CHARACTERISTICS OF PRETEND PLAY AND THEIR CONTRIBUTIONS TO

PRESCHOOL CHILDREN'S EMOTION REGULATION

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By

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The undersigned, appointed by the dean of the Graduate School, have examined the

thesis entitled

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presented by Alaina Wilson,

a candidate for the degree of Master of Science and hereby certify that, in their opinion, it is
worthy of acceptance.

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DEDICATION

This thesis is dedicated to my nieces and nephews as their playfulness and excitement are a wonder to watch and inspire me to be a better human and researcher. It is also dedicated to my grandfather, who has taught me the value of hard work and perseverance. I would not be where I am today without the unrelenting support and encouragement I've received from him as well as my parents and other family members. Finally, I dedicate this thesis to my fiancé, Ryan, who inspires me to be positive and try my best and is always willing to listen to my long-winded, semi-coherent, academic ramblings.

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ABSTRACT

Research on the benefits of pretend play for children demonstrates that engaging in this non-literal style of play is linked with better emotional skills (Lindsey & Colwell, 2013). While this relation between pretend play and emotional development is evident, the mechanisms driving this process are not well understood. The present longitudinal study used video observations to examine whether specific aspects of pretend play (emotional expression and social interaction) were related to improvements in children's emotion regulation. Contrary to hypotheses, there was a negative relation between social pretend play engagement and emotion regulation outcomes that approached significance. Additional research is needed that uses multiple informants of children's emotional self-regulation and examines other possible mechanisms to clarify how these constructs are linked in early childhood.

Characteristics of Pretend Play and their Contributions to Preschool Children's Emotion Regulation

One of the most significant transitions in a child's life is the move from preschool to kindergarten (Bredekamp, 2004). It is often the first time children are in a formal school setting with a stricter daily schedule and fewer adults to rely on. Though new setting can be challenging, school readiness skills– abilities that help children successfully navigate this transition– develop during preschool (Bredekamp, 2004). One important skill for school readiness is emotion regulation (ER; Blankson et al., 2017; Eisenberg et al., 2004). ER involves monitoring one's emotional state and employing strategies to modify emotional experiences, typically in pursuit of a goal (Denham, 2006; Eisenberg, et al., 2004; Harrington et al., 2020). Children in preschool are beginning to regulate their emotions with less outside help (Holodynski & Friedlmeier, 2005), and studies have suggested that ER ability is associated with engagement in pretend play (e.g., Lindsey & Colwell, 2013). Despite these links, few causal conclusions can be drawn due to mixed results in intervention studies: some target ER-adjacent skills or provide immediate results that fade (Blair et al., 2018), and some benefit children only in specific, non-generalizable contexts (Moore & Russ, 2008). These studies' conflicting results warrant further research (Lillard, 2017). To elucidate these mixed findings, the current project examines specific characteristics of pretend play to better understand what might make it particularly beneficial for children's ER development. Specifically, the present study extends previous research by using naturalistic observations to examine social and emotional components within pretend play as predictors of children's emotion regulation in preschool.

Emotion Regulation in Early Childhood

Emotion regulation develops rapidly in early childhood and involves monitoring one's emotional state and employing appropriate strategies to modify the intensity and expression of emotions (Eisenberg et al., 2010; Sala et al., 2014). It is often used in pursuit of a goal or desired outcome (Denham, 2006; Eisenberg, et al., 2004; Harrington et al., 2020). In order to regulate their emotions, preschoolers must identify their feelings and act to modulate arousal by self-soothing, attentional refocusing, problem-solving, or using other ER strategies (Denham, 2006). It is a complex process with many steps, which is why very young children need help from others to master the skill.

According to Holodynski and Friedlmeier's (2005) internalization model, parents assist with almost all regulation during infancy and toddlerhood. Autonomy slowly increases until children reach adulthood, when they can more easily regulate their own emotions and reason about others' emotions. Young children in preschool are still developing their ER skills, so they often benefit from external adult support in this area (Denham, 2006). However, Holodynski and Friedlmeier (2005) highlight the significant decreases in external adult support of ER and contrasting increases in intrapersonal regulation (more self-directed, internal ER) occurring during early childhood. This transition from external, assisted ER to internal, self-directed ER makes the preschool years a prime time for intervention, especially considering the ties between early ER and later social and academic achievement.

ER is important for children's school success, especially during the transition to kindergarten (Blankson et al., 2017; La Paro & Pianta, 2000). The ability to regulate emotions helps children to be successful in school by supporting their academic and social competence Denham et al., 2003; Trentacosta & Izard, 2007). Social competence grows because ER increases children's positive interactions with peers and teachers and decreases their aggressive

and negative interactions (Denham et al., 2003; Trentacosta & Izard, 2007). ER supports academic performance by reducing emotional distractions (e.g., better able to tolerate frustration or disappointment) and helping children navigate academic challenges with positivity (Blankson et al., 2017; Graziano et al., 2007; Harrington et al., 2020; Trentacosta & Izard, 2007). Conversely, children with poor ER abilities are more likely to display behavior problems later in elementary school, which may negatively impact academic outcomes (Graziano et al., 2007; Rydell et al., 2003). Because this skill is important for success in school and beyond, interventions have been created to improve children's ER abilities, such as Promoting Alternative Thinking Strategies (PATHS; Domitrovich et al., 2007) and the Emotion-Based Prevention Program (EBP; Izard et al., 2004, 2008). However, these programs may be too costly or time-consuming to be practically feasible or sustainable long-term because they can involve weeks of training for already-busy teachers, changes in existing routines, or additional supplies for classrooms. Thus, it is important to investigate cost-effective and accessible ways to improve children's ER, such as pretend play, where children can participate regardless of their abilities or resources.

