A BRIEF PRETEND PLAY INTERVENTION TO FACILITATE PLAY AND
CREATIVITY IN PRESCHOOL CHILDREN

by

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A Brief Pretend Play Intervention to Facilitate Play and Creativity in Preschool Children

Abstract

by

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Pretend play has been associated with creativity in the research literature. In school-aged children, both cognitive and affective processes in play have been related to measures of creativity, including divergent thinking and creative storytelling. In the only previous examination of these play processes in preschool-aged children, cognitive and affective play processes related to divergent thinking. One goal of the current study was to replicate this finding and examine the relationship between pretend play and storytelling creativity in a preschool sample.

A second goal was to test the effectiveness of a brief play intervention implemented within a preschool setting. Adult-led play interventions have effectively improved play skills and related developmental skills for children with documented play deficits. There is a need for an empirically-based, brief play intervention for typically developing preschool-aged children. As pretend play peaks during the preschool years, a play facilitation intervention implemented during these key years could have a large impact on a child’s pretend play and development. A pilot study adapted the intervention developed by Russ and colleagues for use with preschool-aged children and their parents and found medium to large effect sizes for increased play skills for the intervention group at
outcome. The current study aimed to examine the effectiveness of this intervention for children within a preschool setting without parental involvement.

Forty-one typically developing children participated from a local preschool. Pretend play, divergent thinking, and creative storytelling were assessed at baseline and outcome. Children were randomly assigned to the play skills intervention group or the active control group. All children received three 20-30 minute individual play sessions with a researcher. At baseline, results were that cognitive and affective processes in play related to divergent thinking and creative storytelling. The play intervention was not effective at significantly improving the pretend play skills or subsequent creativity for children in the intervention group compared to children in the control group. Reasons for the nonsignificant findings for the intervention and suggestions for future refinement and use with the intervention protocol are discussed.
A Brief Pretend Play Intervention to Facilitate Play and Creativity in Preschool Children

Pretend play involves fantasy, make-believe, and the use of one object “as if” it were another object (Fein, 1987; Russ, 2004; D. Singer & J. Singer, 1990). It is most prominent during the preschool years and relates to positive developmental outcomes, including creativity, problem-solving, and general adjustment. Given that pretend play is a frequent, naturally-occurring child behavior, interventions aimed at improving play skills during this critical period may have implications for associated developmental tasks. Although the majority of play interventions examined to date have been developed for a specific population with documented play deficits, general play skills interventions could be beneficial for many children, including those with developmental delays in areas associated with pretend play or to facilitate development in general. One purpose of the current study was to test the effectiveness of a play skills intervention at increasing pretend play, and in turn, creativity and creative storytelling. If effective, this play intervention could be used as a prevention or intervention approach for at-risk children. A second purpose was to investigate the relationship between pretend play and creativity in preschool children.

Pretend Play and Creativity

Pretend play has been associated with developmental tasks such as creativity, problem solving, coping, and emotion regulation (see Russ, 2004, for review). The strongest relationship examined has been the link between play and creativity (Fisher, 1992). Pretend play relates to and facilitates general creativity (Dansky, 1999; Feitelson

Russ (2004) identified two pretend play processes hypothesized to relate independently to creativity: cognitive processes and affective processes. Cognitive processes are those that involve higher-order thinking skills such as imagination or organization within the play narrative. Affective processes are those that involve emotional expression within the story. In facilitating creativity, cognitive processes may be more important for facilitating novelty and fluency of ideas, whereas affective processes are related to the expression and modulation of affect-laden content. Russ (2004) summarized five ways in which the cognitive and affective processes in pretend play may contribute to creative development over time: practice with divergent thinking (described below), practice with symbolism and using objects or ideas in different ways, experience of positive affect and the intrinsically motivating aspects of creativity, expression of both positive and negative emotion themes, and the development of a cognitive structure in which affect can be expressed and regulated. Therefore, the cognitive and affective processes in play are both thought to relate to creativity, although through distinct mechanisms. Both cognitive and affective processes have been proposed in facilitating divergent thinking, a key component in creativity and problem solving.
**Divergent thinking.** Divergent thinking is the ability to generate a variety of ideas or themes (Guilford, 1968). It has been suggested that divergent thinking is practiced during pretend play (D. Singer & J. Singer, 1990). A positive relationship between pretend play and divergent thinking has been supported independent of intelligence (Hoffmann & Russ, 2012; Kaugars & Russ, 2009; Pepler & Ross, 1981; Russ & Grossman-McKee, 1990; D. Singer & Rummo, 1973). Dansky (1980) found that the relationship between play and divergent thinking was mediated specifically by make-believe play, highlighting the importance of imaginative aspects in play. Clark, Griffing, and Johnson’s (1989) longitudinal study revealed that play was related to divergent thinking in preschool and three years later.

In addition to correlational studies, experimental manipulations suggest that pretend play facilitates divergent thinking. Dansky and Silverman (1973) found that preschool children were able to identify more uses for objects after playing with the objects than children in a control group were able to identify. In a later study by Dansky (1980), similar results were obtained when children were given different objects in the test period and the play period, indicating that the effect of the play period on divergent thinking generalized. Despite these early results, a replication of this study with a separate examiner administering the divergent thinking task failed to confirm the increase in divergent thinking following the play task (Smith & Whitney, 1987). Although Smith and Whitney (1987) attributed the results of Dansky’s (1980) study to experimenter bias, other explanations are also possible, especially given the abundance of correlational studies supporting the relationship between play and divergent thinking. Russ (1993) suggested that changing experimenters might have interfered with the experimental set
induced, thus cancelling the experimental effect of the play. This is based on Dansky’s (1980) proposition that make-believe play assists in loosening the old associations by temporarily creating a new cognitive set. It is likely that a single period of pretend play would only temporarily loosen the cognitive set. However, additional research examining temporal effects or the types of interference sufficient to disrupt the new cognitive set has not been conducted. Furthermore, as children are frequently moving in and out of the pretend play world in their daily lives, they may be strengthening the new cognitive set with each play period, resulting in a more stable creative cognitive set over time.

Although there have been some inconsistencies in the literature, Fisher (1992) conducted a meta-analysis of 46 studies and found an effect size of .39 for the relationship between play and divergent thinking, indicating a moderate to strong relationship. In this meta-analysis, other variables related to play included perspective taking ($r = .39$), reading readiness ($r = .38$), basic language acquisition ($r = .35$), problem solving ($r = .35$), affect regulation ($r = .28$), and conservation skill ($r = .26$).

The majority of the studies in this area have not distinguished between the cognitive and affective processes in play and their impact on divergent thinking. The theoretical explanations provided have emphasized the cognitive process mechanisms, such as symbolic transformations or combining ideas or objects in new ways. One exception is the work of Russ and colleagues in examining the differential relationships between play processes and divergent thinking. Using a play task that measures cognitive and affective processes, both imagination and affect expression in play were related to divergent thinking in first and second graders (Hoffmann & Russ, 2012; Russ
& Grossman-McKee, 1990; Russ & Peterson, 1990; Russ & Schafer, 2006). In three of the studies, results remained significant when controlling for IQ (Hoffmann & Russ, 2012; Russ & Grossman-McKee, 1990; Russ & Peterson, 1990). A follow-up study of the Russ and Peterson (1990) sample found that imagination in play predicted divergent thinking in the children four years later (Russ, Robins, & Christiano, 1999). In the only study to date including an examination of the relationship between affective play processes and divergent thinking in preschool-aged children, affect expression in play, comfort in play, and the amount of pretend play displayed related to the number and novelty of responses on a measure of divergent thinking (Kaugars & Russ, 2009). These results suggest that both cognitive and affective processes account for the relationship between play and divergent thinking in preschoolers as well.

**Creative storytelling.** Another measure of creativity is storytelling. In contrast to divergent thinking in which a specific ability is measured based on specific criteria, storytelling measures broader creativity in a less structured manner. The importance of including real-life products in creativity research was emphasized by Amabile (1990). Baas, De Dreu, and Nijstad (2008) identified three domains within creativity: open-ended tasks such as divergent thinking, tasks with a correct solution such as insight tasks, and creative performance tasks in which creativity is based on the evaluation of others. Storytelling and art are two examples of creativity tasks that fall into this last performance-based domain. Hennessey and Amabile (1988) argue that although objective measures of creative performance can be useful for identifying especially creative children, subjective measures of creative performance can assist in illuminating the creative process in all children. They suggest that storytelling also decreases reliance
on “domain-relevant skills” (p. 236) that can impact performance on objective measures, including knowledge and experience with the particular domain. Furthermore, they argue that objective creativity measures that assess originality and fluency neglect an essential feature of creativity: acceptability. Stein (1974) defined creativity as a product that is novel and appropriate. In other words, although a task might be unique, it is only considered creative when it is useful or valuable to the task at hand. Hennessey and Amabile (1988) suggest that assessing both novelty and appropriateness can only be accomplished through subjective judgments by raters familiar with the specific domain. Therefore, they suggested and developed a subjective measure of storytelling in which expert observers provided subjective judgments of creativity.

Although divergent thinking and creative storytelling are expected to be related, research has indicated that domains of creativity may not be related in all cases. For example, divergent thinking was not related to scores on a creative storytelling task in one study of older school-aged children (Russ et al., 1999). In another study, Hoffmann and Russ (2012) found that storytelling ability was correlated with divergent thinking abilities. However, correlations were small to medium, indicating that they were measuring related but distinct constructs. The authors suggest a common creative ability across tasks, but this must be confirmed in future studies before conclusions can be drawn. These results lend additional support for the importance of including multiple domains of creativity when assessing the creative processes.

Pretend play is conceptually related to storytelling. During pretend play children are developing a story and playing it out. Nicolopoulou (2007) reviewed the literature on pretend play and narratives and proposed a model highlighting the reciprocal relationship
between children’s pretend play and storytelling development. Hoffmann and Russ (2012) found that imagination and positive affect in play related to storytelling creativity in a sample of school-aged girls. The authors of this study argued that these results indicated empirical support for the theorized link between positive affect in play and creativity. Given that Hoffman and Russ (2012) did find relationships between both cognitive and affective play processes and creative storytelling, additional studies are needed to confirm this link. The relationship between pretend play and creative storytelling is important to investigate in preschool-aged children as well.

Although examining the relationship between pretend play and creative storytelling is relatively novel, the relationship between play and divergent thinking is robust and has been identified across age groups. Furthermore, studies have indicated that pretend play has a role in facilitating divergent thinking. Creativity is an important ability to foster in childhood, and pretend play may be one way through which creativity can be improved. Therefore, interventions specifically designed to improve pretend play skills may also increase development in important areas such as creativity and divergent thinking.

