

# Pretend Play, Creativity, and Emotion Regulation in Children

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The aim of this study was to examine relationships among pretend play, creativity, emotion regulation, and executive functioning in children. Pretend play processes were assessed using the Affect in Play Scale (APS), which measures children's cognitive and affective processes, such as organization of a plot or use of emotions. Sixty-one female participants, in kindergarten through fourth grade, were assessed using the APS to measure pretend play ability, a divergent thinking task (the Alternate Uses Test), a storytelling task to assess creativity, a measure of executive functioning (the Wisconsin Card Sorting Task, Short Form; WCST-64), and parent report on the Emotion Regulation Checklist (ERC). Using correlational analyses, pretend play significantly related to creativity as measured by divergent thinking and storytelling, and related to emotion regulation. Affect expression in play was significantly related to affect expression in storytelling suggesting cross-situational stability. Divergent thinking ability was significantly related to creativity in storytelling. In general the magnitudes of the correlations were of medium effect size. No significant relationships were found with executive functioning. The results of this study support theories that suggest play, creativity, and emotion regulation are linked.

*Keywords:* pretend play, creativity, divergent thinking, storytelling, emotion regulation

A child's imagination is something to be admired; however, the busy world in which children now live requires that they develop skills of inhibition, self-regulation, and emotional control to be successful. It may seem that children must learn to control their playful imaginations and overflowing creativity so as to mature into self-controlled adults. Yet, it may be that instead of creativity and self-regulation being opposing forces, they are actually related tools for success. Perhaps children with strong imaginations and good pretend play skills are more adept at developing mature emotional control. The current study explored the relationships among pretend play, creativity, emotion regulation, and executive functioning.

## Pretend Play and Creativity

There are many types of play in which children engage, including puzzles, board games, and outdoor activities. The current study focused on pretend play, defined as play that includes the use of fantasy and make-believe, and the use of symbolism (Russ, 2004). Fein (1987) described play as a symbolic act in which "one thing is playfully treated as if it were something else." (p.282). For example, a child might pretend a rectangular block is a car. Through pretend play children display cognitive, affective, and interpersonal processes (Russ, 2004). Russ (2004) asserts that "individual differences in these processes can be identified in

children, and many of these processes are expressed and developed in pretend play" (pp. 9). Cognitive processes in play include divergent thinking, the ability to generate a variety of ideas (Guilford, 1968), and storytelling in which imagination and fantasy abilities can be observed in a less structured format. Divergent thinking is especially important in creative production (Runco, 1991). Symbolism, the ability to transform ordinary objects like blocks into representations of other objects, is also important in pretend play. The capacity to use fantasy and engage in "as if" play behavior should also be important in many domains of creativity.

Creativity and play are naturally connected, as a child uses fantasy, symbolism, and divergent thinking to weave a context, story, and characters. Russ (2004), after reviewing the literature, concludes that there are five ways in which play helps a child become more creative: (1) play involves practice making associations which is an important part of divergent thinking, (2) pretend play leads to the use of symbols, the recombining of ideas, and the manipulation of object representations, which are part of transformation ability and insight ability, both creative skills, (3) play allows for the expression and experiencing of positive affect, important in creativity, (4) pretend play allows the players to express and think about positive and negative affect themes, which over time lead a child to develop abilities to access memories and associations which help creative problem-solving, and (5) pretend play helps a child develop cognitive structure to contain, integrate, and modulate affect.

Divergent thinking involves free association, broad scanning ability, and fluidity of thinking, and has been found to be relatively independent of intelligence (Runco, 1991), making divergent thinking one of the most popular measures of creative potential. Divergent thinking is thought to be important in creative production. Singer and Singer (1990) viewed play as practice with divergent thinking. Pretend play and divergent thinking in other areas should relate as play leads to practice with developing alternate

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This article was published Online First December 12, 2011.  
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We appreciate the support and cooperation of the Center for Research on Girls at Laurel School.

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story ends or using the same object as multiple props. Affect expression in play should also relate to divergent thinking and to creativity. The expression of emotion and affect-laden fantasy in play could help develop a broad repertoire of affect-laden associations (Russ, 1993). This broad repertoire of associations and use of emotion to access these associations should facilitate divergent thinking because the involvement of emotion broadens the search process for associations (Isen, Daubman & Nowicki, 1987). Positive affect, especially, has been found to increase creativity, in a recent meta-analysis by Baas, De Dreu, and Nijstad (2008).

A large number of studies specifically examining pretend play and divergent thinking have found significant relationships (Johnson, 1976; Pepler & Ross, 1981; Singer & Rummo, 1973). Both cognitive and affective processes in play have been found to relate to divergent thinking, independent of intelligence (Russ & Grossman-McKee, 1990). Lieberman (1977) found a relationship between playfulness and joy and divergent thinking in kindergarten children. Negative affect has also been found to relate to fantasy play and divergent thinking (Russ & Schafer, 2006). Children who could express more negative themes in play such as aggression or fear, also generated more uses for object and more original uses for objects than children with less negative affect in their play. This relationship between affect expression in pretend play and divergent thinking has also been found in preschool children (Kaugars & Russ, 2009). A longitudinal study found that imagination and organization in fantasy play in first and second graders was associated with divergent thinking when these students were in the fifth and sixth grades. The relationship between play and divergent thinking was stable over this 4-year period.

