statistics valid (post-transformation skew = 1.68 and kurtosis = 2.56). A multivariate analysis of variance (MANOVA) followed by Bonferroni-corrected post hoc comparisons evaluated group differences across study variables (i.e., prosocial and aggressive affect themes in play, observed and teacher-rated prosocial and aggressive behaviors) as a function of child gender, ethnicity-race (i.e., fixed factors), and their interaction. Chi-square analyses tested for group differences in poverty status. Bivariate analyses explored relations among study variables.

Path analyses were evaluated in Mplus 6.1 (Muthén & Muthén, 1998–2010) using full information maximum likelihood (FIML; Schafer & Graham, 2002) to handle missing data for the 35 children who did not return for follow-up and additional cases that were missing observed prosocial behaviors during the snack task ($n = 6$), observed aggressive behaviors during the Bobo doll task ($n = 4$), and/or teacher-reports of children's prosocial and aggressive behavior ($n = 60$). Absolute model fit was evaluated based on the Comparative Fit Index (CFI) ≥ 0.90 , Root Mean Square Error of Approximation (RMSEA) ≤ 0.08 , and Standardized Root Mean Square Residual (SRMR) ≤ 0.05 (Hu & Bentler, 1999; Marsh, Hau, & Wen, 2004). The theorized model included child gender, ethnicity-race, and poverty status as covariates by modeling their effects on each outcome variable. Follow-up multigroup analyses evaluated the theorized model across groups based on child gender, ethnicity-race, or poverty status by comparing an unconstrained, freed model to a model that equated, constrained the parameter estimates across groups while holding the other two covariates constant (e.g., the multigroup analysis by gender controlled for

ethnicity-race and poverty status). When the chi-square difference test was not significant, we selected the more parsimonious, constrained model.

3 | RESULTS

3.1 | Descriptive statistics & bivariate correlations

Table 1 depicts descriptive statistics and bivariate relations for all study variables. A MANOVA revealed main effects of gender (Wilks' $\lambda = 0.78$, $p < .001$), but not for ethnicity-race (Wilks' $\lambda = 0.82$, $p = .08$) or their interaction (Wilks' $\lambda = 0.92$, $p = .91$). Relative to girls, boys expressed more aggressive affect themes in play ($M_{\text{boys}} = 6.80$, $SD_{\text{boys}} = 6.02$; $M_{\text{girls}} = 3.33$, $SD_{\text{girls}} = 3.73$) at wave one and more aggressive behaviors in the Bobo doll task ($M_{\text{boys}} = 1.87$, $SD_{\text{boys}} = 0.97$; $M_{\text{girls}} = 0.87$, $SD_{\text{girls}} = 0.92$) at wave two. There were no significant differences in poverty status across groups ($\chi^2_{\text{gender}} = 0.150$, $p = .699$; $\chi^2_{\text{ethnicity-race}} = 0.328$, $p = .955$).

At the bivariate level (see Table 2), the frequency of prosocial affect themes in play was positively related to observed prosocial behaviors in the lab. The frequency of aggressive affect themes in play was positively related to both observed aggressive behaviors in the lab and teacher-reports of children's aggressive behavior in school. Observations of aggressive behaviors in the lab were positively related to teacher reports of aggressive behaviors in the classroom. Teacher reports of prosocial behaviors were negatively related to teacher reports of aggressive behaviors.