**Play Skills Interventions**

Given the documented benefits of pretend play, it is not a surprise that researchers have been testing play interventions for approximately 40 years (Freyberg, 1973; Smilansky, 1968). Although the majority of these studies have been successful at improving play skills, a number of questions still remain unanswered.
Perhaps the largest question yet to be answered is that of generalizability. Most interventions have been developed for a specific population with documented play deficits, such as children from disadvantaged backgrounds or those diagnosed with developmental disorders. Although these interventions fill a need for that population, they may not be effective for other populations of children as each group of children may have specific deficits in play. In addition, those play interventions may not be appropriate for children without specific deficits whose parents wish to facilitate general development. Methodological concerns such as small sample sizes also limit generalizability. Interventions that have been effective have been time intensive, including multiple sessions over the course of at least a few weeks. This likely makes it difficult to achieve large samples without a high degree of time and support. Inconsistent use of approaches, lack of fidelity reporting, and varied outcome measures across studies make replication and generalization difficult if not impossible in most cases. Furthermore, until recently, play interventions did not specifically target affect expression. Given the importance of affective processes for children’s development of creativity and emotion regulation (Russ, 2004), including affect expression as a target in interventions may bolster the intervention’s impact across developmental tasks.

Finally, the mechanisms responsible for the play improvements have not been determined. Most often, play interventions have been intensive classroom-wide approaches where it is difficult to distinguish the impact of specific adult behaviors within the intervention protocol. This also interferes with replication and the ability to generalize to use this intervention with another group of children. Although not determining the effectiveness of intervention techniques, reviews have identified adult
behaviors that are used most frequently or most likely to produce a positive response from children (Lang et al., 2009; Malone & Langone, 1999; Trawick-Smith, 1998). For example, Trawick-Smith (1998) identified adults joining the child’s play, adults asking questions, modeling, or giving suggestions to enrich the child’s play, and adults withdrawing from the play over time and encouraging the child to continue to play without their direction as common elements of models designed to increase children’s pretend play. Other adult behaviors common to play interventions are providing access to diverse materials, modeling appropriate play behaviors, prompting and reinforcement of play behaviors, and naturalist instruction methods such as following the child’s lead and teaching play skills in a natural environment (Lang et al.; Malone & Langone, 1999).

Despite these concerns, play interventions have been effective at improving play skills and creativity for a variety of populations. Trawick-Smith (1998) provides an integrative model emphasizing the bidirectional nature of adult-child interactions in a child’s play development. This model suggests that as the adult alters his or her approach in response to the child’s reactions, an individualized intervention is developed for each child, thus emphasizing the need to follow the child’s lead rather than taking a more directive intervention approach. Although this model requires empirical examination, the preliminary framework suggests mechanisms responsible for the changes within the child’s play skills such as following the child’s lead and individualized tailoring, both central features of the intervention used in the current study.

Dansky (1999) also argued that brief play interventions would have long-term implications for children’s development as children continue to play spontaneously and would thus have numerous opportunities to continue to incorporate and improve upon the
skills learned during the intervention. Given the promising results in the literature and the potential long-term benefits across developmental areas of a brief, play skills intervention, there is a large need for these types of play intervention approaches to be refined, tested empirically, and then disseminated to parents and teachers of young children as prevention or intervention.

**At-risk populations.** Play interventions have typically been developed and tested for children with documented play deficits. Play interventions have been implemented with children from low socioeconomic backgrounds and children diagnosed with developmental disorders such as cognitive deficits or Autism Spectrum Disorders.

**Low Socioeconomic Status (SES).** Children from disadvantaged backgrounds exhibit lower symbolic and role playing abilities (Rosen, 1974; Smilansky, 1968). Smilansky (1968) concluded that these deficits were due to limited verbal, cognitive, and social skill development rather than deficits in the emotional environment or quality of the toys available in the home, supporting the link between pretend play and overall development. The first play intervention documented in the literature was developed by Smilansky in 1968. In this seminal study, classrooms in Israeli kindergarten and nursery schools composed of children from socioeconomically disadvantaged backgrounds were assigned to one of three experimental groups: enriched experiences and adult-led discussions about those experiences, an adult-led sociodramatic play intervention, or both the enriched discussions and sociodramatic play. The children in the sociodramatic play groups engaged in play 90 minutes each day, 5 days a week, for 9 weeks. The two control groups included classrooms from the same disadvantaged background or classrooms that included both advantaged and disadvantaged groups of children from
European backgrounds, as opposed to Asian or African backgrounds. Results were that children in either of the experimental groups that included the adult-led sociodramatic play had improved play skills after the intervention relative to children in the disadvantaged background control group. Children that were in classes that received both the sociodramatic play and enriched discussions had the largest improvements. Although children’s play skills improved following the sociodramatic play intervention, their play remained lower than the play of children in the control group that included children from advantaged and disadvantaged backgrounds. In other words, even after intervention, the play skills of the disadvantaged children were still not commensurate with the play of their advantaged peers.

Following this early play intervention success, researchers have continued to examine various aspects of pretend play interventions. For example, Freyberg (1973), Udwin (1983), and Dansky (1980) demonstrated the importance of the focused intervention aimed at improving children’s pretend play skills beyond that of engaging with an adult in structured, non-pretend play by comparing the play intervention groups to active control groups that played with puzzles and building toys. Dansky (1980) further examined the effectiveness of a play intervention beyond that of the opportunity to engage in play by comparing the play skills of 36 preschoolers assigned to three groups: play intervention, free play, or non-play tutoring. Following three weeks of intervention, children in the play intervention group had increased the amount, complexity, and creativity of their play compared to the play skills of the children in free play or non-play tutoring groups. A more rigorous study conducted by Shmukler and Naveh (1984-1985) aimed to isolate the effectiveness of two aspects of the intervention:
the impact of the adult and the content of the play sessions. In this study, 116 preschoolers from socioeconomically disadvantaged backgrounds in South Africa were assigned to one of four conditions: 1) a structured play intervention in which children played out familiar fairy tales, 2) an unstructured play intervention in which children played out a story they made up after being given a general theme, 3) an attention control in which children played active games or participated in structured activities such as art projects or puzzles, or 4) a no-contact control in which the children only met with researchers for baseline and outcome sessions. Results were that after 12 sessions, children in either of the play intervention groups demonstrated higher imagination, affect expression, and focus during the play than either control group.

These four studies had experimental designs that included control groups with free play and non-play adult interaction, suggesting the effects of the play interventions were due to the deliberate attempts of the adult to increase play skills and not due to the play or adult interaction on their own. Although it is clear that the intention to improve play is important, a comparison of an adult-led or peer-facilitated intervention has not yet been conducted. Freyberg (1973), Udwin (1983), and Shmukler and Naveh (1984-1985) also found that although only imagination in play was targeted, other play skills such as affect in play, focus, and cooperation also improved following the intervention. This suggests that play interventions aimed at one play skill can generalize to improve additional types of play skills. Other researchers have examined the impact of play interventions on related developmental skills. For example, Rosen (1974) implemented a classroom-wide play intervention for kindergarten and daycare classrooms comprised of African American children from disadvantaged backgrounds. At outcome, children in
the classrooms that had received the intervention demonstrated higher play skills and problem solving skills compared to children in the control classrooms. Hartmann and Rollett’s (1994) play intervention was also effective at improving related developmental skills for classes of children from low socioeconomic backgrounds. In this study, children in the classrooms that received the play intervention had higher divergent thinking skills and were happier in school as compared to children in control classrooms.

The studies conducted with children from disadvantaged backgrounds have demonstrated that adult-led play interventions can improve cognitive and affective play skills, creativity, problem solving, and general adjustment and happiness. Danksy (1999) reviewed the literature on play interventions in children from economically disadvantaged or minority families and concluded that children’s play increases after interventions that used modeling and verbal encouragement. He also reported that children’s cognitive and social skills frequently improved following interventions aimed at play skills. Although this review identified modeling and verbal encouragement as two mechanisms of change, experimental manipulations have not examined these techniques in isolation in these populations. Therefore, it is not clear whether these are the components necessary for change in play interventions. Furthermore, it is not clear whether interventions developed for children from economically disadvantaged backgrounds would be effective with other populations of children, such as those with developmental disorders or typically developing children.

**Developmental disorders.** The literature on play interventions for children with developmental disorders includes two types of play interventions: those that directly target symbolic or pretend play skills and those that use pretend play as a medium to
teach other skills but do not specifically attempt to increase play skills. In the latter case, results have been that interventions using play improved both the targeted skill and play skills (Craig-Unkefer & Kaiser, 2003; Rogers & Lewis, 1989). Interventions aimed at improving pretend play skills are briefly reviewed below. For reviews of interventions to increase types of play other than pretend play, such as social play, joint attention, or non-pretend play, see Jahr, Eldrvik, and Eikeseth (2000) and Kasari, Gulsrud, Wong, Kwon, and Locke (2010). See Kasari, Huynh, and Gulsrud (2011) for a more comprehensive review of play skills and play interventions in children diagnosed with Autism.

In the most thorough play intervention conducted for children with autism, Kasari, Freeman, and Paparella (2006) randomly assigned 58 three and four year-old children diagnosed with autism to three groups: a symbolic play intervention, an intervention targeting joint attention, or a treatment as usual control group. Highlighting the importance of the play intervention, it was found that following 5-6 weeks of daily intervention, children in both intervention groups improved in functional play skills and interactions with their caregivers (e.g., joint attention and joint engagement). However, children in the play intervention group demonstrated more play types and more advanced play levels than children in either of the other groups, indicating the play intervention was effective at both increasing play skills and related skills in functional play and joint attention and engagement. Twelve months after completing the intervention, children who had received the play intervention had the most improvement in all areas targeted, including joint attention (Kasari, Paparella, Freeman, & Johromi, 2008). Five years following the intervention, children in both intervention groups displayed higher expressive language ability than children in the control group, indicating that both
interventions had lasting results on the preschoolers’ development (Kasari, Gulsrud, Freeman, Paparella, & Hellemann, 2012). However, other developmental tasks, such as play ability and joint attention, were not assessed at this time point.

In addition to the examination by Kasari et al. (2006), interventions with small sample sizes have also demonstrated increased play skills after targeted intervention for these populations, though frequently the lack of a control group makes it difficult to draw conclusions. For example, Hellendoorn (1994) found that individualized play intervention, compared to a no-treatment control, increased the level of play skills for 30 children and adolescents that had cognitive deficits. These gains were maintained at a three month follow-up but failed to generalize to play in the child’s daily living environment. Kim, Lombardino, Rothman, and Vinson (1989) improved the play skills of four children whose cognitive abilities fell in the mentally retarded range, compared to four children assigned to the control group, by having adults model increasingly advanced pretend play across ten daily sessions. Small sample case studies without a control group include an examination by Stahmer (1995) of 7 children diagnosed with autism and a study by Thorp, Stahmer, and Schreibman (1995) of 3 children diagnosed with autism. In both studies, results were that play skills of the children improved, and the play skills learned generalized to play situations with new toys. Thorp et al. (1995) also demonstrated generalization to new play partners.

Two reviews have also confirmed that play interventions are effective at improving play skills for children under the age of 10 diagnosed with developmental disabilities or autism (Barton & Wolery, 2008; Lang et al., 2009). In addition, Lang et al. (2009) examined the extent to which generalization occurred in each of the 15 studies
included in the review and found that generalization to new settings, toys, play partners, and combinations of play behaviors were each supported in at least one study in their review, indicating that the pretend play skills being taught were generalizing to the children’s daily lives as well.