Divergent thinking is only one form of creativity. Storytelling is another type of creativity. Baas, De Dreu, and Nijstad (2008) conceptualized different creative tasks as fitting into one of three domains: (1) open-ended tasks, such as divergent thinking; (2) tasks that have a single correct solution, such as insight tasks; and (3) creative performance tasks in which creativity is subjectively judged by others, such as art or storytelling. Hennessey and Amabile (1988) assert that storytelling tasks are excellent additions to creativity assessments because they do not rely heavily on age-relevant skills.

The relationship between play and storytelling ability has not been investigated. It is also not known what role divergent thinking has in storytelling ability. A child's story can excel in a variety of creative areas, including fantasy, novelty, imagination, or likability. A factor analysis using elementary school teacher ratings on nine dimensions of storytelling found four ratings to load highly and positively on a creativity factor: creativity of the story, imagination of the storyteller, novelty of the idea, and likability of the story (Hennessey & Amabile, 1988). Using a consensus scoring system, in which scoring criteria are purposely left vague, Hennessey and Amabile (1988) found large individual differences between low and high creative stories, with strong interrater reliability between teacher-raters. The present study used these four dimensions, imagination, novelty, likability, and creativity, in the evaluation of storytelling ability.

### Emotion Regulation and Executive Functioning

Emotion regulation is the ability to manage one's emotional experiences to engage adaptively within the daily environment

(Shields & Cicchetti, 1998). This includes regulating the experience of emotion by monitoring one's expressive behavior (Saarni, 1984). Emotion regulation is important because empirical evidence shows that a child's ability to regulate his or her own emotional state is essential in the formation of positive peer relationships (Eisenberg et al., 1993; Fabes et al., 1999).

Emotion regulation develops throughout childhood. It includes internal self-regulation, and environmental factors such as cultural display rules, defined as social conventions that dictate where, when, and how emotion-related behaviors are expressed (Ekman & Friesen, 1969). To show the development of emotion regulation through childhood, Saarni (1984) used a disappointment paradigm in which children were given an undesirable gift. Six-year-olds were openly negative in their expressions, older children were less overtly negative (e.g., lip biting), and 10–11-year-old children were able to exhibit positive behavior (e.g., exaggerated smile) despite feeling disappointed internally.

Pretend play gives children the opportunity to act out emotional experiences and build emotion regulation skills by letting them symbolically create and then modify highly arousing emotional events, and negotiate rules or agree upon the direction of play with another person (Bretherton, 1989; Fein, 1989; Howes & Matheson, 1992). Gayler and Evans (2001) hypothesize that pretend play works as a social interaction to enhance children's abilities to regulate emotion. In their study, preschool children were assessed for emotion regulation and observed engaged in pretend play with their parents. Results indicated that children who engaged in pretend play with their parents more often were found to have higher ratings of emotion regulation. Lindsey and Colwell's (2003) study found that children who engaged in high levels of play were rated by their mothers to have better emotional understanding. Girls in that same study who engaged in high levels of pretend play were also rated as having better emotion regulation and emotional competence with peers, while this pattern was not found for boys. Elias and Berk's (2002) research with preschoolers also confirms the contribution of pretend play to the development of self-regulation abilities. Recent research has shown a link between high levels of sociodramatic play, conflict resolution, and good self-regulation in preschoolers (Fantuzzo, Sekino & Cohen, 2004; Lemche et al., 2003).

Little research has examined how pretend play that a child engages in alone might relate to emotion regulation. Further studies are also needed examining pretend play and emotion regulation with older, elementary school-age children. Sociodramatic play among peers and emotion regulation have been shown to relate as play is a safe arena to experiment with and control negative affect (Bretherton & Beeghly, 1989; Fein, 1989). Theoretically, fantasy play that occurs when a child plays alone should also relate to emotion regulation.

Executive functioning refers to a large set-up abilities including planning, persistence, mental flexibility, working memory, set-shifting, error detection and correction, and inhibitory control. Executive functioning is defined as the conscious control of thought and action needed for future-oriented and purposeful behavior (Welsh, Pennington & Grossier, 1991; Zelazo, Carter, Reznick & Frye, 1997). Like emotion regulation, executive functioning develops with age. Upon leaving preschool, children should have self-regulation to wait their turn, resist the urge to hit or grab other children, and persist at something challenging (Berk,

Mann & Ogan, 2006). Reed, Pein and Rothbart (1984) studied 3- and 4-year olds' abilities to selectively follow or not follow commands using the Bear/Dragon task (a version of Simon Says in which children follow instructions from the bear puppet but do not follow instructions from the dragon puppet). Results showed that the young 3-year-olds had difficulty inhibiting their actions during this task, but older 3-year-olds and 4-year-olds did not.

Theoretically, pretend play should relate to skills of emotion regulation and executive functioning. Vygotsky (1930-1935/1978) theorized that pretend play serves as a context for cognitive development as children create their own zone of proximal development. Within play, children create and then follow their own rules, thereby developing the capacity for self-regulation and impulse control (Vygotsky, 1978). Pretend play becomes a time to practice skills which could be generalized to real life such as following social rules established by the context of the story and the other children with whom one plays (Kraft & Berk, 1998). For example, a child may be able to tell her teddy bear he has to wait five minutes before he gets a cookie and then do so herself, while in real life the same 5-min wait imposed by a parent would seem unbearable.