Pretend Play and Emotion Regulation

Pretend play is a frequent, developmentally appropriate activity that emerges early in life regardless of cultural background (Lillard, 2017) and has distinct social and emotional characteristics that make it a strengths-based option for promoting child development regardless of individual or contextual factors. Pretend play, which is also referred to as imaginative play or pretense, includes the non-literal treatment of objects, setting or identity (de Lorimier et al., 1995; Galyer & Evans, 2001). For example, pretending a banana is a phone (object), pretending a cardboard box is a castle (setting), or pretending to be a mermaid or police officer (identity) are

all considered pretend play activities. This abstract activity is cognitively distinct from concrete styles of play like constructive or exploratory, where children engage with the physical world around them, and it prompts a different social and emotional atmosphere as well, making it a unique opportunity for emotional development. For example, studies have demonstrated that pretend play sometimes lasts longer and includes more social interaction than non-pretend play (Connolly & Doyle, 1984). Similarly, children may become more invested in social pretend (i.e., high enthusiasm and absorption in activity) and engage in more frequent and more complex social interactions during this play than during non-pretend play (de Lorimier et al., 1995). Also, pretend play, especially social pretend, is more externally driven than non-pretend: children often negotiate the content and constraints of play scenarios before enacting them (Gibson et al, 2019), which makes these situations more similar to reality since children only have partial control over the scenario. These characteristics of pretend play suggest that it may be somewhere children practice experiencing and regulating their emotions in a social context.

In fact, several studies have found associations among pretend play engagement and children's ER skills. Gilpin and colleagues (2015) found that preschooler's fantasy orientation (FO), or their propensity to engage in pretend play, predicted their ER abilities, as measured by the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997), such that children with a higher FO also had better ER skills. Also using the ERC to measure ER, Galyer and Evans (2001) found similar results among kindergarteners: frequency of pretend play at home and caregiver involvement in pretend play were both positively related to ER ability. While these were both survey reports, Lindsey and Colwell (2013) conducted a longitudinal, naturalistic observation of preschool children's play behaviors at school and found that children's engagement in sociodramatic play (a specific type of pretend play which includes role-play)

predicted their ER and other emotional skills one year later. Importantly, Lindsey and Colwell's (2013) longitudinal project used parent reports of soothability and emotionality to measure regulation instead of the ERC (Shields & Cicchetti, 1997) but still found similar results.

There is also evidence that pretend play contributes to other aspects of children's emotional development, which could subsequently benefit their ER. For instance, the frequency of pretend play has been positively correlated with emotion understanding in preschool children (Dunn & Hughes, 2001). The amount and complexity of children's social pretend play is also positively related to multiple socioemotional skills, such as emotion knowledge and competence in peer interactions (Connolly & Doyle, 1984). Other researchers have assessed children's pretend play in standardized scenarios using the Affect in Play Scale (APS; Seja & Russ, 1999) which examines quality of fantasy and frequency of affect during the play activity and found that APS scores predicted concurrent emotional understanding in children.

Pretend Play Interventions for ER

Designing interventions that use pretend play to promote emotional development aligns with strengths-based educational perspectives (Lopez & Louis, 2009) by capitalizing on children's existing ability to pretend. However, despite the above evidence for associations between pretend play engagement and ER skills, recent intervention studies have produced mixed results. Table 1 summarizes these projects and concerns about their results. For example, Goldstein and Lerner (2018) found an 8-week dramatic play program improved emotional control among low-income preschool children when compared to a control group, but their emotional control task measured distress over another person's injury, which could be argued as a measure of prosocial behavior or empathy and not particularly ER (Eisenberg & Sadovsky, 2004). A similarly-designed imaginative play intervention led children to display more positive

affect during a standardized play task a few months after the intervention (Moore & Russ, 2008), but the authors found no significant increases in positive affect outside of play and no significant changes in ERC scores. Blair and colleagues (2018) also used the ERC and successfully improved kindergarten students' ER using a make-believe intervention curriculum, but their program also included problem-solving activities designed to improve executive function (EF), a self-control skill that is closely linked with ER (Eisenberg et al., 2010). Since EF was targeted in the intervention, it might be that general self-regulation improvement, and not pretend play engagement, caused the ER growth in their study.