Despite promising results in the literature of play interventions for at-risk children, Russ and Fehr (2013) discussed inconsistencies within the literature that make drawing conclusions difficult. There is variety within the intervention strategies used, length and duration of intervention sessions, and outcomes measured. For example, the intervention paradigms discussed above have ranged from eight 20-minute sessions (e.g., Freyberg, 1973) to 4 hours of intervention per week for an academic year (e.g., Hartmann & Rollett, 1994) for children without developmental disorders and intervention paradigms for children with developmental disorders are typically even more intense. In addition, other methodological considerations, such as small sample sizes, inadequate control groups, or not reporting fidelity, limit the generalizability of the results currently available. However, as these studies show promising results, even with this variability, continued development and empirical validation of intervention approaches is necessary.

**Typically developing children.** Russ and colleagues have developed and tested a series of play interventions designed to improve play skills in typically developing children. These interventions have good potential as they could be used to improve the development of children with specific play or developmental difficulties or to facilitate the development of pretend play and creativity in all children. In addition, developing an empirically-supported play intervention for typically developing children allows one to
more easily adapt the intervention for a variety of populations with specific deficits in pretend play, such as children with anxiety or children with developmental disorders.

In addition to targeting typically developing children, the protocol by Russ and colleagues is the only play intervention to date that targets the facilitation of both cognitive and affective processes. In the first empirical examination of this protocol, Russ, Moore, and Farber (2004) compared the play skills of first and second graders after random assignment to one of three groups: an imagination intervention group, an affect intervention group, or an active control group. Children in each group received five 30-minute play sessions with the researcher conducted over a period of 3-5 weeks. For a description of the development of the strategies and intervention approach, see Russ, Fehr, and Hoffmann (2013). A play intervention manual was developed and followed for children in each intervention group. In the imagination intervention, children met individually with the researcher who targeted imagination and organization within the play narrative. In the affect intervention, children also met individually with the researcher who targeted emotion expression in play. For each intervention session, children played out approximately 4 stories with the researchers that encouraged the type of play targeted in the intervention. In the imagination group children were asked to play out stories such as a boy who goes to the moon and in the affect group children were asked to play out stories such as a boy who is sad because he lost his favorite toy. Children were asked once per session to make up their own story. Standardized toys, stories, and prompts were used and researchers completed session checklists after each session to ensure adherence to the intervention manual. In the control group, children met individually with the researcher to color and play with puzzles.
It was expected that children in both play intervention groups would have increased play skills relative to children in the control group following intervention, but that children in each play intervention group would have higher play skills in the areas targeted by their intervention. Specifically, it was hypothesized that children in the imagination intervention group would have increased imagination and organization whereas children in the affect intervention group would have increased emotional expression in play. Fifty children participated in this study from a school composed of predominantly African American families at or below the poverty line. Results were that children in both play intervention groups had increased play skills compared to the control group. Children in the affect intervention group performed the best, with increases in affect expression (positive affect, negative affect, and variety of affect), imagination, and organization in play. Children in the imagination intervention group exhibited more positive affect and variety of affect than the control group also. When examining the outcome measures in addition to play skills, there were significant group effects for divergent thinking, coping, and self-reported life satisfaction, an aspect of emotional well-being. Inspection of the profile plots indicated that the play groups had higher scores on each of these outcome measures than the control group.

The results of this preliminary study were promising, suggesting that the play intervention was effective at increasing play skills and the related developmental tasks of creativity and coping. Furthermore, this study compared interventions aimed at cognitive and affective play processes separately. Children in the affect group had the highest play at outcome, and children in both groups improved on play skills not targeted in their intervention. Children in the affect intervention group improved in both affective and
cognitive play skills, and children in the imagination intervention group improved in affective play skills also. Similar to the results of Freyberg (1973) and Udwin (1983), this suggests that interventions targeting only one play process can have wide-reaching improvements across play processes. A follow-up session conducted 4-8 months after the outcome indicated that the imagination intervention group maintained play improvements whereas the affect intervention group did not (Moore & Russ, 2008).

Based on the positive findings of both intervention groups in this first study, Russ and colleagues conducted a replication with the play intervention groups combined so that imagination, organization, and affect expression were all targeted in the intervention (Hoffmann, Fiorelli, & Russ, 2012). In this study, 57 girls enrolled in kindergarten through fourth grade at a private girls’ school were randomly assigned to the play intervention or active control group. Each child received four individual 25-30 minute sessions with the researcher. In the intervention group, children played out 4-5 stories each session, with story stems provided alternating between imaginative and emotion content. Children were prompted to make up their own story one time each session. Over the course of the sessions, the story stems provided contained increasingly more complex imaginative and emotional content, encouraging the expansion of children’s pretend play abilities over time. The play intervention manual and standardized toys, stories, and prompts were used. The researcher kept notes after each session and individualized the sessions to target the child’s individual pattern of play skill needs.

At baseline, a majority of the children demonstrated excellent pretend play skills, exhibiting a possible ceiling effect for the intervention. However, for the children who had poorer pretend play skills at baseline, both imagination and organization improved
following intervention relative to the control group. Group differences for divergent thinking, creative storytelling, and coping were not significant. The results of these two studies provide preliminary evidence that this pretend play intervention is effective at improving both cognitive and affective play processes and in turn, areas of adaptive functioning such as divergent thinking, coping, and life satisfaction. Following this initial success, this intervention protocol was adapted for use with preschoolers.

Pilot of Play Skills Intervention for Preschoolers

A pilot intervention was conducted testing an adaptation of Russ’ approach used with school-aged children (Fehr, Christian, & Russ, 2013). Two major changes that were made when implementing this intervention with preschoolers were (a) involving parents and (b) attending to the developmental level of the children. It was thought that the best approach to teach preschool-aged children pretend play skills would be to involve their parents in the intervention. Therefore, parents were present for each of the three 20-30 minute intervention sessions and were asked to conduct play sessions at home with their child in between each session with the researcher.

Researchers were also sensitive to the developmental level of these young children and thus had different play skill expectations and within-session interactions with the children than would be used with children in the school-aged intervention. Researchers for both age groups follow the child’s lead throughout the intervention. However, for the preschool-aged children this means allowing for normal individual differences in development while also encouraging improvements in play. For example, in a story in which the child has the doll go to the moon and then get eaten by a monster,
researchers will likely target organization very differently. In a school-aged child’s story, getting eaten by the monster would likely be the end of the story, and the researcher may summarize the story to emphasize the organization and what happened during the beginning, middle, and end of the story. It is also possible that the researcher could view this as a switch in theme if the monster is not on the moon and request that the child create an ending to the original story before beginning a second story. On the other hand, with a preschool-aged child, getting eaten by a monster does not necessarily mean the end of the story since children at this developmental level do not have the cognitive understanding of the permanency of death and often have characters get eaten up and then come back to life. Therefore, a researcher working with a child of this age group might encourage the child to make up an ending to the story that comes back to the original theme of going to the moon, allowing for the characters to come back to life. Permitting looser organization assists the researcher in respecting the child’s developmental level to achieve the balance between following the child’s lead and facilitating play skill development. Other than these adaptations, all procedures described in the school-aged play intervention manual were followed.

In this pilot study, 17 four- to six-year-old children that had not yet entered first grade were recruited from a local children’s museum and randomly assigned to the play intervention or activities control. As in the school-aged studies with this approach (Hoffmann et al., 2012; Russ et al., 2004), baseline and outcome measures included measures of pretend play and creativity and were administered by a researcher blind to condition assignment. Play intervention sessions consisted of the researcher playing with the child individually while the child’s parent watched. Approximately 4 stories were
played out each session, with story prompts alternating between imaginative and affective content. For the last story of each session, children were asked to make up their own story. The play intervention manual and standardized toys, stories, and prompts used with the school-aged children were followed, and researchers kept track of session content and intervention behaviors to ensure adherence to the manual. In the activities control group, children could choose to color, play with puzzles, or put together a building toy. In both groups, parents observed play sessions and were asked to conduct 10 minute play sessions at home at least twice between sessions with the researcher. Parents were told to play with their children in the same manner that the researcher had and were given a handout describing example toys and prompts to use based on the child’s condition assignment. Given the small sample size, effect sizes were used to examine treatment effectiveness. Preliminary results were that compared to the control group, children in the intervention group had increased imagination, organization, and positive and negative affect expression in their play with medium to large effect sizes (Christian, Fehr, & Russ, 2011). More detailed scoring and analyses, including examining differences in divergent thinking and creative storytelling following intervention, are currently being conducted (Fehr et al., 2013).

This pilot study was effective at improving play skills after only three sessions. However, unanticipated variability was identified, which suggested areas to be addressed in the randomized controlled trial to follow. First, many of the children acted quite differently with their parents in the room. It was difficult to engage some children and when given a prompt by the facilitator, many children would become shy or defer to their parents instead of developing their own play skills. Second, parental involvement was
inconsistent across families. Parents were inconsistent in terms of the quantity of home play sessions conducted, the content included in those sessions, and whether they followed the principles of their group assignment. Third, inconsistency with scheduling with parents in a community setting made it difficult to control for time between sessions and between baseline and outcome sessions. Due to these concerns, the current study was designed to take place in a preschool setting without including parents. Conducting the study in a preschool setting also is important because this intervention could easily be incorporated into preschools, and preschool teachers would be ideal play facilitators.

One goal of this project was to test the effectiveness of this brief play intervention within the preschool setting.

Finally, during the pilot phase, the variety of story stems provided in the play intervention manual were tested, and researchers agreed that certain stories were more facilitative in this age range than others and that some stories should be presented before others. In other words, although researchers were allowed more individualization in the pilot phase to provide stories to match the child’s play needs, researchers agreed that this was not necessary and a standardized set of stories with increasing complexity across sessions emerged naturally.

**Summary and General Hypotheses**

Pretend play processes relate to and facilitate positive development in areas such as creativity, problem solving, coping, and general adjustment (see review in Russ, 2004). The strongest of these relationships has been with divergent thinking, a measure of creativity (Fisher, 1992). Furthermore, adult-led play skills interventions are effective
at increasing children’s pretend play skills and development in related areas, such as divergent thinking and problem solving for children with documented play deficits, including children from disadvantaged backgrounds or children diagnosed with developmental disorders (Barton & Wolery, 2008; Freyberg, 1973; Hartmann & Rollett, 1994; Hellendoorn, 1994; Kasari et al., 2006; Lang et al., 2009; Rosen, 1974; Shmukler & Naveh, 1984-1985; Smilansky, 1968; Udwin, 1983). Russ and colleagues have developed and empirically tested a play skills intervention for typically developing school-aged children and found increases in pretend play, divergent thinking, coping, and life satisfaction compared to active control groups (Hoffmann et al., 2012; Russ et al., 2004). A pilot study adapting this intervention for use with preschool-aged children obtained medium to large effect sizes for the intervention group compared to the active control in improving pretend play skills (Christian et al., 2011). The current study aimed to build upon the results obtained during the pilot study by testing the brief play skills intervention with a larger sample of preschoolers within a preschool setting. If effective, these results could have long-term implications for children’s pretend play, creativity, and general development and could be easily implemented by parents or teachers of preschoolers as a prevention or intervention approach. This intervention protocol could also be customized to target specific issues, such as children with anxiety or developmental disorders.