3.2 | Path analyses

Figure 1 and Table 3 depict results of the path analysis for the theorized model (Model 1), which evaluated prospective relations of preschoolers' prosocial and aggressive affect themes in pretend play at wave one (age 4) with observations of prosocial and aggressive behaviors in the lab and teacher reports of prosocial and aggressive behaviors in school at wave 2 (age 6), after controlling for gender, ethnicity-race, and poverty status. The model fit the data well, $\chi^2(12) = 13.96$, $p = .30$, CFI = 0.99, RMSEA = 0.03(CI_{90%} = 0.00, 0.07), SRMR = 0.03. Prosocial and aggressive affect themes in play at wave one predicted observed measures of prosocial and aggressive behaviors in the laboratory at wave two, respectively. However, the direct paths from prosocial and aggressive affect themes in play to later teacher reports of prosocial and aggressive behaviors were not significant in the theorized model. Multigroup analyses evaluated if and how the theorized model varied as a function of gender (Model 2), ethnicity-race (Model 3), and poverty status (Model 4), by testing for a significant model fit difference between the unconstrained model and the constrained model across groups (see Table 3). Findings indicated that the theorized model did not differ significantly by gender (Models 2 and 2.1), $\Delta\chi^2(25) = 13.72$, $p = .97$, ethnicity-race (Models 3 and 3.1), $\Delta\chi^2(34) = 37.24$, $p = .32$, or poverty status (Models 4 and 4.1), $\Delta\chi^2(25) = 30.64$, $p = .20$ (see Table 3).

4 | DISCUSSION

The current study evaluated prospective relations of preschoolers' prosocial and aggressive affect themes during an observational assessment of solitary pretend play with later prosocial and aggressive behaviors as observed in the laboratory and as reported by teachers at age 6. Preschoolers' prosocial affect themes expressed in pretend play were positively related to observed prosocial behaviors during a laboratory-administered sharing task two years later, but were not significantly related to teacher reports of children's prosocial behaviors in the school setting. Likewise, preschoolers' aggressive affect themes expressed in pretend play were related to increased

TABLE 1 Descriptive statistics for study variables by gender and race-ethnicity

Variable	Child gender		Child race-ethnicity				Univariate ANOVA			
	Male	Female	White M (SD)	Black M (SD)	Latinx M (SD)	Multi/Other M (SD)	F	Gender	Race	F
Prosocial affect themes	0.45 (0.34)	1.19 (0.24)	0.45 (0.63)	1.39 (0.36)	0.59 (0.23)	0.84 (0.32)	3.22 ⁺	1.26	0.51	
Aggressive affect themes	6.64 (0.88)	3.24 (0.62)	3.51 (1.63)	6.24 (0.93)	4.74 (0.60)	5.29 (0.83)	10.09 ^{***}	0.96	0.44	
Observed prosocial behaviors	1.88 (0.26)	2.24 (0.18)	1.98 (0.48)	2.15 (0.27)	2.01 (0.18)	2.08 (0.24)	1.28	0.07	1.22	
Observed aggressive behaviors	1.94 (0.16)	0.97 (0.12)	1.38 (0.31)	1.67 (0.17)	1.15 (0.11)	1.53 (0.16)	25.76 ^{***}	2.63 ⁺	1.28	
Teacher-reported prosocial behaviors	13.70 (0.61)	15.01 (0.48)	14.91 (1.14)	12.92 (0.64)	15.21 (0.42)	14.39 (0.58)	3.10 ⁺	3.03 ⁺	0.30	
Teacher-reported aggressive behaviors	11.47 (0.87)	9.38 (0.61)	9.30 (1.63)	12.41 (0.92)	8.98 (0.60)	11.02 (0.83)	3.85 ⁺	3.72 ⁺	0.17	

⁺ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 2 Bivariate correlations among study variables

	1	2	3	4	5	6
1. Prosocial affect themes	–					
2. Aggressive affect themes	–0.02	–				
3. Observed prosocial behaviors	0.27**	0.01	–			
4. Observed aggressive behaviors	–0.08	0.31**	–0.00	–		
5. Teacher-reported prosocial behaviors	–0.00	–0.06	0.09	–0.10	–	
6. Teacher-reported aggressive behaviors	–0.09	0.17*	–0.03	0.19*	–0.65**	–

* $p < .05$; ** $p < .01$.

aggressive behaviors during an adapted Bobo Doll Task in the laboratory two years later, but were not significantly related to teacher reports of aggressive behaviors in the school setting, even though there was a significant positive relation between children's aggressive behavior in the laboratory observation and teacher reports of their aggression at school. Multigroup analyses indicated these relations did not vary significantly by child gender, ethnicity-race, or poverty status.