### Summary

Research has shown that pretend play has been associated with aspects of creativity and emotion regulation. Children who exhibit more imagination and affect in pretend play tend to be better divergent thinkers and to be better able to self-regulate. The current study examined the relationship of processes in pretend play and two aspects of creativity, divergent thinking, and storytelling ability. The relationships between these two measures of creativity were also examined. In addition, the relationships among play, creativity, emotion regulation, and executive functioning were explored.

It was expected that pretend play would positively correlate with divergent thinking, storytelling, emotion regulation, and executive functioning. In addition, it was hypothesized that the multiple measures of creativity (divergent thinking and storytelling) would relate to each other and to emotion regulation.

### Method

#### Participants

Sixty-one students from a private school for girls participated in this study. Consent forms were sent home with each student in the kindergarten through fourth grade. Students were enrolled in the study when consent forms were returned to the school by parents. No reward was offered for participation in the study. The participation rate, based on the number of recruitment letters originally sent out to parents, was 43%. Participants were ages 5 to 10, with a mean age of 7.4 years with a standard deviation of 1.5. There were 12 kindergarteners, 11 first graders, nine second graders, 10 third graders, and 19 fourth graders. Information regarding ethnic background or socioeconomic status was not collected in this study, though the private school has a majority of Caucasian students with most families in the middle to upper classes. This study was part of the baseline data collected for a larger project examining a four-session play intervention.

#### Procedure

Each participant was met with individually for two half-hour sessions in the school library during the school's lunch and recess hour. During the first session, the Affect in Play Scale (APS; Russ, 1993, 2004) was administered as a measure of cognitive and affective pretend play processes. During the second session, three tasks were administered: (1) the Wisconsin Card Sorting Task, short form (WCST-64; Haaland, Vranes, Goodwin & Garry, 1987), to measure executive functioning, (2) a storytelling task using Mayer's (1967) book *A Boy, A Dog, and A Frog* to measure creativity in storytelling, (3) and Wallach and Kogan's (1965) adaptation of Guilford's Alternate Uses Task, a measure of divergent thinking. The Vocabulary subtest of the Wechsler Intelligence Scale for Children (WISC-IV; Psychological Corporation, 2003) was administered as an estimate of verbal intelligence to the majority of children during their first session; however, if time ran out during the first session, children received the Vocabulary subtest during their second session. Parents were mailed copies of the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1998) to be completed at their convenience and mailed back to the researchers.

Two graduate students administered all of the baseline assessments. One of the graduate students was able to meet with 61% of the participants for both baseline sessions, while 39% of participants, 24 of the 61 participants, had different examiners for their first and second sessions. A comparison of means on each of the variables revealed no significant examiner effects on the participants' scores. Measures were scored blind to the participant's performance on other tasks.

#### Measures

**Affect in play scale.** This a method of rating children's play through observation of a standardized 5-min play task using two puppets and three blocks. Instructions for the task are:

I'm here to learn about how children play. I have here two puppets and would like you to play with them any way you would like for five minutes. For example, you can have the puppets do something together. I also have some blocks that you can use. Be sure to have the puppets talk out loud. The video camera will be on so that I can remember what you say and do. I'll tell you when to stop.

The play is videotaped so that detailed coding may be completed. Both cognitive and affective elements of the play are scored. The main cognitive scores are (1) organization, a score of the quality and complexity of the plot from 1 to 5, and (2) imagination, a score of the novelty and fantasy of the play from 1 to 5. The main affect scores are (1) the frequency of affect, the total number of affective expressions in the play narrative, (2) the variety of affect expressed across 11 possible categories, (3) positive affect, the number of positive affective expressions in the play narrative, for example a child might say, "That was fun!", and (4) negative affect, the total number of negative affective expressions in the play narrative, for example a child saying, "A monster is coming!". The child's level of comfort and enjoyment engaging in pretend play is also scored from 1 to 5.

A detailed scoring manual for the APS has been developed. Past studies have reported the interrater reliability of the APS to be

high, consistently in the .80s and .90s using Cohen's kappa. Internal consistency on the APS using the Spearman-Brown split-half reliability is also high (.85; Seja & Russ, 1999). The APS has a large body of validity studies demonstrating associations with theoretically relevant criteria (see Russ, 2004).

**Alternate uses task.** As one measure of creativity, divergent thinking was assessed using the Wallach and Kogan (1965) adaptation of Guilford's Alternate Uses Task. The task asks children to think of uses for six common objects: a newspaper, a button, a key, an automobile tire, a shoe, and a knife. Three scores are calculated from the child's responses to the six items: (1) Fluency, the number of acceptable uses generated by the child, (2) Flexibility, the number of different categories of uses generated by the child, and (3) Originality, the number of acceptable uses given by a child that made up only 1% or less of all the responses given for an item. The Alternate Uses Task has excellent reliability and validity, established in many studies conducted with children (Kogan, 1983; Runco, 1991).