Table 1: Conflicting Results of Pretend Play Interventions for Emotion Regulation

Authors & Year	Play Session Length	Total Sessions	Program Length	Group Size	Significant results	Concern
Goldstein & Lerner 2018	30 minutes	24	8 weeks	Small (4)	Better emotional control in task where researcher feigns injury.	Outcome measurement task overlaps with prosocial behavior, not a pure ER measure.
Moore & Russ, 2008	30 minutes	5	3 to 5 weeks	Medium (13-16)	More positive affect during contrived play task.	No significant improvements in ER or affect in general contexts outside of pretend play.
Blair et al., 2018	Comprehensive curriculum approach	N/A	School year	Entire Class	Improved ER, self-regulation, problem behavior, and teacher relationships.	Improvements only seen at immediate follow-up; most were lost 3 months later. Curriculum targeted both ER and broader overlapping self-regulatory skills.

These conflicting results indicate a need for further research on pretend play and its potential benefits. It is pertinent to look more closely at the processes occurring during pretend play to clarify the characteristics that might promote ER development. Since this type of play is natural for children, more research is needed outside of controlled laboratory settings (Berk & Meyers, 2013). The proposed study addresses these concerns by using naturalistic observations to examine specific components within pretend play as predictors of ER.

Components of Pretend Play Theorized to Drive Relations with ER

Components within pretend play that drive the relationship between pretend play and ER

have not been extensively studied in previous research. Two prominent developmental theories

suggest elements that may be important to examine. Specifically, Jean Piaget's theory of

cognitive development (Piaget & Inhelder, 1968, as cited in Campbell, 1976) and Lev

Vygotsky's sociocultural theory (Vygotsky 1978, as cited in Gauvain & Cole, 1997) point to

emotional expression and social interaction as factors within pretend play that may support ER

development. The ideas suggested by these theories are further supported by Eisenberg's

(1998a,b) writings on emotion socialization.

Piaget's Theory of Cognitive Development

Piaget argued that children develop schemas or mental organizations of objects and ideas

about the world around them (Thomas, 2005). Children experience disequilibrium in their

knowledge when encountering new information, leading them to develop knowledge schemas

through assimilation, which is the simple categorization of a new idea into existing schemas, or

accommodation, which is the act of changing one's schema to fit new information (Piaget &

Inhelder, 1968, as cited in Campbell, 1976). The concepts of what emotions are, what they feel

like, how to control them, and how to display them appropriately with others may each represent

a cognitive schema. For example, a child may have a schema for anger and that may include

what angry means, what it feels like to be angry, what angry looks like on other children, and

what to do reduce or express that anger. When viewed from this perspective, the cognitive

processes of assimilation and accommodation can apply to the child's cognition about emotion.

In pretend play, which tends to include more emotional investment than non-pretend play (de

Lorimier et al., 1995), children may utilize and modify these emotion schemas as they enact

pretend scenarios. It follows that children who demonstrate more emotional expression in their pretend play may be refining their emotional knowledge and competence, which are important precursors to ER development (Denham, 2006). Pretend play may also afford children opportunities to practice regulating their emotions during play (Thibodeau-Nielsen et al., 2021), allowing them to change their schemas as they learn which regulation strategies are most efficient. Thus, in the present study, emotional expression (displays of positive and negative affect) during pretend play is examined in relation to ER outcomes.

Vygotsky's Sociocultural Theory

Lev Vygotsky's theory of cognitive development differed from Piaget's in that it included a social aspect. Vygotsky argued that children learn socially, and there are activities that the child can only learn with the help of others (Vygotsky, 1978, as cited in Gauvain & Cole, 1997). Because pretend play typically involves more social interaction than non-pretend play (Connolly & Doyle, 1984; de Lorimier et al., 1995), this may be the best space for children to develop ER skills. As noted earlier, the development of ER starts out largely as an external process where children rely heavily on the guidance of more-skilled others to learn how to respond in emotionally arousing situations (Holodynski & Friedlmeier, 2005). This aligns with Vygotsky's ideas. He noted that the expert who guides development does not need to be an adult or someone older than the child; it can be a same-age peer with more advanced knowledge (Vygotsky, 1978, as cited in Gauvain & Cole, 1997). This suggests one possible explanation for the positive relation between pretend play and the development of ER: as children enact pretend scenarios and display pretend emotions, if an emotion displayed does not match the pretend situation or if the child displays the emotion improperly in their play, peer reactions could clue the child in to this mistake. The peer may indicate that the child has not interacted properly by

telling them directly, ending the interaction, changing the subject, or reacting negatively. All of these reactions could inform the child that they did something wrong, leading them to modify their behavior accordingly. Furthermore, children often negotiate about the content and constraints of social pretend play scenarios before enacting them (Gibson et al., 2019) so one child may directly inform the other of what emotion they should display. For example, if one child sets the scene with a fear-inducing scenario, such as "We're being chased by a dinosaur," they may also directly tell the peer to "Be scared!" or "Run away!". In this way, if a child does not already know the emotions that a situation should induce, or how to appropriately display (or not display) that emotion, they may be able to acquire this knowledge through social pretend play with peers, and thus potentially improve their ER skills over time. Therefore, social interaction is another element of pretend play which is examined in relation to ER outcomes in the present study.