These findings extend prior studies suggesting that children's affect expression in play is significantly related to behavioral outcomes in several important ways. First, we evaluated specific affect themes instead of broad-band affect themes. Second, we included observed and reported measures of prosocial and aggressive behaviors. Third, we included reports from both laboratory and school settings. Finally, we evaluated our hypotheses using a large and diverse community sample of children that has been followed over time and we tested the final model across groups based on child gender, ethnicity-race, and poverty status.

The current study revealed that children's expression of prosocial affect themes in pretend play at age 4 predicted observed prosocial sharing behavior in the laboratory at age 6, but not teacher reports of general prosocial behaviors in the school setting. Interestingly, the laboratory observation of prosocial sharing did not correlate significantly with teacher ratings of children's prosocial behavior in school. One explanation for these findings is that prosocial affect themes in play may be related to some, but not all types of prosocial behaviors. Indeed, a strong body of research points to orthogonal relations across different forms of prosocial behavior (e.g., sharing vs. helping; Dunfield, 2014; Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011). Teachers rated a variety of prosocial behaviors (e.g., helping, being kind to peers) whereas the laboratory observation evaluated a specific prosocial sharing behavior toward an adult authority figure (i.e., the examiner). Relatedly, although the teacher ratings did not specify the target of children's prosocial behaviors, teachers may have focused on children's prosocial behaviors toward their peers rather than adults whereas the laboratory observation focused on a prosocial expression toward the adult examiner.

Mirroring the patterns observed with prosocial affect themes in pretend play, preschoolers' aggressive affect themes in play were related to later observations of aggressive behavior in the laboratory, but not to teacher reports of aggressive behaviors at school. This pattern is particularly noteworthy given that bivariate relations indicated that the frequency of children's aggressive affect themes in pretend play were positively correlated with both observed and teacher reports of aggressive behavior. Moreover, observed aggressive behaviors in the lab were positively correlated with teacher reports of aggressive behavior in school. Stronger relations between aggressive affect themes in preschoolers' pretend play and observed aggression in the lab setting may reflect our use of a play-based measure of aggression (i.e., the Bobo clown was brought in the room and the child was instructed that they could *play* with any of the toys in the room). In addition, consistent with research on expectancy effects (Bandura, 1977), children who expressed aggressive affect themes in solitary pretend play without negative consequences may have trusted that there would not be negative consequences if they expressed aggression in the context of play more generally. Importantly, the current findings are consistent with other studies that

TABLE 3 Observed and teacher-rated prosocial and aggressive behaviors on preschoolers' prosocial and aggressive affect themes in pretend play

Model	Description	χ^2	df	p	$\Delta\chi^2$	Δdf	p	RMSEA	RMSEA 90% CI	CFI	TLI	SRMR
1	Theorized model	13.96	16	0.30	-	-	-	0.03	0.00–0.07	0.99	0.96	0.03
2	Theorized fully freed- gender	18.27	16	0.31	-	-	-	0.03	0.00–0.09	0.98	0.92	0.03
2.1	Theorized constrained- gender	31.81	41	0.85	16.95	27	0.93	0.00	0.00–0.04	1.00	1.12	0.05
3	Theorized fully freed- ethnicity-race	24.76	16	0.07	-	-	-	0.09	0.00–0.16	0.94	0.68	0.05
3.1	Theorized constrained- ethnicity-race	61.95	50	0.12	50.21	42	0.18	0.06	0.00–0.10	0.92	0.86	0.09
4	Theorized fully freed- poverty	28.39	16	0.03	-	-	-	0.08	0.03–0.13	0.91	0.67	0.05
4.1	Theorized constrained- poverty	58.87	41	0.03	34.60	30	0.97	0.06	0.02–0.09	0.87	0.81	0.07

Note: Models 2-4.1 are the multigroup models, where we compared if and how the theorized model (Model 1) varied by gender, ethnicity-race, and poverty status.