**Storytelling task.** A storytelling task was administered as a second measure of creativity. Children were asked to look through Mercer Mayer's (1967) picture book *A Boy, A Dog and a Frog* and tell a story that went along with the pictures. The instructions were:

I want you to tell me the story in this book. (Hand child the picture book and turn to the first page). I can't see the pictures so make sure to tell me the story so that I will understand it. Make it the kind of story we would read in a book. Go all the way to this page that says stop. I will be writing down what you say, so I may have to ask you to slow down. Go ahead.

Stories were scored with two methods. The first method for assessing creativity in the stories was a consensus scoring system as defined by Hennessey and Amabile (1988). Two child clinical psychology graduate students familiar with child creativity rated the stories on five-point Likert-type scales (1 = lowest rating, 5 = highest rating) for Creativity, Imagination, Novelty, and Likability, the four variables which Hennessey and Amabile (1988) found to load highly on a creativity factor for storytelling. Raters were given no scoring directions other than to rate the stories relative to each other rather than to an outside standard. Both raters scored all of the stories. For statistical analyses, a composite score was calculated for each of the four variables (Creativity, Imagination, Novelty, and Likability) by averaging the two rater's scores.

Second, stories were rated using fantasy and affect measures adapted and derived from the Affect in Play Scale (Katz, Russ & Overholser, 1993). Each story was given a fantasy score between 1 and 3. Stories were given a fantasy score of 1 if no additional information was added by the storyteller other than that in the picture book (e.g., "There was a boy walking his dog."). Stories were given a fantasy score of 2 if the storyteller added some fantasy elements or imaginative information not immediately provided by the book (e.g., "There was a boy named Max who loved to take his dog Buddy for walks down by the river."). Stories with the highest amounts of fantasy, imagination, dialogue, or other additions not easily gleaned from the picture book were given a fantasy score of 3 (e.g., "There was a boy named Max who lived in a small fishing village. One day his mother said 'Take Buddy for a walk down by the river and catch us something for dinner.' So Max and Buddy went for a walk.").

Stories were also coded for the amount of affect expressed. For example, a unit of affect was coded if the storyteller said, "The boy was mad" or "The frog was scared." In addition to a Total Affect score, affective expressions were also divided into Direct Affect ("The boy was mad") and Implied Affect ("The boy yelled at his dog"). Direct Affect was coded as affective expressions in which an emotion word was used (e.g., mad, sad, happy), while Implied Affect counted affective expressions or actions in which the character's affect state was implied (e.g., yelling, crying, smiling). Direct Affect and Implied Affect were combined to form the Total Affect score. Stories were also coded for the Variety of Affect, using the 11 possible affect categories from the Affect in Play Scale.

**Emotion Regulation Checklist (ERC).** Emotion regulation was measured using the emotion regulation subscale from the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1998) a parent report questionnaire. The scale comprises of 24 items, each using a four-point Likert scale from Never (1) to Almost Always (4), on which parents rate how often their child displays certain behaviors relevant to developmentally appropriate reactions during positive and negative emotions. Some example items are, "Can say when s/he is feeling sad, angry or mad, fearful or afraid," and "Is empathic toward others." The emotion regulation subscale is reported to have high internal consistency, .83 (Shields & Cicchetti, 1998), and good construct validity correlating with parent rating on the Child Behavior Checklist (CBCL; Achenbach, 1991). In this study, the emotion regulation subscale had a Cronbach's alpha of .70, which is considered acceptable internal consistency.

**Wisconsin Card Sorting Task, Short Form (WCST-64).** Children were administered the Wisconsin Card Sorting Task, Short Form as the measure of executive functioning. This 64-card version is adapted from the 128-card original Wisconsin Card Sorting Task (WCST; R. K. Heaton, 1981). In the task, each participant sorts 64 cards by color, shape, or number into piles based on four key cards. Directions for the task are as follows:

This test is a little unusual because I am not allowed to tell you very much about how to do it. You will be asked to match each of the cards in this deck (point to the response card deck) to one of these four key cards (point to each of the stimulus cards in succession, beginning with the red triangle). You must always take the top card from the deck and place it below the key card you think it matches. I cannot tell you how to match the cards, but I will tell you each time whether you are right or wrong. If you are wrong, simply leave the card where you have placed it and try to get the next card correct. There is no time limit on this test. Are you ready? Let's begin.

Research shows the WCST-64 to be generally comparable to the standard WCST (e.g., Heaton & Thompson, 1992; Axelrod, Henry & Woodard, 1992). Two scores from the WCST-64 were used for analyses: (1) Perseverative Responses, scored as any time a participant persisted in placing cards according to an incorrect sorting principle (shape instead of color), and (2) Conceptual Level Responses, scored as correct responses occurring in runs of three or more, presumably indicating a participant's insight into the correct sorting principle. The Perseverative Responses score was selected because it reflects the extent to which a child will continue with an erroneous strategy despite being given feedback. This score has been recommended by the test authors as of primary interest for clinical interpretation (Kongs et al., 2000). The Conceptual Level

Responses score was chosen because it is meant to indicate the number of correct responses a participant gave that demonstrated their clear understanding of the sorting principal correcting for guesses. Many of the variables obtained from the WCST-64 are highly interdependent, and therefore only two variables were selected to avoid overlapping statistical comparisons.