Eisenberg's Emotion Socialization

Eisenberg and colleagues' writings and research on emotion socialization offer further support for the idea that emotional expression and social interaction during pretend play may contribute to emotional development. Children's emotional development is influenced by their experiences with parents, teachers, and peer; specifically, other people's modeling of, responses to, and discussions about emotions matter for a variety of emotional skills (Eisenberg et al., 1998a,b). Children learn how they should experience, express, and regulate their emotions by noticing how other people respond to and display emotions (Eisenberg et al., 1998a,b). This suggests that when children pretend play together it may give them an opportunity to witness, discuss, and act out emotional themes, thus engaging in emotion socialization. Similar to the Vygotskian and Piagetian perspectives above, this may in turn impact their emotional

development. As such, children who express more emotions during their pretend play, and children who engage in more social pretend play, are expected to demonstrate better emotion regulation.

Study Aims and Hypotheses

Since pretend play and ER have been linked in previous research, but intervention findings are mixed, it is unclear what mechanisms underlie this relationship. As such, the present study examines children's pretend play behaviors and their relation to ER outcomes using naturalistic observations in preschool classrooms. Based on the previous research summarized above demonstrating consistent empirical links between pretend play engagement and ER skills, the primary hypothesis (H_1) of the present study is that children's observed pretend play engagement in a classroom setting will be positively related to ER growth. Furthermore, the present study aims to identify elements within pretend play that are beneficial for ER development, rather than broadly assessing pretend play as a monolithic construct. Based on the theoretical ideas of Piaget, it is hypothesized (H_2) that children's emotional expression during pretend play will be positively related to ER growth, such that children who display more emotions during pretend play will see greater ER gains. These children may be experiencing more emotional arousal during their play, and thus modifying their emotional schemas more quickly, resulting in ER improvements. Furthermore, the Vygotskian perspective suggests that social pretend play, rather than solitary, might be the best activity for promoting ER due to peer scaffolding of emotional skills. Thus, it is also hypothesized (H_3) that social pretense engagement will be positively related to ER growth.

Method

Study Design

The current study utilizes data collected as part of a larger study of children's play behaviors in the classroom. The study occurred over the course of 5 months, with pre-tests during September and October (Time 1), video observations of classrooms during November, and follow-up measures during December and January (Time 2). Teachers completed baseline and post-test surveys where they reported on various aspects of children's development, including children's ER skills, and parents provided demographic information. Following video observations, research assistants (RAs) viewed the videos and coded child behavior using a time-sampling procedure. Consent was obtained from parents and teachers, and assent was obtained from children before observations. Both the larger longitudinal study and the current study were approved by the University of Missouri Institutional Review Board (IRB #2016001 and 2091188 respectively).

Participants

Participants were 88 preschool children who were on average 49 months old ($M = 48.89$, $SD = 6.97$). Children attended 4 preschools of varying types (3 Head Start, 1 private). Gender was relatively evenly distributed across the sample (47% boys, 53% girls), and families had an average annual income in the range of $50,000 to $59,999 (incomes reported in $10k ranges). Demographic information about race and ethnicity was also collected and is as follows: White (69%), Asian/Pacific Islander/or Middle Eastern (20%), Black/African American (6%), Hispanic/Latinx (2%), and other (3%).

Video Data Collection and Coding Procedures

Video data was collected from preschools on a rotating basis over the course of one month; each child was observed once and no more than 5 children were observed on a given day. Observations were 20 to 60 minutes in length and occurred during free play to capture what children naturally chose to do. Videos were obtained using a 360° GoPro camera in the center of the classroom in addition to 4 static GoPro cameras aimed at specific areas of the classroom where pretend play is likely to occur (i.e., block play and dramatic play). Lastly, to clearly document conversations, children wore a LENA microphone during the observation.

Following recordings, RAs were trained to code videos using a 15-second time-sampling procedure, meaning each 15-second segment was coded. RAs progressed systematically through the video by watching a 10-to-15-minute segment without coding and then re-watching that segment and entering codes every 15 seconds using Mangold INTERACT observational coding software. Before coding independently, RAs participated in training meetings and practice coding assignments until all reached at least 90% agreement with exemplar codes across 4 practice videos. RAs completed codes for the child's type of play (e.g., constructive play, exploratory play, pretend play, etc.), social interaction (e.g., solitary, parallel, social, etc.), and affect (positive, negative, or neutral) during the majority of the 15-sec segment.

Interrater Reliability

In addition to monitoring percent agreement during coding training, reliability between coders was examined for 5% of the videos used in final analyses. Five videos were coded by two raters, and reliability statistics were generated. Initially, Cohen's kappa was used to test the reliability, but this produced very low values despite high percent agreement (> 90% for all measures). Since these two measures of interrater reliability were producing incongruent results, it suggested that there may have been other factors affecting the reliability measurement.

While typically a good measure of reliability, Cohen's kappa is sensitive to the distribution of codes in cross-tabular form, such that it can be inaccurate in some situations (Feinstein & Cicchetti, 1990). When the marginal totals of the table are unbalanced (e.g., many Yes's and few No's, or vice versa), kappa can be artificially inflated or deflated (Feinstein & Cicchetti, 1990). By coincidence, the observations that were double-coded for reliability included few 'Yes' codes for pretend play, social play, and emotional expression. As such, the prevalence of positive and negative ratings was imbalanced, thus producing the low kappa's seen above, despite high percent agreement (Feinstein & Cicchetti, 1990; Zec et al., 2017).