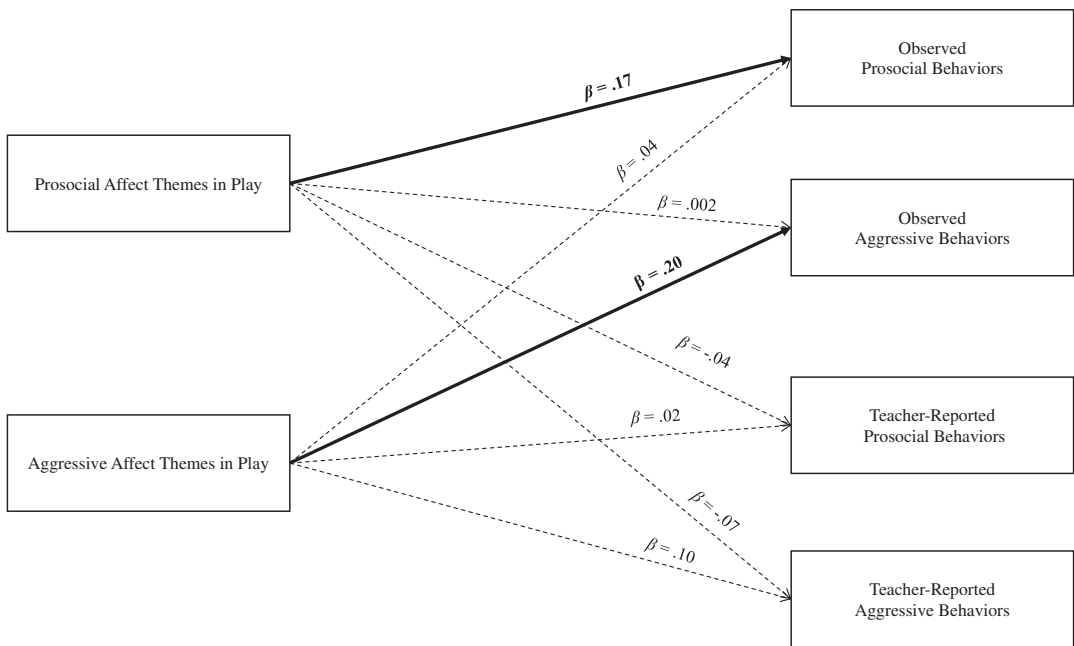


FIGURE 1 Path analysis of the contribution of aggressive and prosocial affect themes in preschoolers' pretend play to later observed and teacher-reported prosocial and aggressive behaviors. Final model fit: $\chi^2(16) = 13.96, p = .30, CFI = 0.99, RMSEA = 0.03 (CI_{90\%} = 0.00, 0.07), SRMR = 0.03$. Paths of covariates (i.e., gender, ethnicity-race, and poverty status) to outcomes, covariances, and cross-sectional relations (i.e., observed laboratory behaviors with teacher-reported behaviors) not shown for clarity. Standardized parameter estimates with CIs that do not cross zero are shown in bold