Correlations between the WCST and the WSCT-64 have been shown to be .87 for Perseverative Responses and .86 for Conceptual Level Responses (Axelrod et al., 1992). The WCST-64 has been shown to have good construct validity and good to excellent test-retest reliability coefficients, averaging between .57 and .90 (Kongs, Thompson, Iverson & Heaton, 2000).

**Vocabulary Subtest of Wechsler Intelligence Scale for Children (WISC-IV).** Participants were administered the Vocabulary subtest of the WISC-IV as an estimate of verbal ability. The subtest asks participants to define words of increasing difficulty and scores participants' answers on a scale from 0 to 2, assessing verbal fluency, concept formation, and word knowledge. Of all the subtests on the WISC-IV, the vocabulary subtest is generally the best estimate of overall intelligence. The Vocabulary subtest has been validated for children 6 to 16 and has demonstrated strong reliability and validity through correlations with other measures of intelligence and academic achievement (see Wechsler, 2003).

**Data Considerations**

In this sample of 61 participants there were some missing data. Two participants did not wish to participate in the pretend play task, and 11 participants were not videotaped, leaving 48 participants with videotaped play to be scored. Twelve parents did not return the Emotion Regulation Checklist sent home, and two parents who did return the ERC left crucial items blank. Two participants did not complete a second baseline session and thus

are missing scores for the Wisconsin Card Sorting Task, storytelling task, and divergent thinking measures. In addition, one participant chose not to complete the WCST, and four kindergarteners' scores were dropped because they were 5-years-old and thus did not have valid scores on the task. Two children also expressed that they did not wish to complete the storytelling task. Because of these participant requests, each measure had a slightly different sample of participants. Descriptive statistics of all variables are reported in Table 1. The data were examined for outliers. No outliers were found that would alter the correlations.

**Results**

**Data Analyses**

Pearson product-moment correlations were used to test for significant correlations among the measures of pretend play, creativity, emotion regulation, and executive functioning. A power analysis done with G\*Power indicated that 64 participants would provide 0.80 power for a medium effect size. Data were checked for skewness and kurtosis. Where data were skewed, analyses were rerun with transformed data. Because of only small changes in the magnitude of correlations, that did not affect interpretation of results, all results presented below use raw data. An alpha value of .05 was used for all statistical tests. One-tailed tests were used for a priori hypotheses.

**Interrater Reliability**

Interrater reliability for the Affect in Play Scale was calculated for the present study using 20 randomly chosen participants. Interrater reliability was assessed using a rigorous form of intraclass correlation coefficient that measures absolute agreement rather

Table 1  
*Descriptive Statistics of the Sample*

Measure	Variable	N	M	SD	Range
APS	Organization	48	2.98	1.36	1-5
	Imagination	48	3.08	1.30	1-5
	Comfort	48	3.50	1.38	1-5
	Frequency of affect	48	23.48	19.83	0-75
	Variety of affect	48	3.69	2.28	0-8
	Positive affect	48	14.21	13.23	0-53
	Negative affect	48	9.27	11.72	0-54
Divergent thinking	Fluency	59	16.17	6.81	4-35
	Flexibility	59	14.03	5.53	4-30
	Originality	59	3.12	3.64	0-16
Storytelling (affect and fantasy scoring)	Fantasy	57	1.75	0.76	1-3
	Direct affect	57	3.82	2.84	0-12
	Implied affect	57	8.26	3.35	2-19
	Total affect	57	12.09	5.03	3-28
	Variety of affect	57	3.23	0.96	2-6
Storytelling (consensus scoring)	Likeability	57	3.14	0.89	1.5-5
	Creativity	57	2.98	1.00	1-5
	Novelty	57	2.83	0.99	1-5
	Imagination	57	3.18	0.93	1-5
Emotion regulation	Emotion regulation	49	27.90	2.96	20-32
Executive functioning	Perseverative resp.	54	11.31	7.09	2-38
	Conceptual resp.	54	37.98	11.94	13-56

than just consistency between raters (Shrout & Fleiss, 1979). A two-way random effects model was used, testing for absolute agreement using a 95% confidence interval. The average scores for the intraclass coefficients were: .94 for organization, .96 for imagination, .95 for comfort, .96 for frequency of affect, .97 for variety of affect, .95 for positive affect, and .98 for negative affect.

For the storytelling scores using the consensus scoring system, both raters scored all 57 stories given by the participants. Before averaging the two raters' scores to calculate the composite score used for statistical analyses, the interrater reliability was calculated. Using the two-way random effect model to test for absolute agreement using a 95% confidence interval, the intraclass coefficients were: .80 for imagination, .80 for creativity, .68 for novelty, and .70 for likability, suggesting moderate to strong agreement between the two raters.

### Verbal Ability

Verbal ability was measured using the Vocabulary subtest of the WISC-IV. Participants had a mean score of 12.18 ( $SD = 2.47$ , Range = 7 to 17). The WISC-IV has a standardized mean of 10 and standard deviation of 3, thus the present sample scored approximately two thirds of a standard deviation above average. Verbal ability did not correlate with any pretend play, storytelling, or executive functioning variables. Verbal ability did correlate with divergent thinking variables of Fluency,  $r(59) = .33, p < .05$ , and Flexibility,  $r(59) = .31, p < .05$ .