Other methods of obtaining reliability statistics are available which are less susceptible to this paradox. Gwet's agreement coefficient 1 (AC1; Gwet, 2008) is one option that is less susceptible to the effects of imbalanced totals present in these data (Wongpakaran et al., 2013; Zec et al., 2017). As such, all interrater reliability statistics reported below were generated using Gwet's AC1 formula. These values were computed individually for each set of double-coded videos, and then averaged across all 5 videos, resulting in one reliability statistic for each code (e.g., pretend, social, positive expression, and negative expression). AC1 values are interpreted similarly to Cohen's kappa (Zec et al., 2017).

Measures

Emotion Regulation

Children's emotion regulation was assessed using the Emotional Self-Regulation subscale of the Early Years Toolbox Self-Regulation Questionnaire (Howard & Melhuish, 2017). This is a teacher-report measure which assesses children's self-regulation skills using a series of statements (e.g., "Gets over being upset quickly") and has acceptable reliability (Cronbach's α = 0.83; Howard & Melhuish, 2017). Teachers report how true the items are of the target child on a

5-point scale from 'Not True' to 'Very True'. Resulting scores are the average of the 6 items in the subscale and range from 1 to 5, with higher scores indicating better emotion regulation skills.

Pretend Play

Children's pretend play engagement was computed as the proportion of pretend play codes across all observations for that child. For coding purposes, pretend play was defined as any play that included pretense, such as object substitution, role play, personification of objects, imaginative storytelling, or attribution of pretend properties to inanimate objects. For example, many children were seen caring for dolls as though they were real (personification of objects), telling imaginary stories as they animated small figurines (storytelling, attribution of pretend properties), or acting out scenes together (role play). The proportion method for calculating the amount of pretend play (dividing the total number of pretend play codes by the total number of observations per child) is preferred to the raw total because there is an unequal number of observations per child due to absences, differences in classroom schedules, or uncodable behaviors (out of the classroom or out of view of camera). In other words, this calculation gives a clearer, more standardized picture of the amount of time a child chose to engage in pretend play during the observations. Higher scores indicate more pretend play engagement, and interrater reliability was acceptable ($ac1 = 0.99$)

Social Pretend Play

Similar to the general pretend play variable, social pretend play was calculated as the proportion of social pretend play relative to the total number of free-play observations for the child. Social pretend play was defined as any observation segment in which the activity was coded as pretend play, and the interaction code was social/cooperative (i.e., "The child plays with others and there is a common goal or purpose to their activity"). The raw total of these

codes was divided by the total number of observations per child to compute a proportion of social pretend play. Higher scores indicate more social pretend play, and interrater reliability was acceptable ($ac1 = 0.95$)

Emotional Expression in Pretend Play

Emotional expression in pretend play was measured as any 15-second observation in which the activity code is pretend play, and the child was displaying some affect. Examples of emotional expressions include smiling, laughing, or jumping excitedly for positive affect, or crying, frowning, fussing, or yelling for negative affect. Positive or negative emotional expression was only coded if it was overt or obvious, and codes were assigned based on the child's affect for the majority of the segment (at least 7.5 seconds). In line with pretend and social pretend play, the number of expressive observations was divided by the total number of observations per child and the resulting value represents the proportion of emotional expression in the child's play. Separate proportions were generated for positive and negative expression. Higher scores indicate greater emotional expression, and interrater reliability was acceptable ($ac1 = 0.97$ and .99 for positive and negative expression respectively).

Demographic Information

In addition to the variables of interest to our hypotheses, demographic data were also collected, including each child's age in months, gender, family income, and race and ethnicity.

Results

Preliminary Analyses

All analyses were conducted using IBM SPSS Statistics, version 11. Table 2 provides means and standard deviations for all study variables. On average, children spent about one-third of their free play time in pretend play ($M = .34$), but there was significant variability around this mean $(SD = .32)$, indicating that some children were pretending a lot (max: .98), while others were pretending relatively infrequently (min: 0). Generally, social pretend ($M = .15$, $SD = .18$) occurred more often than solitary pretend ($M = .05$, $SD = .09$). Average proportions for expression of positive affect ($M = .02$, $SD = .06$) and negative affect ($M = .01$, $SD = .03$) were lower than expected.

Bivariate correlations between study variables (Table 2) were generated before moving to the mixed model analyses. Children's time 1 and time 2 ER scores were correlated ($r(78) = .778$, $p < .01$), indicating their emotion regulation ability remained relatively stable over time. Interestingly, there was a significant negative correlation between social pretend play and emotion regulation at time 2 ($r(71) = -.297$, $p < .05$), meaning that children who engaged in social pretend play more often demonstrated poorer ER at follow-up. These were the only significant correlations involving children's emotion regulation abilities.