We hypothesized that at baseline, pretend play skills of preschoolers would be related to measures of creativity, specifically divergent thinking and creative storytelling ability. In addition, we expected that there would be improvements in the play of children in the intervention group compared to the control group. Pretend play involves
divergent thinking and creative storytelling so much so that increases in play should also be reflected in measures of divergent thinking and creative storytelling. Therefore, divergent thinking and creative storytelling were also expected to improve for the children in the intervention group as compared to the control group.

**Method**

**Participants**

Forty-eight preschoolers between the ages of four and six were recruited for this study from a local preschool (20.43% participation rate). A power analysis computed with a large effect size, based on pilot data, and power set at .80, revealed that 40 children needed to participate (Faul, Erdfelder, Lang, & Buchner, 2007). Of the 48 children whose parents gave consent to participate, 2 children were not included due to scheduling difficulties, 1 parent later decided not to participate, 1 child chose not to participate during the assent process (brief script read to child asking if they want to participate), and 1 child was excluded due to a preexisting relationship with the graduate student research assistant. Parents were given the option in the consent form for the child’s sessions to be videotaped for research and fidelity purposes. Videotaping was not required for participation, and 2 parents did not consent to videotaping. Therefore, only children with videotaped data were included in these analyses, resulting in a sample of 41 children. For the 38 participants that the school provided birthdates for, the mean age was 56.50 months ($SD = 4.43$ months). The majority were female ($n = 23$) and most children were enrolled in full-day preschool ($n = 26$) instead of half-day preschool ($n = 15$). The majority of the children were Caucasian (80.5%), with 7% identified as biracial,
5% identified as Hispanic or Latino, 2.5% identified as Asian American, 2.5% identified as African American, and 2.5% identified as Pacific Islander.

Procedure

Consent forms were sent home with all eligible children at The Music Settlement, a local preschool. Parents were instructed to indicate their interest by signing the consent form and returning it to the mailbox in the school office or by mailing it to the researchers. Each child had five sessions that each lasted approximately 20-30 minutes: the baseline assessment session, three play sessions, and an outcome assessment session. See Table 1 for outline of sessions. Baseline and outcome measures were conducted by a researcher blind to the children’s intervention condition. After the baseline session was completed, children were randomly assigned to be part of the play skills intervention or activities control group (see descriptions below). All sessions occurred in The Music Settlement and occurred approximately one week apart. For children in whole-day classrooms, teachers decided when the children could be taken from the classroom so the children did not miss important classroom activities. For children in half-day classrooms, a time was coordinated with the parent either before or after school so the child did not miss important classroom activities. As part of a larger study, each child’s parent completed a questionnaire about their parenting style and each child’s teacher completed a questionnaire about the child’s behavior in the classroom.

Before any children were included in the study, a school representative introduced the researchers to all the classes that had children participating. The school representative introduced the researchers as students at Case Western Reserve University
conducting a study to learn about how children play. The school representative also told
the children that their parents were deciding whether they would be participating and that
some of the children would be leaving the classroom to play with the researchers.

**Play skills intervention group.** Twenty children were randomly assigned to the
play skills intervention group. Children assigned to this condition had three individual
meetings with the play facilitator with a standardized set of toys (see Appendix A.1 for
play intervention manual). During each session, children were given 3-4 story stems to
play out, with the final story being one that the child could make up on their own. Stories
alternated to pull for imagination (a story about a boy going to the moon) or emotion
expression (a scary story about a boy who hears a scary sound) and were presented in a
standardized fashion with progressively increasing difficulty. The play facilitator
followed the child’s lead, so if the child did not respond to the prompt to change stories,
the facilitator let the child continue their story, however, they then encouraged more
imagination or emotion in the play, depending on the previous story instructions.

The play facilitator engaged in the child’s play and a variety of prompts and
comments were used to encourage the child’s play development. For example, to
facilitate imagination, the facilitator modeled and praised fantasy elements within the
story. The facilitator also summarized the story and asked questions to encourage
organization. To target affect expression, the facilitator modeled emotional expression
within the story, praised the child’s affect expression in the narrative, and labeled and
asked the child to label the feelings of various characters throughout the story. The play
facilitator kept notes each session and emphasized interventions aimed at the child’s
specific play weaknesses the next session. Over the course of the three sessions, the play
facilitator gradually decreased her involvement in the child’s story and encouraged the child to play more independently so that by the last story of the last session the play facilitator aimed to give minimal input, allowing the child to play independently.

**Control group.** Twenty-one children were randomly assigned to the activities control group. Children assigned to this condition also played individually with the play facilitator during the three sessions, but imagination and emotion were not encouraged (see Appendix A.2 and A.3 for standardized control instructions and prompts). Children could choose a puzzle, coloring sheets, or to assemble a pre-formed object (plastic pieces that built a television character when assembled) to play with during the sessions. Materials without fantasy content were chosen, such as puzzles and coloring pages with animals, flower, and trains. The play facilitator for the control group engaged with the child, modeled, and praised his or her efforts in order to control for the amount of interaction with the child. For example, play facilitators modeled strategies to put together a puzzle, such as starting with the outside or looking for pieces with similar colors, or provided factual information about the task at-hand, such as providing information about trains when completing a train puzzle or asking about the child’s experiences at a zoo when coloring a picture of zoo animals. The child’s activities were summarized and prompts and questions were used to keep the child on-task. Finally, praise was given for child’s on-task behavior and effort. Imagination and affect expression were not encouraged and spontaneous fantasy displayed by the child was ignored.

**Fidelity.** Play facilitators were three graduate students in psychology. All originally trained and met with the clinical psychologist who developed the school-age
play intervention. Two of the graduate students were involved in developing the pilot intervention for this study and had administered the intervention through that study with observation and frequent feedback (Fehr et al., 2013). The new graduate student received additional training with the primary play facilitator in this study on implementing the play intervention with preschoolers. She watched videotaped sessions of the primary play facilitator conducting all three sessions with three different children with direct supervision and instruction. She also completed sessions for two children in the intervention with videotaped monitoring and feedback.

All play facilitators completed behavioral checklists of session content and their own behavior for each session, regardless of group assignment (see Appendix A.3). Play sessions in both groups were videotaped if parents had given consent to videotape. An undergraduate student in psychology blind to study hypotheses watched 20% of the videotaped sessions for each play facilitator and rated the session for fidelity (see Appendix A.4). For each session overall, she rated play facilitators on a 5-point Likert scale on five dimensions: verbal praise, warmth, engagement, redirection/direction, and on-task behavior. To test for adherence to condition assignment and possible cross-contamination, specific prompts and behaviors of the play facilitators were also examined. Frequency counts were computed for behaviors in eight categories: praise/positive reinforcement for on-task behavior; praise for fantasy in play; praise for emotional expression; describe or summarize; model or prompt imagination in play; model, label, or prompt feelings in play; model or prompt on-task behavior; and interact with child using questions or prompts (e.g., What happens next? I wonder where that puzzle piece will go.). These behaviors were identified as those the play facilitators
should be adhering to in order to encourage play skill advancement in the intervention and to control for verbal praise, instruction, and modeling in the control sessions.

**Measures**

*Demographic information.* Children’s birthdates were provided by the school administrators to determine the child’s age in months when they entered the study. Group ethnicity/race data of the sample was also provided by school administrators.

*Affect in Play Scale-Preschool version* (Appendix A.1). The Affect in Play Scale-Preschool version (APS-P; Kaugars & Russ, 2009) was administered at baseline and outcome to assess the child’s play skills. The APS-P is a five-minute standardized play task that examines the imagination, organization, comfort, and affect in the child’s play. This task was previously adapted from a play task developed and validated for children six to ten years old, the Affect in Play Scale (Russ, 1987, 1993). Children are given stuffed and plastic animal figures (hippopotamus, shark, bear, giraffe, lion, zebra, and elephant), a plastic car, three plastic cups, and a “hairy” rubber ball. First the children are introduced to the toys, and then the play assessment begins with the following instructions:

That’s all the toys in the bag. Now we’re going to make up a story using the toys on the table. See how you can play with the toys. (exaggerate voice tones) This is the bear. He says, ‘I’m really hungry! Where can I find some food? (goes over to cups) Oh look, I found some cookies! I love cookies – yum yum yum! Here’s another cup. Oh yucky! I don’t like what’s inside there, yuck!’ Now you keep playing. What happens next? You make up a story, and I’ll tell you when to stop.
Standard prompts are given if the child does not play, stops playing early, or does not talk. The child is also told when there is one minute left to play. After five minutes, the researcher says, “Stop. You did a good job. Now you can help me put all the toys back in the bag.” The primary scores that are generated from this measure include: Total Affect, Positive Affect, Negative Affect, Undefined Affect, Variety of Affect, Imagination, Organization, Elaboration, and Comfort. The number of segments each child spends in Pretend Play, Functional Play, and No Play is also coded. See Table 2 for a list of the main dependent variables.

Affect in the child’s play is coded as a frequency count. It is important to note that it is the affect within the child’s story narrative and not the child’s actual affect that is measured. The Total Affect score measures instances in which the child expresses affect in any of the twelve possible categories: Nurturance/Affection, Happiness/Pleasure, Aggression, Anxiety/Fear, Sadness/Hurt, Frustration/Disappointment/Dislike, Competition, Oral, Oral Aggression, Sexual, Anal, and Undefined. The Positive Affect score is the frequency of affect expressed in the categories of Nurturance/Affection, Happiness/Pleasure, Competition, Oral, or Sexual. The Negative Affect score is the frequency of affect expressed in the categories of Aggression, Anxiety/Fear, Sadness/Hurt, Frustration/Disappointment/Dislike, Oral Aggression, or Anal. The Undefined Affect score is a count of affect that does not clearly fall into the positive or negative affect category. For example, noises like “whoosh,” animal noises, and car noises are counted in this category. Verbal and nonverbal affect expressions are recorded. For example, one animal saying, “we’re friends” to another doll would be scored as Nurturance/Affection affect. One animal
hitting another would be coded as Aggression affect. Variety of Affect is the number of affect categories out of the twelve possible categories expressed by the child during the five-minute task.

Imagination, Organization, Elaboration, and Comfort are scored based on a 5-point Likert scale. The Imagination score measures the child’s ability to engage in fantasy play and the uniqueness of their play events. Organization assesses the quality of the plot and coherence of the narrative. Elaboration measures the complexity and embellishment in the themes, toys used, sound effects, and characters. The Comfort score measures the child’s comfort and involvement in the play. During each 20-second segment, pretend play, functional play, or no play is rated as the predominant type of play. The number of segments the child spends in each of these types of play is summed to form the Pretend Play, Functional Play, and No Play scores.

Psychometric properties are adequate to excellent for this measure, with intraclass correlation coefficients for normal preschool populations ranging from .66 to .95 (Fehr & Russ, 2013a; Kaugars & Russ, 2009). Internal consistency was also high, with .88 for the split-half reliability correlation for the frequency of affect (Kaugars & Russ, 2009). Construct validity has been supported in three studies. In one study the APS-P play scores significantly related to teacher-rated imagination, affect expression, and pleasure in daily play, teacher-rated social competence and general adaptation, creativity on a laboratory task, and teacher-rated intensity of positive emotion expression in daily activities (Kaugars & Russ, 2009). In another study, play scores were positively correlated with teacher-reported prosocial behavior (e.g., sharing, taking turns) in the classroom and negatively correlated with teacher-reported aggression in the classroom.
(Fehr & Russ, 2013a). In the third study, play variables were related to emotional understanding in a cocaine-exposed sample (Kaugars, 2001).