### Play and Creativity

As in past studies, a pattern emerged in which the cognitive processes of pretend play (organization and imagination), as measured by the APS, related to divergent thinking (See Table 2). Organization in play positively correlated with divergent thinking Fluency,  $r(46) = .32, p < .05$ , and Flexibility,  $r(46) = .28, p < .05$ . Imagination in play also positively correlated with Fluency,

$r(46) = .38, p < .05$ , and Flexibility,  $r(46) = .36, p < .01$ . Children who were rated as having more organization and imagination in their play also generated more responses on the divergent thinking task. Organization and imagination in play accounted for 10% and 14% of the variance in fluency of divergent thinking, respectively. The magnitudes of these correlations are medium effect size (Cohen, 1992). The variety of affect expressed in pretend play was also found to relate to divergent thinking. Variety of Affect as measured by the APS positively correlated with divergent thinking Fluency,  $r(46) = .25, p < .05$ . Children who expressed a wider range of emotions during pretend play also generated more answers during divergent thinking. These results remained significant after controlling for verbal ability.

For the storytelling measure, using the consensus system, the affect in play had the most significant correlations. Positive Affect in pretend play significantly related to story likability,  $r(44) = .30, p < .05$ , creativity,  $r(44) = .31, p < .05$ , and imagination,  $r(44) = .29, p < .05$ . Children who expressed more positive affect during pretend play also tended to tell stories rated as more likable, creative, and imaginative. As expected, imagination in pretend play also positively related to creativity in storytelling,  $r(44) = .26, p < .05$ . Children rated as more imaginative in pretend play were also rated as telling more creative stories.

Using the fantasy and affect scoring system, there were no significant correlations between play and the storytelling fantasy score; however, affect in play did relate to affect in storytelling. Direct affect expression in storytelling, tallied as instances in which the child used an affect-laden word (e.g., The boy was mad), as opposed to implied affect (e.g., The boy shook his fist), related to affect expression in pretend play (see Table 2). Direct affect expression positively correlated with Frequency of Affect expression in play,  $r(44) = .31, p < .05$ , Variety of Affect expressed in play,  $r(44) = .27, p < .05$ , and Positive Affect expressed in play,  $r(44) = .51, p < .01$ . Controlling for verbal ability, the majority of correlations remained the same.

Table 2  
Pearson Product-Moment Correlations Among Creativity and Pretend Play

Creativity variables	Pretend play variables						
	Org.	Imag.	Comf.	Freq.	Var.	Pos.	Neg.
Divergent thinking <sup>a</sup>							
Fluency	.32*	.38**	.18	.15	.25*	.22	.01
Flexibility	.28*	.36**	.16	.14	.22	.21	-.01
Originality	.24	.28*	.16	.14	.20	.19	.03
Storytelling (affect & fantasy scoring) <sup>b</sup>							
Fantasy	.02	.20	.20	.25	.20	.20	.19
Direct affect	.08	.15	.18	.31*	.27*	.51**	-.02
Implied affect	.08	.07	.07	-.01	-.03	.10	-.12
Total affect	.09	.13	.14	.16	.12	.34*	-.09
Variety of affect	-.05	.03	.02	.06	-.01	.22	-.12
Storytelling <sup>b</sup> (consensus scoring)							
Likeability	.13	.19	.06	.11	.06	.30*	-.12
Novelty	.19	.21	-.01	.05	.03	.22	-.14
Creativity	.20	.26*	.09	.12	.11	.31*	-.12
Imagination	.15	.24	.08	.15	.09	.29*	-.06

<sup>a</sup>  $n = 46$ . <sup>b</sup>  $n = 44$ .  
\*  $p < .05$ . \*\*  $p < .01$ .

**Play and Emotion Regulation**

Emotion regulation was found to positively relate to pretend play (see Table 3). Emotion regulation positively correlated with pretend play scores of organization,  $r(39) = .30, p < .05$ , imagination,  $r(39) = .34, p < .05$ , comfort,  $r(39) = .38, p < .01$ , frequency of affect,  $r(39) = .39, p < .05$ , variety of affect,  $r(39) = .28, p < .05$  and frequency of positive affect  $r(39) = .36, p < .05$ . Children rated as having higher emotion regulation by their parents also had higher scores on both the cognitive and affective pretend play variables. Comfort engaging in pretend play and positive affect expression accounted for 14% and 13% of the variance in emotion regulation, respectively.

**Interrelationships Among Creativity Measures**

Pearson product–moment correlations were used to address the hypothesis that the two creativity measures, divergent thinking and storytelling, would be positively related (See Table 4). All three divergent thinking scores, Fluency, Flexibility, and Originality related to storytelling scores of Implied Affect, Total Affect, Variety of Affect, and Fantasy.