Table 2: Means, Standard Deviations, and Bivariate Correlations

M (SD)	Range	Pretend Play	Social Pretend	Solitary Pretend	Positive Affect	Negative Affect	ER (T1)	ER (T2)	Age
Pretend Play	0 - .98	.34 (.32)							
Social Pretend	0 - .70	.725**	.15 (.18)						
Solitary Pretend	0 - .57	.456**	.107	.05 (.09)					
Positive Affect	0 - .44	.254*	.500**	-.052	.02 (.06)				
Negative Affect	0 - .14	.432*	.370**	.361*	.053	.01 (.03)			
ER (T1)	1-5	-.073	-.141	.091	.084	.034	3.86 (1.05)		
ER (T2)	1-5	-.215	-.297*	0.28	.044	-.006	.778**	3.95 (1.02)	
Age	35-61mo	.148	.202	.077	0.038	.068	-.136	-.151	48.76 (6.97)

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

To assess potential covariates, the effects of age, gender, and preschool type on emotion regulation were examined. It is important to test these variables as covariates because they have all been shown to influence children's ER (Morris et al., 2007; Raver et al., 2014). Independent samples *t*-tests were conducted for dichotomous variables (gender and preschool type), and I also examined the bivariate correlation between age and ER. Age was not significantly related to emotion regulation at either timepoint (T1: $r(78) = -.136$, $p = .235$; T2: $r(81) = -.151$, $p = .179$). However, *t*-tests revealed significant group differences by gender ($t(76) = 2.24$, $p < .05$) and school type ($t(79) = 3.06$, $p < .005$), such that baseline emotion regulation was higher for girls and for children in private preschools.

I also tested whether or not children's emotion regulation ability grew significantly over time using a paired samples *t*-test. This analysis revealed that there was no significant change in children's emotion regulation from baseline to post-assessments ($t(77) = -1.35$, $p = .18$). Due to the significant mean differences in emotion regulation by school type outlined above, I split our sample by preschool type (private or Head Start) and conducted another paired samples *t*-test for ER change. In this analysis, emotion regulation ability significantly increased for children in private preschools ($t(37) = -2.83$, $p < .01$), while there was no significant change for the Head Start group ($t(39) = 1.9$, $p = .062$). As such, I chose to split the sample by preschool type, so mixed model analyses were conducted separately for Head Start and private preschools.

Mixed Model Repeated Measures Analyses

To test the three hypotheses, separate mixed-model repeated measures analyses were conducted to assess whether pretend play (H$_1$), social pretend play (H$_2$), and emotional expression during pretend play (H$_3$) explained significant amounts of variance in children's ER scores. For all analyses conducted, time was the within-subjects factor, and gender was entered

as a covariate. The between-subjects factor was the style of pretend play, which varied for each hypothesis. Finally, an interaction term was included to examine the combined effects of these play styles over time.

H_1: Effect of Pretend Play and Time on ER

The mixed model examining the effects of pretend play and time on ER produced a few significant results (Table 3). Time was a significant positive predictor of ER in private preschool classrooms, indicating that children's ER improved over the course of the study. For the same subsample, gender was also a significant predictor, and the parameter estimate was negative. Since gender was coded 0 for girls and 1 for boys, this suggests that girls' ER growth was greater. There were no significant predictors related to pretend play itself.

Table 3: Mixed Model Repeated Measures Results, Effect of Pretend Play on ER

School Type	Parameter	Estimate	Std. Error	df	t	Sig.	95% CI Lower	Upper
Head Start	Intercept***	4.21	.29	27.13	14.41	.000	3.61	4.81
	Pretend Play	-.09	.47	26.36	-.20	.847	-1.06	.87
	Time	-.24	.15	26.12	-1.55	.133	-.55	.08
	PretendPlay*Time	.28	.28	26.20	.99	.333	-.30	.86
	Gender	.31	.31	26.04	.99	.330	-.33	.94
Private	Intercept***	4.02	.23	38.97	17.19	.000	3.55	4.49
	Pretend Play	-.69	.53	33.19	-1.29	.204	-1.77	.39
	Time**	.58	.18	32.39	3.20	.003	.21	.95
	PretendPlay*Time	-.49	.45	32.35	-1.07	.291	-1.41	.44
	Gender*	-.69	.26	34.90	-2.59	.014	-1.23	-.15

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

H_2: Effect of Social Pretend Play and Time on ER

The mixed model analysis that included social pretend play as the between-subjects factor revealed a similar pattern of significant results for the private preschool group, but not the Head Start group. Both time and gender were significant predictors of emotion regulation growth, in different directions (Table 4). Again, time had a positive effect on ER, while gender had a negative effect. There was a negative effect of social pretend play on ER in the private

classroom that was marginally significant ($p = .068$), but no significant interaction between time and social pretend play.

Table 4: Mixed Model Repeated Measures Results, Effect of Social Pretend on ER

School Type	Parameter	Estimate	Std. Error	df	t	Sig.	95% CI Lower	Upper
Head Start	Intercept***	4.27	.24	26.83	17.85	.000	3.78	4.77
	Social Pretend	-.59	.77	27.29	-.76	.452	-2.18	1.00
	Time	-.21	.13	26.15	-1.59	.123	-.48	.06
	Social*Time	.48	.48	26.43	1.01	.323	-.50	1.46
	Gender	.32	.31	26.12	1.04	.308	-.31	.96
Private	Intercept***	4.01	.21	41.00	18.89	.000	3.58	4.44
	Social Pretend[+]	-1.92	1.02	35.66	-1.88	.068	-3.99	.15
	Time**	.59	.16	32.96	3.58	.001	.25	.92
	Social*Time	-1.27	.88	32.77	-1.45	.158	-3.05	.52
	Gender*	-.62	.25	36.08	-2.50	.017	-1.13	-.12

[+]$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$

H₃: Effects of Emotional Expression and Time on ER

Separate mixed model analyses were conducted for positive emotion expression (Table 5) and negative emotion expression (Table 6), neither of which significantly influenced ER for either subsample. However, in private preschools, time and gender were significant predictors in both models tested, which mirrored the analyses above. As before, the interactions between emotional expression and time were not significant for either positive or negative affect.