**Multidimensional Stimulus Fluency Measure** (Appendix A.2). The Multidimensional Stimulus Fluency Measure (MSFM; Godwin & Moran, 1990; Moran, Milgram, Sawyers, & Fu, 1983) was administered at baseline and outcome as a measure of divergent thinking, a predictor of creativity. The MSFM has been widely accepted as a measure of divergent thinking for preschoolers as it assesses ideational fluency, the best single measure of divergent thinking (Wallach & Kogan, 1965). It has been validated and used with preschool populations as a measure of original thinking and creative potential (Farver, Kim, & Lee-Shin, 2000; Godwin & Moran, 1990; Hong & Milgram, 1991; Moore & Sawyers, 1987; Moran et al., 1983; Tegano & Moran, 1989) independent of intelligence (Hong & Milgram, 1991; Moore & Sawyers, 1987; Moran et al., 1983) and gender (Tegano & Moran, 1989). A longitudinal study found that the scores on this scale were relatively stable from age 4 to ages 7-8 (Moore & Sawyers, 1987). The six items on this task comprise three subtests: uses, pattern meanings, and instances. On the uses subtest, children are asked to name all possible uses for a box and paper. On the pattern meanings subtests, children are shown two colored Styrofoam shapes and asked, “What could this be?” On the instances subtest, children are asked to name things that are round and things that are red.

According to Godwin and Moran (1990), the quantity and quality of responses are related such that being able to identify many ideas makes it possible to produce some original responses. Therefore, Fluency and Novelty are the two main scores derived on this measure. The Fluency score is the sum of acceptable responses the child gives to
each item. Items that are not acceptable and repetitions are not scored. The Novelty score is the sum of responses given by less than 5% of the sample. The Novelty score has been suggested to be the preferred score for creativity because the Fluency score contains components of both ideational fluency and verbal fluency (Godwin & Moran, 1990). As response criteria for acceptability is relatively clear, one rater familiar with the scoring system scored all responses blind to children’s group assignment and performance on other measures. Any responses with questionable acceptability were discussed with a second blind rater.

**Storytelling Task** (Appendix A.3). To measure creative storytelling, children were asked to tell a story to Mercer Mayer’s (1967) picture book, *A Boy, a Dog and a Frog*. The instructions were:

I want you to tell me the story in this book. 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. I am going to write down what you say, so I may have to ask you to slow down at times. Go ahead.

Children were asked to tell a story to the first half of the book at baseline, and the second half of the book was used at outcome. Stories were scored based on a consensus scoring system defined by Hennessey and Amabile (1988). Creativity, Imagination, Novelty, and Likeability, the four scores that loaded on a creativity factor for storytelling, are each rated on a five-point Likert scale (Hennessey & Amabile, 1988). Imagination measures the amount of additions to the story beyond what is present in the pictures. Creativity assesses the amount of additions to the story that are useful (e.g., the story benefits because of the addition) and make sense within the context of the story. Novelty assesses
the uniqueness of the imaginative aspects in the child’s story. Likeability measures the amount the rater was interested in and enjoyed the overall story. Raters are not given anchor points for each score, but are asked to rate the stories in relation to each other. Two raters familiar with children’s storytelling scored each story, and individual raters’ scores were averaged to form each composite.

**Specific Hypotheses**

1. Children’s pretend play at baseline (APS-P: Pretend Play, Imagination, Organization, Total Affect, and Comfort) was expected to be positively correlated with divergent thinking (MSFM: Fluency and Novelty) and storytelling ability (Storytelling Task: Creativity, Imagination, Novelty, Likeability). Baseline cognitive play processes (APS-P: Imagination, Organization) and affective play processes (APS-P: Total Affect) were each expected to uniquely explain a portion of the variance in creativity (MSFM: Fluency, Novelty; Storytelling Task: Creativity, Imagination, Novelty, Likeability).

2. APS-P Positive Affect and Negative Affect were both expected to positively relate to divergent thinking (MSFM: Fluency, Novelty) and storytelling ability (Storytelling Task: Creativity, Imagination, Novelty, Likeability) at baseline.

3. The two measures of creativity were hypothesized to be related but distinct aspects of creativity. Therefore, baseline divergent thinking (MSFM: Fluency and Novelty) was expected to be positively correlated with storytelling ability (Storytelling Task: Creativity, Imagination, Novelty, Likeability).
4. It was hypothesized that for children in the play skills intervention group, pretend play ability (as measured by APS-P Pretend Play, Imagination, Organization, Elaboration, Positive Affect, Negative Affect, Undefined Affect) would increase following the intervention as compared to the control group.

5. It was further hypothesized that children in the intervention group would have increased divergent thinking (as measured by MSFM Fluency and Novelty) and storytelling (as measured by Storytelling Task Creativity, Imagination, Novelty, and Likeability) at outcome as compared to the control group.

6. Gender differences at baseline were included as exploratory analyses. Based on a previous study with this sample (Fehr & Russ, 2013a), it was expected that girls would score higher than boys on measures of pretend play (APS-P: Pretend Play, Imagination, Organization, Comfort, and Positive Affect). Boys were expected to display more non-pretend play than girls (APS-P: Functional Play, No Play).

Results

Data Analysis Plan

Frequency data were computed for demographic data and research personnel assignment. Independent samples t-tests were conducted to test for differences in fidelity across group assignment and across play facilitator assignment (as one graduate student only completed sessions for two children, group differences were only examined for the other two play facilitators).

Pearson product-moment correlation coefficients using one-tailed tests of significance were computed to determine the strength and direction of the relationships
between the hypothesized variables at baseline. Multiple regressions were computed to determine the proportion of the variance in the creativity measures explained by the pretend play variables and the unique contribution of the cognitive and affective play processes. Independent samples t-tests were conducted to explore gender differences in pretend play and creativity at baseline.

The main analyses were repeated measures analyses of variance to assess the effectiveness of the intervention at improving pretend play, divergent thinking, and creative storytelling. Separate analyses were computed for each dependent variable (APS-P Pretend Play, Imagination, Organization, Elaboration, Positive Affect, Negative Affect, Undefined Affect; MSFM Fluency, Novelty; Storytelling Task Creativity, Imagination, Novelty, Likeability), with group assignment as the independent variable. A one-way between-groups multivariate analysis of variance was performed to investigate group differences based on condition assignment in the overall change in play from baseline to outcome. Change variables were computed for the main variables (Pretend Play, Imagination, Organization, Elaboration, Positive Affect, and Variety of Affect) by subtracting the individual’s baseline score from their outcome score and the change variables (change in Pretend Play, change in Imagination, change in Organization, change in Elaboration, change in Positive Affect, and change in Variety of Affect) were entered as dependent variables. Group assignment was the independent variable.

**Descriptive Statistics**

Baseline means and standard deviations for the major variables are listed in Table 3. Interrater reliability for the APS-P was assessed by having an independent rater score
a random selection of 20 of the baseline videos (49%). Interrater reliability was determined using an intraclass correlation coefficient (ICC). A two-way (Target x Judges) mixed model was used, testing for absolute agreement with a 95% confidence interval. This is a more rigorous measure of interrater reliability because it measures absolute agreement and not just consistency between raters (Shrout & Fleiss, 1979). The average scores for the ICC were .92 for Pretend Play, .90 for Functional Play, .92 for No Play, .94 for Imagination, .92 for Organization, .94 for Elaboration, .85 for Comfort, .99 for Total Affect, .94 for Variety of Affect, .99 for Positive Affect, .98 for Negative Affect, and .96 for Undefined Affect, indicating that the interrater reliability for the APS-P was excellent in this study.

Interrater reliability for the storytelling task was computed with a two-way mixed model ICC testing for consistency between the two independent raters. Both raters scored all stories for Creativity, Imagination, Novelty, and Likeability, and the ICCs for average scores at baseline were .81 for Creativity, .89 for Imagination, .91 for Novelty, and .89 for Likeability, indicating excellent consistency between raters. In addition, the reliability of the four storytelling scores (Creativity, Imagination, Novelty, and Likeability) as a measure of overall storytelling creativity was examined. Cronbach’s alpha was .97, and deletion of individual variables would have decreased the alpha coefficient. Furthermore, these variables were highly correlated with each other (correlations ranged from .85 to .92). Given the fact that these variables were highly correlated and internally consistent, the storytelling variables were averaged to form one overall Storytelling Creativity score. The overall Storytelling Creativity score was used in all subsequent analyses.
Means and standard deviations were compared to previous samples to determine if this sample was similar to other preschool samples. For the APS-P, all play variables were similar to those found with a previous sample at this same school (Fehr & Russ, 2013a). As was found in the Fehr and Russ sample, children displayed more segments of pretend play ($M = 8.89, SD = 4.99$) than was found with a previous preschool sample ($M = 4.33, SD = 4.93$; Kaugars & Russ, 2009). For the divergent thinking measure, children in this study identified a similar amount of total responses, though the number of Novel responses was lower in this sample ($M = 4.10, SD = 2.61$) than found previously ($M = 12.00, SD = 8.22$; $M = 13.76, SD = 9.72$; Kaugars & Russ, 2009; Moore & Sawyers, 1987, respectively). This may have been due to scoring differences as children who gave multiple responses that were only slightly different (e.g., “put things in” and “put paper in” as responses for ways to use a box) were not scored as novel in this study and it is not clear how these situations were scored in previous samples. As the storytelling measure had not been previously used exclusively with a preschool-aged sample, comparisons with preschool samples were not able to be computed.

**Pretend Play and Creativity**

The relationships between age and pretend play, divergent thinking, and storytelling creativity were examined using Pearson product-moment correlation coefficients with two-tailed tests of significance. Age was moderately positively related to APS-P Pretend Play, Imagination, Organization, Elaboration, Comfort, and Total Affect (see Table 4). Age was also positively related to Storytelling Creativity. Therefore, partial correlations controlling for age were computed to examine the
relationships among pretend play, divergent thinking, and creative storytelling.

Inspection of the zero order correlations suggested that controlling for age had little effect on the strength of the relationships between pretend play and creativity (see Table 4 for comparison of zero order and partial correlations).

**Pretend play and divergent thinking.** As hypothesized, pretend play variables related to divergent thinking, as measured by the MSFM, even after controlling for age (see Table 4). MSFM Fluency was positively related to APS-P Organization, Elaboration, and Positive Affect. MSFM Novelty was positively related to APS-P Pretend Play, Organization, Elaboration, Comfort, Total Affect, Undefined Affect, and Variety of Affect. MSFM Novelty was negatively related to APS-P No Play. These results indicate that overall, pretend play variables were related to divergent thinking.