have yielded mixed results with some finding that aggressive behavioral expressions in peer play are correlated with negative adaptive outcomes, such as worse emotion regulation and more physical aggression (Flanders et al., 2010; Kung, Li, Golding, & Hines, 2017), but others finding that aggression in play may be related to positive adaptive outcomes (Fehr & Russ, 2013). Importantly, the obtained findings regarding aggressive affect in play at both the bivariate level and in the multivariate path model differed from those of Fehr and Russ (2013) who found that aggressive affect themes in pretend play correlated with lower levels of teacher-reported aggression in the classroom. Fehr and Russ (2013) employed a cross-sectional design with an ethnically homogenous sample (82% white) using the APS-P administered in the school setting with concurrent teacher reports of children's behavior. Consistent with a hydraulic model of affect (Breuer & Freud, 1957), aggressive affect themes in play may be associated with lower levels of behavioral aggression in that moment, but, over time, the nature of these relations could change. In general, these findings suggest that inconsistent results across prior play studies may reflect meaningful differences in the play assessment context (e.g., dyadic play with caregivers, dyadic play with peers, or solitary play behaviors; play observed in laboratory, school or home settings), the aspect of play measured (e.g., broadband vs. specific affect themes), the outcome variables of interest (e.g., positive vs. negative behavioral vs. emotional outcomes), the method by which outcomes are assessed (e.g., observed vs. reported behaviors), the study design (e.g., cross-sectional vs. longitudinal), and the sample sociodemographics (e.g., developmental or socioeconomic status).

In addition to contextual differences across laboratory and school settings, the current investigation evaluated the obtained relations across groups defined by child gender, ethnicity-race, and poverty status. Consistent with previous studies that evaluated mean-level differences in affect expression by gender, we found that prosocial affect themes did not vary significantly by gender, but boys expressed more aggressive affect themes than girls in

their play (Fehr & Russ, 2013; Marcelo & Yates, 2014; Russ, 2004). Likewise, boys engaged in more aggressive behaviors than girls during the Bobo Doll Task. Likewise, boys engaged in more aggressive behaviors than girls during the Bobo Doll Task. However, beyond mean levels, the current findings indicated that the behavioral implications of children's prosocial and aggressive affect themes in pretend play did not differ significantly by gender, ethnicity-race, or poverty status. Collectively, prior research suggests that there may be individual differences in the degree to which various affect themes are expressed in pretend play (Chessa et al., 2013; Russ & Schafer, 2006), and in the types of toys children select to support their play narratives (Gosso et al., 2007). However, the behavioral significance of affect themes in pretend play does not appear to differ significantly across sociodemographic groups (Gosso et al., 2007). That said, it is important to note that some of the groups in this study were small in size, which may have constrained our ability to detect significant differences, particularly across ethnic-racial groups.

4.1 | Strengths & limitations

The current study extends the literature on pretend play and development by testing relations between preschoolers' expression of *specific* affect themes in play and affectively matched behavior in both laboratory and school settings at age 6. Despite the strengths of this multi-method, multi-setting, longitudinal study, a number of limitations qualify our interpretation of the obtained findings and point to promising directions for future research.

The current research design introduced several limitations, including a setting-method confound wherein observational behavioral measures were collected in the lab and reported measures were collected from school teachers. This study would have been strengthened by naturalistic observations of children's behavior in the school setting, especially because the content of the observational and reported assessments did not match. For example, prosocial sharing behavior with an adult examiner in the laboratory was not parallel to the teacher reports of children's various prosocial behaviors with peers and adults. Moreover, the prosocial sharing task itself awaits further validation for use with sociodemographically diverse samples. Likewise, the observational measure of aggressive behavior in the laboratory was further confounded by the playful context of the Bobo Doll Task. Although the positive and significant correlation between observed and reported aggression in this study was on par with prior studies using observational measures of aggression across the Bobo Doll Task and behavior in other settings (Bendersky et al., 2006), it remains unclear whether this paradigm is most appropriately considered a measure of children's aggression in play, rough-and-tumble play, or aggressive behavior tendencies more generally (Drewes, 2008). Finally, notwithstanding the value of examining relations between affect themes in preschoolers' pretend play and affectively matched behaviors across time and settings, our inability to control for prior levels of children's prosocial and aggressive behaviors in the current study significantly hindered our ability to render directional interpretations of the obtained data.