Table 5: Mixed Model Repeated Measures Results, Effect of Positive Emotional Expression on ER

School Type	Parameter	Estimate	Std. Error	df	t	Sig.	95% CI Lower	Upper
Head Start	Intercept***	4.18	.20	27.83	20.87	.000	3.77	4.59
	Positive Expression	-.24	1.90	27.12	-.12	.902	-4.13	3.66
	Time	-.13	.10	26.17	-1.28	.213	-.35	.08
	PositiveExp*Time	.41	1.12	26.22	.36	.721	-1.90	2.71
	Gender	.30	.32	26.14	.94	.356	-.36	.96
Private	Intercept***	3.93	.22	41.30	18.13	.000	3.50	4.37
	Positive Expression	-4.47	9.83	31.38	-.46	.652	-24.51	15.56
	Time**	.45	.15	32.75	3.11	.004	.16	.75
	PositiveExp*Time	-1.06	8.45	31.69	-.13	.901	-18.28	16.16
	Gender**	-.82	.27	35.26	-3.04	.004	-1.37	-.27

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

Table 6: Mixed Model Repeated Measures Results, Effect of Negative Emotional Expression on ER

School Type	Parameter	Estimate	Std. Error	df	t	Sig.	95% CI Lower	95% CI Upper
Head Start	Intercept***	4.18	.25	27.59	16.61	.000	3.66	4.69
	Negative Expression	-.65	4.76	27.58	-.14	.892	-10.42	9.11
	Time	-.16	.11	26.12	-1.41	.171	-.39	.07
	NegativeExp*Time	1.85	2.72	26.36	.68	.502	-3.74	7.44
	Gender	.32	.34	25.98	.93	.359	-.38	1.01
Private	Intercept***	3.93	.21	40.81	18.47	.000	3.50	4.36
	Negative Expression	-12.92	16.93	32.55	-.76	.451	-47.39	21.54
	Time**	.43	.15	32.89	2.90	.007	.13	.73
	NegativeExp*Time	4.15	14.04	31.78	.30	.769	-24.45	32.75
	Gender*	-.77	.28	35.33	-2.70	.011	-1.35	-.19

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

Discussion

To date, the literature has focused on pretend play as a broad construct without looking closer at what happens during this play, but the present study explored specific elements of pretend play and their relation to children's growing ER. Using observational methods, I examined the roles of social interaction and emotional expression during pretend play in children's emotional development. While pretend play engagement and emotional expression were not significant predictors of emotion regulation, results revealed a negative contribution of social pretend play to ER that was approaching significance.

This study contributes scientific knowledge to the discussion of how pretend play is related to ER (Lillard et al., 2013), but does not fit with existing research. There was no significant effect of general pretend play engagement on ER growth, which contradicts existing literature conducted using similar naturalistic observational methods (e.g., Lindsey & Colwell, 2013) and theories on children's learning and emotional development. There are a few possible reasons for the lack of significant results. The first possibility is the study design, specifically the measurement of ER. Teachers completed a brief (6-item) survey about children's emotional self-regulation at both timepoints, but there are aspects unique to pretend play that may warrant the use of other methods when researching ER in particular. For example, children's pretend play sometimes includes high emotional investment and physical activity (de Lorimer et al., 1995; Bauer & Gilpin, 2022). Because of these more active and emotional elements, children who engage in a lot of pretend play may look dysregulated from a teacher's perspective; when in reality, their regulatory skills may be similar to, or even ahead of, their peers'. This measurement issue may be one reason for the lack of significant results in the present study, as some research has shown that using multiple informants paints a different picture of the relation between

pretend play and children's development (Bauer & Gilpin, 2022). As such, it is pertinent for future research to include multiple measures of children's emotion regulation, such as direct child measures and parent reports. This is considered a limitation of the current project, especially because a final timepoint of data collection with a direct child measure of ER was scheduled but was not conducted due to the onset of the COVID-19 pandemic. Future observational research could also code for children's emotion regulation in the classroom, which would be another method that may provide different results than teacher reports.