Hierarchical multiple regressions were used to assess the proportion of the variance in divergent thinking explained by pretend play, after controlling for the influence of age, and to test the independent contributions of cognitive and affective play processes. As APS-P Imagination and Organization were highly correlated \((r = .91); see Table 5 for APS-P intracorrelations\), only APS-P Organization was included to represent the cognitive play process, as this variable was more strongly related than APS-P Imagination to the dependent variables (MSFM Fluency, MSFM Novelty, Storytelling Creativity). As APS-P Total Affect was not significantly related to MSFM Fluency and Storytelling Creativity, APS-P Positive Affect was included to represent the affective play process in the regressions predicting those variables. APS-P Total Affect was still used to represent the affective play process in the regression predicting MSFM Novelty.
To examine MSFM Fluency, age was entered at Step 1, explaining 1% of the variance. After entry of APS-P Organization and Positive Affect at Step 2, the total variance explained by the model as a whole was 15.4%, $F(3, 34) = 2.06, p = .12$. The pretend play variables explained an additional 15.3% of the variance in MSFM Fluency after controlling for age, and this almost reached statistical significance, R squared change = .15, $F$ change $(2, 34) = 3.08, p = .06$. To examine MSFM Novelty, age was entered at Step 1, explaining only 1% of the variance. After entry of APS-P Organization and Total Affect at Step 2, the total variance explained by the model as a whole was 15.5%, though this was not statistically significant, $F(3, 34) = 2.07, p = .12$. The play variables explained 15.3% of the variance in MSFM Novelty after controlling for age and this addition almost reached statistical significance, R squared change = .15, $F$ change $(2, 34) = 3.09, p = .06$. This suggests that the pretend play variables together trended toward explaining a significant amount of the variance in MSFM Fluency and Novelty.

However, since the cognitive and affective play processes did not make independent contributions to the final model, it seems that these relationships are likely explained by an overall pretend play ability rather than individual cognitive or affect play processes.

To further examine the unique contribution of each play variable, hierarchical multiple regressions were computed entering each play variable in a separate step. For MSFM Fluency, Age was entered at Step 1, explaining only 1% of the variance. APS-P Organization was entered at Step 2, independently explaining 12.3% of the variance, R squared change = .12, $F$ change $(1, 35) = 4.91, p = .03$. APS-P Positive Affect was entered at Step 3, explaining 3% of the variance. The total model accounted for 15.4% of the variance in MSFM Fluency, but this did not reach statistical significance. In a second
analysis for MSFM Fluency, Age was entered at Step 1, explaining 1% of the variance. APS-P Positive Affect was entered at Step 2, explaining 10.3% of the variance, R squared change = .10, F change (1, 35) = 4.03, p = .05. APS-P Organization was entered at Step 3, explaining 5% of the variance. This total model also accounted for 15.4% of the variance in MSFM Fluency, but it was not statistically significance. Similar analyses were conducted with MSFM Novelty as the dependent variable. In the first analysis, Age was entered at Step 1, explaining 1% of the variance. APS-P Organization was entered at Step 2 and independently explained 13.7% of the variance, R squared change = .14, F change (1, 35) = 5.55, p = .02. APS-P Total Affect was entered at Step 3 and independently explained 1.7% of the variance. The total model did not significantly account for the variance in MSFM Novelty, despite explaining 15.5% of the variance. In the second analysis, Age was entered at Step 1 and explained 1% of the variance in MSFM Novelty. APS-P Total Affect was entered at Step 2 and independently explained 11.1% of the variance, R squared change = .11, F change (1, 35) = 4.36, p = .04. APS-P Organization was entered at Step 3 and independently explained 4.3% of the variance. The total model explained 15.5% of the variance in MSFM Novelty but it was not statistically significant. In sum, these analyses indicated that the addition of the first play variable, regardless of the order in which the variables were entered, significantly explained variance in each model and the second variable did not. Therefore, these results also suggested that overall play was more predictive of divergent thinking than the individual play processes.

**Pretend play and storytelling creativity.** Storytelling creativity was also related to pretend play variables as hypothesized (see Table 4). After controlling for age,
Storytelling Creativity was positive related to APS-P Imagination, Organization, Elaboration, Comfort, Positive Affect, and Variety of Affect. A hierarchical multiple regression, with age entered at Step 1 explained 6.4% of the variance in Storytelling Creativity. After entry of APS-P Organization and Positive Affect at Step 2, the total variance explained by the model was 23.4%, $F(3, 34) = 3.46, \ p = .03$. The pretend play variables significantly explained 17.0% of the variance in Storytelling Creativity after controlling for age, $R^2$ change = .17, $F$ change $(2, 34) = 3.77, \ p = .03$. Neither APS-P Organization nor APS-P Positive Affect made a statistically significant contribution to the overall model ($\beta = .32, \ p = .09, \beta = .18, \ p = .32$, respectively). Therefore, the overall model was supported with pretend play significantly explaining a portion of the variance in Storytelling Creativity after controlling for age. Similar to the results found when examining MSFM Fluency and Novelty, the cognitive and affective processes did not independently contribute to the overall model, suggesting the contribution of overall pretend play ability rather than individual play processes.

When the contribution of each play variable was further examined by entering the play variables in separate steps of a hierarchical multiple regression, results were similar. In the first regression, Age was entered at Step 1 and explained 8.0% of the variance. APS-P Organization was entered at Step 2 and independently explained 12.1% of the variance, $R^2$ change = .12, $F$ change $(1, 35) = 5.29, \ p = .03$. APS-P Positive Affect was entered at Step 3, independently explaining only 1.0% of the variance. The total model significantly explained 21.1% of the variance in Storytelling Creativity, $F(3, 34) = 3.02, \ p = .04$. A second model was analyzed, switching the entry at steps 2 and 3. Age was entered in Step 1 and explained 8.0% of the variance, APS-P Positive Affect
was entered at Step 2 and independently explained 6.5% of the variance, and APS-P Organization was entered at Step 3 and independently explained 6.6% of the variance. Although the contribution of each step was not significant, the total model significantly explained 21.1% of the variance in Storytelling Creativity, $F(3, 34) = 3.02, p = .04$.

**Divergent thinking and storytelling creativity.** As hypothesized, a moderate correlation was found between Storytelling Creativity and MSFM Fluency, even after controlling for age (see Table 4). Results indicated approximately 14% shared variance between MSFM Fluency and Storytelling Creativity. This moderate correlation indicated that the two measures of creativity were positive related, though still had a large amount of variance unique to each measure. The relationship between MSFM Novelty and Storytelling Creativity did not reach statistical significance, indicating that the variables were measuring distinct constructs.

**Fidelity of Play Intervention**

The primary play facilitator conducted play sessions with 28 of the children, the second graduate student conducted play sessions with 11 of the children, and the third graduate student conducted play sessions with 2 of the children. There were no differences between the first and second graduate student in terms of the amount of change children displayed in pretend play, divergent thinking, or creative storytelling, indicating experimenter effects were not likely to impact the results. Play facilitators rated fidelity of each session by completing a checklist of behaviors based on condition and by identifying the number of times the child followed the story prompt given. Play facilitators completed 98.32% of the target behaviors in the intervention sessions and
100% of target behaviors in the control sessions. The children in the play intervention sessions followed the story stem prompt 74.21% of the time.

In addition to checklists completed by play facilitators after each session, a random 20% of the sessions available on videotape for each investigator (n = 22) were rated by an independent rater blind to study hypotheses. On overall ratings, there were no differences based on condition for the play facilitator’s verbal praise, warmth, engagement, redirection/direction, or on-task behavior, suggesting that the play facilitators interacted similarly with the children in the intervention and control sessions. Specific prompts and behaviors of the play facilitators were also examined. As expected, play facilitators praised, prompted, or modeled both fantasy and emotional expression in the intervention group sessions ($M = 22.42, SD = 7.13, M = 15.67, SD = 5.57$, respectively) significantly more than in the control group sessions, $M = 0.40, SD = 0.52, M = 0.00, SD = 0.00$, respectively; $t (20) = 9.71, p < .001; t (20) = 8.87, p < .001$, respectively. Overall praise and verbal interaction of the play facilitators did not differ across groups. These findings suggest that the play facilitators succeeded in interacting with the children in a similar way across groups while also adhering to session goals and minimizing cross-contamination.

**Play Intervention Effects**

Means and standard deviations for the intervention and control groups at baseline and outcome are shown in Table 6. For APS-P Pretend Play, there was no significant interaction between group assignment and time and the main effects for time and group
assignment were also not significant. This indicates there was no significant change in the amount of pretend play for participants over the course of this study.

For APS-P Imagination, there was no significant interaction between group assignment and time. The main effect for time was significant, $F (1, 39) = 7.71, p < .01, \eta_p^2 = .17$, with Imagination increasing for both groups from baseline to outcome. The main effect for group assignment was not significant. For APS-P Organization, there was no significant interaction between group assignment and time. The main effect for time was significant, $F (1, 39) = 6.75, p = .01, \eta_p^2 = .15$, suggesting that organization improved in both groups from baseline to outcome. The main effect for group assignment was not significant. For APS-P Elaboration, there was no significant interaction between group assignment and time. The main effect for time was significant, $F (1, 39) = 11.81, p < .01, \eta_p^2 = .23$, suggesting that elaboration improved in both groups over the course of the study. The main effect for group assignment was not significant.

Overall, these results indicate that imagination, organization, and elaboration improved for children from baseline to outcome, regardless of group assignment.

For APS-P Positive Affect, Negative Affect, and Undefined Affect, the interactions between group assignment and time were not significant. The main effects for time and group assignment were also not significant. For APS-P Variety of Affect, there was not a significant interaction between group assignment and time. The main effect for time was significant, $F (1, 39) = 6.53, p = .02, \eta_p^2 = .14$, suggesting that Variety of Affect improved for both groups from baseline to outcome. The main effect for group assignment was not significant. In sum, these results indicate that the intervention was not effective at increasing affective play processes for the intervention
group as compared to the control group. There was a significant main effect for time in Variety of Affect, indicating that Variety of Affect increased over time, regardless of group assignment. Group assignment was not significant for any of the affect in play variables.

MSFM Fluency and Novelty were examined to assess the effectiveness of the play intervention at improving divergent thinking. There was not a significant interaction between group assignment and time for MSFM Fluency or MSFM Novelty. The main effects for time and group assignment were also not significant. These results suggest that divergent thinking did not change over the course of the study for participants in either group. Finally, the effect of the intervention on Storytelling Creativity was examined. The interaction between group assignment and time was not significant. The main effects for time and group assignment were also not significant, suggesting that storytelling creativity also did not change over the course of the study.

These results suggest that the play intervention was not effective at improving pretend play, divergent thinking, or storytelling creativity variables to a statistically significant level. A one-way between-groups multivariate analysis of variance (MANOVA) was computed to examine whether pretend play overall had changed based on group assignment. The change from baseline to outcome for Pretend Play, Imagination, Organization, Elaboration, Positive Affect, and Variety of Affect were the dependent variables and group assignment was the independent variable. There was not a significant difference between the intervention and control group on the combined dependent variables, $F (6, 34) = 0.79, p = .59$; Wilks’ Lambda = 0.88; $\eta^2 = 12$. However, an examination of the means indicated that the intervention group displayed more change
on the hypothesized variables included than the control group (See Table 7 for means of change variables). These results did not reach statistical significance, but suggest that the intervention group may have had slight increases in the hypothesized direction relative to the control group, though below the level required to reach statistical significance.

**Exploratory Gender Analyses**

There were no differences between males and females on any of the APS-P pretend play variables (See Table 8). There was a trend, with a medium effect size, indicating that males ($M = 19.11, SD = 5.42$) exhibited a slightly higher MSFM Fluency score than females, $M = 15.87, SD = 5.69$; $t (39) = -1.85, p = .07$ (two-tailed), $\eta^2 = .08$.