Although this study represents a novel investigation of specific rather than broadband, affect themes in play, ongoing research is needed to evaluate relations between additional affect themes and diverse outcomes in both typically and atypically populations. Likewise, the current study did not examine relations between specific affect themes and specific facets of prosocial or aggressive behaviors (e.g., sharing vs. helping prosocial behaviors, proactive vs. reactive vs. relational aggression). Moreover, given the suggestive evidence that specific facets of children's affect in play may have important implications for later social behavior obtained in this study, future research should consider if and how other affect themes, such as frustration, happiness, or anxiety, may relate to later behavioral outcomes, as well as other facets of adaptation (e.g., mental health, self-regulation). Likewise, it is important to examine the significance of both cognitive and affective aspects of pretend play beyond the neurotypical sample used in this study. Although a handful of studies have begun to examine these processes in children with autism (Lam & Yeung, 2012) and Prader-Willi syndrome (Zyga, Russ, levers-Landis, & Dimitropoulos, 2015), there is a need for ongoing efforts to understand processes of play and adaptation in the development of all children.

4.2 | Implications

Outside the context of play, prosocial and aggressive behaviors have been linked to a range of adaptive outcomes within and across childhood. For example, prosocial behavior is correlated with a range of developmental outcomes, including fewer problem behaviors (Padilla-Walker, Memmott-Elison, & Coyne, 2018), lower peer victimization (Sugimura, Berry, Troop-Gordon, & Rudolph, 2017), and higher academic achievement (Coulombe & Yates, 2018; Hall & DiPerna, 2017). Likewise, a plethora of evidence documents enduring associations between children's aggressive behaviors and higher rates of peer delinquency and victimization (Fite & Vitulano, 2011; Frey & Strong, 2018), earlier initiation of substance use (Fite, Colder, Lochman, & Wells, 2008), poorer psychosocial adjustment (Kamper & Ostrov, 2013) and lower academic achievement (Savage, Ferguson, & Flores, 2017). Expanding our understanding of how specific affect themes in play may correspond to children's behavioral development and adjustment has the potential to refine our use of pediatric play assessments as a tool for risk identification and amelioration.

The current study joins prior works suggesting that children's affect themes expressed in pretend play have meaningful implications for social development (Fehr & Russ, 2013; Hoffmann & Russ, 2012; Kaugars & Russ, 2009). Thus, these findings highlight the importance of examining (and supporting) *both* cognitive and affective features of children's pretend play. Indeed, although the majority of play-based intervention efforts have focused on cognitive play features, such as the frequency of pretend play and quality of imagination (Fehr, Russ, & levers-Landis, 2016; Thibodeau, Gilpin, Brown, & Meyer, 2016; Tucker, Schieffer, Wills, Hull, & Murphy, 2017), this study suggests that affective play processes can and should be harnessed to promote children's adaptive functioning (Fehr & Russ, 2016; Hoffmann & Russ, 2016; Moore & Russ, 2008). For example, ongoing work may clarify when aggressive affect themes in young children's pretend play become a risk indicator that warrants supportive efforts to help children differentiate playful, safe expressions of aggressive impulses from potentially problematic aggressive behaviors in the social world.

As opportunities for play and creative expression face increasing threats in contemporary western classrooms that favor memorization-based education and formalized testing evaluations, the need to understand children's play and evaluate its influence on children's negotiation of age-salient developmental issues has never been greater. Parents and teachers alike should be educated and encouraged to appreciate that children's pretend play is an important context for the development and practice of emotion processing and regulation skills (Hoffmann & Russ, 2012; Marcelo & Yates, 2014), which, in turn, have important implications for children's behavioral adjustment in varied settings (Butcher & Niec, 2005; Kaugars & Russ, 2009; Marcelo & Yates, 2014). Socialization agents, including peers, play important roles by encouraging children's engagement in pretend play, allowing them to express a range of affect themes, and discouraging problematic or extreme expressions therein. Following Piaget (1952) observation that play is the work of childhood, we must continue to explore and understand how this aspect of children's work shapes their ongoing and long-term socioemotional development.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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