The second unsupported hypothesis was regarding emotional expression. It was expected that children who displayed more emotions during their pretend play would demonstrate greater ER growth, since they might be practicing regulation during play. However, emotional expression was not a significant predictor of ER growth in the current study. If there is a true effect and it was undetected in our results, it may be due to the way emotional expression was coded. I chose to code emotional expression as a majority code, meaning that there was one expression code for each 15-second segment. However, children often displayed multiple emotions within a single segment, and this would have gone undetected with the coding scheme that was used. As such, future research could code emotional expression more sensitively by noting the valence and duration of each emotion that is expressed, and this may yield different results. Another possible explanation for the lack of effect of emotional expression could be children's growing understanding of real and pretend emotions. In early childhood as social and emotional competence improve, children begin to recognize that sometimes people feign emotions and sometimes they are genuine (Sidera et al., 2013). The difference between real and pretend emotions may explain the lack of effect in the current study; no distinction was made between real and pretend emotions during coding, so the effect may have gone undetected. This

is another methodological limitation of the current project. Perhaps children who express pretend emotions are practicing and improving their ER, but children who display real emotions are not. This could be tested empirically in the future by comparing expressions of pretend and real emotions as they relate to emotional development.

One finding that approached significance was social pretend play as a negative predictor of children's ER growth. One explanation for the lack of significance here may be due to low power in statistical analyses. Since the sample was split by preschool type and an interaction and covariate were entered into the mixed effects model, the sample was likely not large enough to detect an effect. Even so, the relation between social pretend play and ER was trending negatively, which was a surprise in itself. While this negative influence was unexpected, research has shown that engagement in social pretend play may be related to more relational aggression (Aslan, 2020), and something similar may have occurred in the present study. This surprising result emphasizes the importance of looking closer at what is occurring during pretend play, rather than only measuring engagement. Most studies cited in this review examine this type of play as a monolithic construct by measuring overall frequency or quality of pretend play (e.g., Connolly & Doyle, 1984; Galyer & Evans, 2001; Gilpin et al., 2015), or only making comparisons between pretend and non-pretend (e.g., de Lorimier et al., 1995; Lindsey & Colwell, 2013), while the present study compared specific types of pretend play and yielded different results. This warrants further investigation. Perhaps other aspects of children's pretend play may be relevant, like the content children enact or the specific peers involved. There is research to suggest that children synthesize and process their life experiences during social pretend play (Long et al., 2007), which may indicate that their negotiation and enactment of thematic content could be important for their development. Content could also be a reason for the

distinct results between private and Head Start preschools. During video coding, I noticed that children tended to enact different scenarios and roles between the two types of preschools, so this content difference might be one explanation for the ER differences seen in the sample. This is only anecdotal evidence, however, so future research should continue empirically investigating the processes happening during children's pretend play, such as the themes children play about and their negotiation about these themes. Research questions like these may prove fruitful in further uncovering the links between pretend play and socioemotional development.

Another avenue for future research may be to include gender as a variable of interest, rather than a covariate. In the mixed effects models, gender was included as a covariate based on existing literature demonstrating that girls' emotional self-regulatory skills tend to be better than boys' (Morris et al., 2007). This was consistent in our sample, where gender was a significant negative predictor in all four mixed effects models for private preschools. Since gender was a significant predictor, I was interested to see if there was an interaction between gender and pretend play variables. So, I removed the nonsignificant interactions between time and pretend play and replaced them with gender-by-pretend-play-variable interactions instead, but these analyses yielded nonsignificant results (p's ≥ 0.119 for interactions). The standalone contributions of gender did remain significant in the positive and negative emotional expression models (p's $< .05$), but not in other analyses. Future investigators may examine other aspects of children's pretend play as mediating or moderating factors to better understand the gender differences in ER seen here and elsewhere. Research demonstrates that girls tend to be more fantasy-oriented and engage in more pretend play than boys (Colwell & Lindsey, 2005; Gleason, 2005; Prioletta & Pyle, 2017); girls' pretend play is less aggressive (Rao et al., 2021; Rao & Gibson, 2021) and includes a wider variety of emotional themes (Kyratzis, 2001); and the toys

advertised to boys and girls often differ in their socioemotional content (Reich et al., 2018). As such, similar to above, the content that children play about may be important for their development. This idea could be examined by using qualitative analyses like thematic coding (Braun & Clarke, 2006) to see if there are significant group differences in thematic content or emotionality of themes.

One strong aspect of this research is ecological validity because observations were conducted while children engaged in free play in their typical classroom, rather than during a standardized play task in a laboratory, meaning that the results are more generalizable to natural settings. Additionally, personal microphones and multiple camera angles were used during data collection, which likely strengthened our coding accuracy since more information was available by using this method. These aspects of our observations should be employed in future extensions of this work investigating additional mechanisms in the relationship between pretend play and ER. As mentioned above, some limitations include a lack of sensitivity in the coding scheme (no data on real vs. pretend emotions or brief emotional expressions) and a small sample size. Despite these limitations, the results still further our knowledge of children's pretend play by emphasizing the importance of considering styles of pretend play and suggesting additional questions for future research.

Through ecologically valid observational methods, this project revealed some processes occurring within pretend play that were contrary to existing research and theory. These results suggest that more research is needed to determine how pretend play contributes to children's development. By continuing to tease apart the styles of pretend play that are most beneficial, we will eventually uncover the best methods for supporting children's kindergarten readiness through play. Pretend play is available to all children regardless of who or where they are, and

this makes it an incredible strengths-based tool for promoting a smooth transition to

kindergarten, one of the first major challenges in a child's life.

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