There were no differences between males and females on MSFM Novelty or Storytelling Creativity.

**Discussion**

The major findings in this study were that at baseline, pretend play was related to divergent thinking and creative storytelling, after controlling for age. Specifically, the amount of pretend play, imagination, organization, elaboration, positive affect expression, undefined affect expression, variety of affect, and comfort engaging in play were related to divergent thinking. Imagination, organization, elaboration, positive affect expression, variety of affect, and comfort engaging in play were related to creative storytelling. A hierarchical multiple regression revealed that age, organization, and positive affect expressed in play significantly accounted for 23.4% of the variance in
storytelling creativity. Divergent thinking and storytelling creativity were moderately correlated, indicating they were measuring distinct aspects of creativity.

The play intervention in this study was not successful at significantly increasing pretend play, divergent thinking, or storytelling creativity as compared to the control group. Imagination, organization, elaboration, and variety of affect expressed in play increased from baseline to outcome, regardless of group assignment. A MANOVA examining the total amount of change in play variables did not reach statistical significance.

**Relationships between Pretend Play and Creativity**

Overall, the results of this study supported the link between pretend play and creativity. Pretend play variables related to divergent thinking and storytelling creativity. The association between play and divergent thinking was slightly stronger when examining novelty rather than fluency. This makes sense theoretically as the novelty score has been suggested to be a purer measure of creativity on the MSFM than the fluency score (Goodwin & Moran, 1990). Cognitive and affect variables both related to divergent thinking and storytelling creativity, thus supporting the hypothesized relationships between each of the play processes and creativity. Hierarchical multiple regressions controlling for age indicated that the cognitive and affective play variables together accounted for 15.3% of the variance in divergent thinking, although these contributions did not reach statistical significance. As neither of the play processes made an independent contribution to the overall model for divergent thinking, the hypothesis that each would account for unique variance was not supported. This suggests that in this
age group, a child’s overall pretend play ability may be more predictive of divergent thinking than specific play processes.

A hierarchical multiple regression predicting storytelling creativity revealed that age and pretend play variables significantly accounted for 23.4% of the variance in storytelling creativity. The pretend play variables significantly accounted for 17.0% of the variance. Organization and positive affect did not make independent contributions to the overall model. These results also suggest that the overall pretend play ability, rather than specific play processes, is important during this age for creativity development. The current results also could be reflective of decreased power and a small sample size.

It is important to examine the links between creativity and pretend play in preschoolers as developmental relationships may not be defined as expected in this age group, especially as compared to the pretend play of school-aged children. For example, more relationships between pretend play and creativity were found in this sample than in the recent school-aged sample of Hoffmann and Russ (2012). Pretend play processes may be less differentiated at this early age. An exploratory factor analysis with the APS-P found that positive affect in play loaded on the cognitive factor in preschoolers rather than on the factor with other affect variables, suggesting that imagination and positive affect may be more related in this age group (Fehr & Russ, 2013b). If this finding is verified in a confirmatory factor analyses, this may explain why many of the play variables were related to creativity variables in the preschool-aged children whereas only specific variables were related to creativity in previous school-aged samples. It may be that examining the pattern of relationships in preschoolers is more important than the
individual variable relationships supported in school-aged children due to the level of development and lack of process differentiation at this age.

The current results confirmed and expanded the hypothesized relationship between divergent thinking and pretend play in preschoolers. Kaugars and Russ (2009) found that the amount of pretend play, affect expressed, and comfort in the play narrative related to divergent thinking variables in preschool-aged children. The current study replicated these results and found additional relationships with imagination, organization, elaboration, and the variety of affect categories expressed. The strength of the relationships in the current study were moderate and similar to the effect size identified between pretend play and divergent thinking in a previous meta-analysis (Fisher, 1992). These results are also consistent with the relationship between pretend play and divergent thinking found in first and second grade children (Hoffmann & Russ, 2012; Russ & Grossman-McKee, 1990; Russ & Peterson, 1990; Russ & Schafer, 2006). It is not clear why the additional associations with pretend play variables were not found in the Kaugars and Russ sample, but it is possible that having a slightly larger sample increased the power to find these relationships. It is also possible that the power to detect these differences could have been increased in this sample as the children engaged in a higher quantity of pretend play than the children in the previous sample.

The results of this study also expanded the literature on creativity and pretend play in preschoolers as it included two measures of creativity: divergent thinking and creative storytelling. As hypothesized, imagination, organization, elaboration, comfort, and positive affect expressed in play related to creative storytelling. Although this connection had not previously been examined in preschoolers, the pattern of relationships
replicated those found for school-aged children (Hoffmann & Russ, 2012). This connection also confirmed the hypothesized connection between pretend play and narrative development in preschoolers (Nicolopoulou, 2007). Furthermore, a hierarchical multiple regression revealed that the overlap is substantial, with 17% of the variance in storytelling creativity accounted for by pretend play variables. Hoffmann and Russ found that imagination and positive affect in pretend play related to creative storytelling in school-aged girls. The findings of the current study confirmed these relationships in preschool-aged children. Creative storytelling in this preschool sample was related to cognitive play processes, positive affect expression, and comfort in play. As emphasized by Hoffmann and Russ, the link between positive affect in play and creative storytelling confirms the theoretical relationship between positive affect and creativity. Hoffmann and Russ found that positive affect was related to creativity, but negative affect was not. In the current study, positive affect, but not negative affect, was related to storytelling creativity and divergent thinking fluency. As reviewed in Russ (1993), expression of positive affect induces a positive mood state, which in turn facilitates creativity in adults. Russ hypothesized that play could be one way in which children might express positive affect, thus inducing a positive mood state and facilitating creativity. Another affective process described by Russ is the experiencing of affect, which broadens the ability to access and use additional affect-related material. The ability to access affective material is important for creativity. Russ suggested that children who use play to experience affective material may subsequently be able to access a richer network of affective material. The results of this study support both of these hypothesized mechanisms. It
seems that children who expressed positive affect in play were more creative on the divergent thinking and storytelling tasks.

Although hypothesized to also relate to creativity, in this study negative affect expression in play was not related to creativity. This finding was unexpected given that the psychodynamic literature suggests that expression of both positive and negative affect in play can be beneficial (see Russ, Fiorelli, & Cain Spannagel, 2011, for review). On the other hand, Masters, Barden, and Ford (1979) found that inducing negative mood states decreased learning in children. Perhaps the mechanisms associated with the decrease in learning also affects the creative process. If expression of negative affect in play leads to a negative mood state, as is the case for positive affect, this may be why an association between creativity and negative affect in play was not found. Russ (1993) suggested that the short-term effects of affect expression may differ from the long-term effects. Perhaps negative affect expression decreases creativity in the short term, but facilitates affect regulation and other aspects of development that could increase creativity and problem solving in the long term. Negative affect may also serve a different purpose at specific developmental stages. Fehr and Russ (2013b) found that negative and undefined affect loaded on a different factor than the cognitive play scores and positive affect. Perhaps negative affect in pretend play is a different process during the preschool age.

As hypothesized, the two measures of creativity included in this study (creative storytelling and divergent thinking) were correlated, but only at a moderate level. Specifically, results indicated that only 7-13% of the variance in the relationship between divergent thinking and creative storytelling was shared variance. This suggests an
underlying creative process but also unique variance in the relationship. Amabile (1990) emphasized the importance of including real-life products when examining the creative process. Hennessey and Amabile (1988) argued that objective and subjective measures of creativity likely reveal different aspects of creative performance. These authors stated that objective measures of creativity, such as divergent thinking tasks, can be helpful in distinguishing especially creative children. On the other hand, subjective measures of creativity, such as a storytelling creativity task, may highlight the creative potential in all children. This may explain why the correlations between pretend play and creative storytelling were slightly stronger than the correlations between pretend play and divergent thinking in this sample. Perhaps all children could display creative processes during the storytelling task, highlighting the relationship with pretend play, whereas the relationship with divergent thinking and pretend play only reflected the relationship in children with more advanced abilities in this area.

The fact that the divergent thinking and creative storytelling tasks were correlated, but only moderately so, provides further evidence that more than one measure of creativity should be included when examining creative processes. Hennessey and Amabile (1988) emphasized the importance of creative tasks that are assessed in objective and subjective ways. Baas, De Dreu, and Nijstad (2008) argued that measures can assess three domains within creativity, including open-ended tasks such as divergent thinking, tasks with a correct solution such as insight tasks, and performance-based tasks in which creativity is based on the evaluation of others such as storytelling or art. Future studies on creativity should keep both of these recommendations in mind and include measures of creativity accordingly. The results of this study support the use of more than
one type of creativity assessment, although future studies are needed to provide guidance on which types of assessments are most helpful in which situations.

**Play Skills Intervention**

The main hypothesis that the intervention would improve play and creativity when compared to the active control group was not supported. There may be a variety of reasons why the intervention was not effective. First, it is possible that the intervention is not effective at increasing pretend play and creativity in preschool-aged children. The quality of the intervention may have been below the level needed to identify significant changes. It may be that the intervention was too global in that imagination, organization, and affect expression were all targeted. Perhaps these were not the most important targets or that focusing on only one process might have been a more effective approach. A more systematic baseline assessment would allow for targeting of specific play skills and tailoring of the intervention to each child’s specific play profile and intervention needs. By targeting overall play skills, the protocol used in the current study could have lost the ability to target specific intervention skills. It also may be that there was not enough modeling or scaffolding to the individual child’s level.

Second, preschool is a specific age-group with unique developmental needs. Although interventions that occur only at school have been effective for school-aged children, a stable home environment that encourages pretend play may be more important to foster these skills during the preschool years. When asked for feedback, parents during the pilot phase of this study frequently commented on their increased awareness of their child’s pretend play and the importance of developing their child’s pretend play skills.
Perhaps the pilot procedure was effective because it changed the home environment and/or the parent interactions around pretend play, as well as individual play skills.

Many play variables increased over the course of the study regardless of condition assignment. The effect of time may be accounted for by a pattern of natural development, improvement related to co-occurring factors, or a confounding effect within the control group. Children’s pretend play during the preschool years may be developing at such a rapid pace that natural improvements can be distinguished even over short periods of time. This would make additional improvements beyond natural development difficult to detect. Relatedly, the current intervention took place at a preschool that values and encourages pretend play. Therefore, it may be that all children received informal play intervention in the classroom or at home. Unfortunately, the stability of pretend play skills during this period of development and the impact of various settings on the development of pretend play skills have not yet been examined and thus cannot shed light on the current results. Another possibility is that there was cross-contamination in the control group. Although fidelity ratings indicated that differences between groups were maintained, it is possible that subtle behaviors of the play facilitators were not identified that may have encouraged children’s fantasy in the control group. It is also possible that simply spending one-on-one time with a caring adult improves children’s pretend play skills regardless of the activity. However, this explanation seems unlikely given previous results indicating the importance of the adult’s efforts at improving play (Dansky, 1980; Freyberg, 1973; Udwin, 1983).