Divergent thinking also significantly correlated with storytelling scores from the consensus scoring system. Fluency in divergent thinking positively correlated with all four consensus scores: likability  $r(57) = .30, p < .05$ , creativity  $r(57) = .37, p < .01$ , novelty  $r(57) = .32, p < .01$ , and imagination  $r(57) = .23, p < .05$ . Flexibility in divergent thinking also positively correlated with storytelling consensus scores of likability  $r(57) = .29, p < .05$ , creativity  $r(57) = .36, p < .01$ , and novelty,  $r(57) = .31, p < .01$ . Originality in divergent thinking positively correlated with story-

Table 3  
*Pearson Product–Moment Correlations With Emotion Regulation*

	Emotion regulation
Pretend play scores <sup>a</sup>	
Organization	.30*
Imagination	.34*
Comfort	.38**
Frequency of affect	.38**
Variety of affect	.28*
Positive affect	.36*
Negative affect	.23
Divergent thinking scores <sup>b</sup>	
Fluency	.30*
Flexibility	.29*
Originality	.31*
Storytelling (affect & fantasy scoring) <sup>b</sup>	
Fantasy	.11
Direct affect	.32*
Implied affect	-.11
Total affect	.10
Variety of affect	.17
Storytelling (consensus scoring) <sup>b</sup>	
Likeability	.05
Creativity	.09
Novelty	.07
Imagination	.09

<sup>a</sup>  $n = 39$ . <sup>b</sup>  $n = 47$ .  
\*  $p < .05$ . \*\*  $p < .01$ .

Table 4  
*Pearson Product–Moment Correlations Among Creativity Variables*

Storytelling variables	Divergent thinking variables		
	Fluency	Flexibility	Originality
Affect & fantasy scoring			
Fantasy	.26*	.25*	.34**
Direct affect	.20	.18	.19
Implied affect	.27*	.26*	.24*
Total affect	.29*	.27*	.26*
Variety of affect	.38**	.31**	.33**
Consensus scoring			
Likeability	.30*	.29*	.16
Creativity	.37**	.36**	.25*
Novelty	.32**	.31*	.23*
Imagination	.23*	.22	.21

Note.  $n = 57$ .  
\*  $p < .05$ . \*\*  $p < .01$ .

telling creativity,  $r(57) = .25, p < .05$ , and novelty  $r(57) = .23, p < .05$ . In general, those children who performed better on the divergent thinking task also produced stories given more favorable ratings.

**Creativity and Emotion Regulation**

Divergent thinking scores were found to positively relate to emotion regulation (see Table 3). Emotion regulation positively correlated with all three divergent thinking variables, Fluency  $r(47) = .30, p < .05$ , Flexibility  $r(47) = .29, p < .05$ , and Originality  $r(47) = .31, p < .05$ . Thus, children who generated more uses in a wider range of categories, and more original responses, all tended to be children rated by their parents to have better emotion regulation.

Storytelling scores were largely unrelated to emotion regulation. Storytelling composite scores using the consensus scoring system were not significantly related to emotion regulation. The storytelling Fantasy score also did not significantly relate to emotion regulation. Emotion regulation did positively relate to direct affect expression in storytelling,  $r(47) = .31, p < .05$ , meaning that those children who used more emotion words in their narratives were rated by their parents as having better emotion regulation.

**Executive Functioning**

Scores of executive functioning from the WCST-64, perseverative responses and conceptual level responses, were not found to relate to pretend play variables nor emotion regulation.

**Discussion**

The primary purpose of the present study was to test the hypotheses that pretend play would relate to creativity, emotion regulation and executive functioning. The major findings from the study were that pretend play related to two different types of creativity as well as parent report of emotion regulation. In addition, creativity measures of divergent thinking and storytelling related to each other and to emotion regulation. Executive func-

tioning was not found to relate to play, creativity, or emotion regulation.

### **Pretend Play and Creativity**

Pretend play scores were associated with creativity in this sample. Children who had more organized stories and more imagination in play were better divergent thinkers, independent of verbal ability. Children with a broader range of affect were also better divergent thinkers. These relationships were consistent with previous research using the Affect in Play Scale and Alternate Uses Task (Russ & Grossman-McKee, 1990). However, total affect expression in play did not relate to divergent thinking in this sample, as it did in other studies.

Pretend play variables also related to storytelling scores in this sample. Children who had more imagination in their play also had more creativity in their storytelling. Children with more positive affect in their pretend play narrated stories rated to be more likable, creative, and imaginative, supporting the theorized link between affect and creativity (Russ, 2004). Positive affect in particular has related to creativity in adult studies.

The direct expression of emotion words during storytelling was found to relate to the amount of affect expression in pretend play as well as the variety of affect expression across domains. Children who express more affect during play, also express more affect when telling a story, suggesting cross-situational stability. This result is consistent with Russ and Schafer's (2006) findings that affect in play is related to affect expression in memory narratives. The mechanisms underlying this relationship might begin in childhood, with pretend play being one vehicle for development.

### **Multiple Measures of Creativity**

Consistent with hypotheses, divergent thinking and storytelling ability were significantly related in this study. Those children who had higher divergent thinking scores also tended to have higher amounts of affect, larger varieties of affect, and greater amounts of fantasy in the stories they told. These children were also more likely to be rated as having stories that were more likable, novel, creative, and imaginative. Originality during divergent thinking was also positively related to storytelling affect expression and fantasy, as well as ratings of creativity and novelty. These results suggest a common creative ability across creative tasks, which has implications for development of creative writing abilities.

### **Pretend Play and Emotion Regulation**

As hypothesized, children who were viewed as better able to manage their emotions were also more comfortable engaging in the play task and showed higher levels of imagination and organization while playing. Children with more affect expression during their play narratives, and those who used a wider range of emotions and more positive affect were also rated as having better emotion regulation by their parents. These results remained significant after controlling for verbal ability, suggesting that the link between good play and development of emotion regulation is not accounted for by verbal ability. It is likely that the actual act of pretending and the safe environment for experimenting with affect expression are important features of pretend play. The possibility

that skills of identifying emotions in others and correctly expressing emotions can be developed in pretend play while with a playmate or alone has clinical significance as well.

### **Creativity and Emotion Regulation**

Higher parent ratings of emotion regulation also related to higher scores on the divergent thinking task. Those children whose parents rating them as having more developed emotion regulation also tended to display greater fluency, flexibility, and originality in divergent thinking. These results fit with current theory and findings linking creativity and coping. Children who can generate more solutions to a problem and more original solutions should be better equipped to problem-solve in distressing situations. A creative child will be able to think of more responses, behaviors, or activities that she might use to better handle her emotions when necessary.

While the majority of storytelling variables did not relate to emotion regulation, children with more direct affect expressions during storytelling were rated to have better emotion regulation. Implied affect was not related to emotion regulation and thus the total affect score, combining direct and implied affect, was also not significantly related. This finding suggests a crucial difference between merely incorporating affect themes into one's narrative versus actually using emotion words to label characters' feelings. Those children who used more emotion words (happy, sad, angry, scared) had better emotion regulation compared with other children who may have implied affective themes but did not directly use emotion words.

### **Nonsignificant Findings With Executive Functioning**

Inconsistent with the proposed hypotheses, scores of pretend play processes were not related to scores of executive functioning. Theory suggests that pretend play processes might be associated with executive functioning attributable to development of problem-solving, set-shifting, or inhibition skills. There are a few possible explanations for the nonsignificant findings. The WCST-64 is typically a measure of executive functioning used with clinical samples where difficulties are suspected. The use of the measure with a nonclinical sample in this study resulted in a skewed range of scores, with most children performing very well on the task. This result may have made finding a significant relationship between play and executive functioning more difficult. In addition, low scores on executive functioning may have been attributable to variables such as attention span or difficulty recognizing patterns, abilities which should not be related to pretend play. A second interpretation of the results is also possible; while a relationship between play and executive functioning was expected, the nonsignificant relationship indicates that play and executive functioning are indeed separate constructs for this sample of participants.

Similarly, emotion regulation scores were not found to relate with scores of executive functioning. A relationship between the Emotion Regulation Checklist and the WCST-64 specifically has not been reported previously in the literature, however there was good reason to hypothesize that the measures would relate. Past studies using different measures have shown executive function and emotion regulation to be related (e.g., Carlson & Wang, 2007).

It is possible that the restricted range of scores for emotion regulation in this sample combined with the large quantity of high scores on executive functioning made it more difficult to show significant correlations. Perhaps a different measure of executive functioning that involved less set-shifting and pattern recognition, and more evaluation of inhibition or frustration tolerance would have been more appropriate.

### Limitations and Future Directions

A major limitation of the present study is generalizability, because the sample is made up entirely of female children who have all passed admissions tests to attend a private school. Results may not generalize to male children, and may not apply to low income, at-risk, or clinical samples. A study including both male and female children might yield a different pattern of results, especially with regard to the correlations between pretend play and emotion regulation given the findings of Lindsey and Colwell (2003) in which play related to emotional competence differently for male and female preschoolers. Future studies should examine such gender discrepancies further. The small sample size is also a limitation. A power analysis indicated that 64 participants would provide 0.80 power for a medium effect size. This study's sample of 61 total participants and as few as 46 included in some analyses limits the conclusions that may be drawn from the results. Further research to examine the links between play, creativity, and emotion regulations in larger, more diverse samples is needed.

Second, the study is limited in that the findings are correlational, such that all relationships between variables are bidirectional. It cannot be concluded from this study that strong pretend play skills enhance creativity or emotion regulation or vice versa. Results merely highlight the significant association that exists between these variables but does not suggest causation.

The results of this study open up a variety of directions for future research. This study strengthened the construct validity of the Affect in Play Scale by replicating past findings with divergent thinking and finding new relationships with storytelling and emotion regulation. An important next step in establishing the construct validity of the APS is to continue exploration of relationships of theoretically related and unrelated variables. Stronger evidence supporting the connection between pretend play and emotion regulation would be beneficial for both normative and clinical samples. Further research focusing on these variables is also necessary to study developmental trends.

Overall, results of this study are promising with regards to the associations between pretend play and other important life skills for children. Results corroborate past evidence and theories that pretend play processes are important for multiple forms of creativity and emotion regulation. These results can be used in support of future research aimed at enhancing children's play skills in the hopes of also developing creativity and emotion regulation. Finally, further exploration of the relationship between divergent thinking and storytelling could be important in understanding the development of abilities involved in creative writing.

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Received July 12, 2011

Revision received October 7, 2011

Accepted October 7, 2011 ■