The current study was novel in that it examined the impact of a very brief intervention aimed at improving pretend play skills and creativity. Although not
significant, an examination of the means from baseline to outcome suggests that the play intervention group may have displayed some improvement in pretend play skills relative to the control group. Given that individual variables demonstrated a pattern of change in the hypothesized direction, the current intervention paradigm may be worth pursuing. Other reasons may also explain why significant results were not found in the current study, such as the small sample size, the intervention dosage, or decreased power due to the particular procedures used in this study. The sample size in this study was relatively small. Therefore, there may not have been enough power to identify subtle differences between groups. The power analysis for the current study indicated that 40 children would need to be included to detect a large effect. In the pilot study, medium to large effect sizes were found. To detect a medium effect, a much larger sample would have been required. With a larger sample, it is possible that significant effects could have been found with the current intervention protocol.

Nonsignificant results suggest that the dosing or quality of this intervention was insufficient to reach desired results. In previous studies with school-aged children, effects have been found after conducting four or more play intervention sessions. Three 20-30 minute sessions were chosen for the current study as that was found to be an effective dose during the pilot phase of this study. However, the pilot procedure also included play sessions that parents conducted at home in between sessions with the play facilitators. Although there was a wide variety in the number and length of play sessions conducted by parents, few parents did not conduct any play sessions. Therefore, it is likely that the amount of play intervention sessions children received during the pilot phase was actually much higher than in the current study. This could also account for the
relatively lower impact of the intervention found in the current study. Future examinations of this intervention protocol will need to examine the impact of a variety of intervention doses, including the number of sessions required with the play facilitators and whether or not parents conduct additional sessions at home. With a larger sample, an in-depth analysis of the interactions between child and play facilitator throughout the sessions could assist in determining which interventions were effective for which children at specific times during the intervention.

Finally, it is important to note specific study procedures that may have played a role in the lack of significant findings. There was typically a one-week gap between the final play session and the outcome assessment, and this may have decreased the impact of the intervention. Danksy (1980) suggested that pretend play episodes increase creativity by temporarily loosening the child’s cognitive set. Instead of a temporary loosening, the goal of the intervention was to facilitate children’s abilities to engage in pretend play and thinking creatively. The current results may suggest that the loosened set created during intervention sessions may not have become permanent over the brief course of the study. The interval at which the outcome session occurs may explain why these results were not as strong as those found in previous intervention studies. If the outcome occurs immediately after the final play session, it would be difficult to discern how much of the improvement is a temporary effect and how much would be sustained over time. It would be helpful to examine this process more thoroughly in future studies.

Another methodological issue in the current study is that of generalizability. The outcome play session occurred with a different set of toys and with a different researcher. Generalizability outside of the play intervention has been raised as an important issue in
the play intervention literature (e.g., Lang et al., 2009). It is possible that children in the current study exhibited more improvements during the intervention that did not generalize to the outcome play assessment with different toys. Future studies should examine this possibility and continue to address generalization in the intervention procedures.

The sample used in the current study may also not have been a representative sample. Overall, children displayed more periods of pretend play than was found in a previous sample (Kaugars & Russ, 2009). There may be a ceiling effect of play interventions such that they are most effective for children with deficits in play and only minimally effective for children who have developed age-appropriate play skills. The majority of play intervention studies to date have included only children with play deficits. This will be important to consider when examining this intervention approach again. The current sample was too small to examine differences in play only for those children with play deficiencies at baseline. Larger samples in the future would allow for increased power and greater flexibility in analyses.

**Refinement of the Intervention**

The intervention used in the current study failed to improve pretend play and creativity significantly more than improvements found in the control group. However, the results obtained did indicate some improvements in pretend play in the intervention group relative to the control. Coupled with the strength of previous findings with this intervention, it seems likely that this intervention could be refined and effective with a future sample. First, the dosing of the intervention must be increased. Given that the
pilot study found promising results, it seems that teaching parents to implement the intervention is likely to be the most fruitful route. The pilot included three sessions with the play facilitators and encouraged parents to play similarly with their children at home twice in between each session. More time and effort at teaching the parents the intervention is likely to increase adherence and should be included. Another way to bolster the dosage would be to include more sessions. Interventions with the school-aged samples have used four or five sessions (Hoffmann, Fiorelli, & Russ, 2012; Russ, Moore, & Farber, 2004). Including five intervention sessions with the preschool age group would allow for more time to practice and solidify the play skills learned during the intervention, which likely would lead to an increase in play skills and generalization to the creativity tasks. Providing classroom teachers with instruction on implementing the intervention sessions is another possible way to increase the dosage within a school setting. Teachers would be ideal play facilitators and could provide intervention for multiple children at a time. A recent pilot study examined the effectiveness of a group play intervention for school-aged children and found significant improvements in pretend play and creativity compared to the control group following the intervention, which was co-led by the psychology graduate student and a teacher (Hoffmann, 2012).

Second, the standardized toys used in this study changed slightly for each session, but was generally from the same set. To increase the possibility of generalization, it seems as though it would be beneficial to vary the toys used in each session. For example, for the main characters, plastic characters may be used in one session, stuffed animals in another, and larger dolls may be used in another session. In addition to using a variety of story stems, this may also increase the possibility of generalization to play
settings outside of the study. Third, more scaffolding and individualization are needed. Instead of conducting blind baseline assessments, the baseline results should be systematically used to guide all future sessions. That way, the child’s specific struggles can be targeted more thoroughly from the beginning and less attention can be spent on play skills the child has already developed. Fourth, given preschoolers’ rapid development, it seems necessary to include a no-contact control in addition to the activities control group to compare the effect of the intervention to natural development. Until we know how much play change occurs naturally during this age group, we will not know how much the intervention is adding or how much change must be obtained for the intervention to reach clinical significance. It seems that retesting the intervention protocol following implementation of these modifications is likely to provide children with the intervention needed to reach clinical and statistical significance.

Finally, the appropriate sample for this intervention should be considered. A larger sample size should be used so that power is increased and so that more refined analyses can be conducted. It is possible that this intervention was most effective for children with the lowest play abilities at baseline. Parceling out the types of children the intervention might be most effective for would require a much larger sample than the one recruited for the current study. The population used in future studies will also need to be considered. The current study used a sample from predominantly advantaged families. The school, and likely the parents, supported the study because they already valued and encouraged pretend play. In future examinations of this protocol, a more diverse sample should be included to minimize the possibility that the children’s play skills are already receiving attention by caring teachers or parents interested in fostering
those skills. It is also possible that a more diverse sample would include children who could benefit more from the intervention.

**Age and Gender Analyses**

In this study, age and gender differences were included as exploratory analyses. Age was not expected to relate to pretend play or divergent thinking as both constructs have previously been found to be independent of age in preschool samples (Fehr, 2010; Kaugars & Russ, 2009; Moran et al., 1983). Divergent thinking was not associated with age in the current sample. However, imagination, organization, elaboration, total affect expressed, and comfort in play were related to age. In previous studies using the APS-P, elaboration has been the only pretend play variable related to age (Fehr, 2010). As this finding was unexpected, it should be examined in future studies with preschool-aged children. The storytelling creativity task was not previously used with preschoolers and it was positively related to age in this sample. In a school-aged sample, storytelling creativity and age was also related (Dillon, 2010). Although it makes sense that creative storytelling ability would increase with age, it is important to keep in mind that raters are instructed to score the stories relative to the sample. Therefore, it is somewhat surprising that even within the narrow preschool age range this relationship was found. Continued examinations of these relationships may shed light on the development of creative storytelling and writing.

The relationships between gender and pretend play, divergent thinking, and storytelling creativity were also explored in this study. In this sample, there were no gender differences for the pretend play variables. This was similar to the findings in the
original preschool sample (Kaugars & Russ, 2009), although a recent examination with a
sample at the same school had found gender differences with girls having more advanced
cognitive and affective play scores (Fehr & Russ, 2013a). In school-aged children, the
only gender difference consistently found is that boys express more aggressive affect in
their play narratives (Russ, 2004). The current results are consistent with the majority of
the literature in this area and did not replicate the differences found in Fehr and Russ,
suggesting pretend play abilities in preschoolers likely do not differ by gender. When
examining divergent thinking, a trend was found indicating that boys identified more
responses than girls. However, there was not a gender difference when examining
divergent thinking novelty or storytelling creativity, indicating that the overall creativity
of boys and girls in this sample was similar. This replicated previous results that did not
find gender differences in divergent thinking in preschool-aged children (Tegano &
Moran, 1989). The current study also did not find gender differences on creative
storytelling, which was consistent with previous results found with school-aged children
(Hennessey & Amabile, 1988).

Limitations

A number of limitations within this study exist that provide direction for future
research in this area. The major limitation was the small sample size. The relationship
between play and creativity must be replicated with a larger sample. A larger sample is
also needed in future intervention studies to increase power and allow for more specific
analyses. Second, the relationship examined between play and creativity was
correlational in nature. Thus, future studies teasing out causation and the natural
development of the specific processes and patterns involved in developing play and creativity are required. There was also no measure of intelligence included in the current study. In school aged children, the relationship between creativity and play has often remained significant even when controlling for IQ (Hoffmann & Russ, 2012; Russ & Grossman-McKee, 1990; Russ & Peterson, 1990). However, there are some mixed findings in the literature and it is unclear how intelligence would be related in preschoolers. Third, the current study used two graduate students to rate the children’s stories. Hennessey and Amabile (1988) used three elementary teachers as raters for each child’s story. Although the current study found that the raters achieved excellent interrater reliability, this was a deviation from the original scoring method and could limit the generalizability of the results obtained. Relatedly, another limitation was that there was more than one play facilitator meeting with children during the intervention. It is possible that subtle differences in their interactions with the children were not detected by fidelity assessments. Although having more than one play facilitator introduces additional error, it also relates to generalizability. The consistency between experimenters suggested that this intervention could be taught and implemented similarly by at least two graduate students. As a future direction is dissemination of methods to assist in increasing play to parents and teachers, this is an important finding. Future studies will need to continue to examine fidelity across raters and effective training methods. Finally, this study did not include a no-contact control group. It would be helpful to examine pretend play and creativity longitudinally in preschoolers to assist in determining the natural rate of development in these areas. Relatedly, it would also be important to examine the relationship between play and creativity over time. A follow-up
study of school-aged children found that imagination in play predicted divergent thinking four years later (Russ, Robins, & Christiano, 1999). However, the consistency in development of pretend play and creativity starting in the preschool years has not yet been examined. Short-term and long-term longitudinal studies with preschoolers are needed to illuminate the natural progression and consistency of development from this unique stage of development.

Conclusions

This study found a positive relationship between pretend play and divergent thinking in preschoolers, thus replicating the results of Kaugars and Russ (2009). The relationship between play and creative storytelling was a new finding and the hypothesized positive relationship was also supported, suggesting that pretend play is related to multiple types of creativity in this age range. This finding is also important as it provides preliminary validation of the proposed reciprocal relationship between pretend play and storytelling ability (Nicolopoulou, 2007). The hypothesis that the play intervention used in this study would improve pretend play and creativity was not supported. However, examinations of means and significant effects of time indicate that the intervention used in this study might still be found effective when additional factors are examined and included. It is interesting that this study did not find the strong intervention effects suggested by the pilot study and provides direction for how the intervention should continue to be refined in future examinations. Pretend play and creativity are important aspects of child development and are related to positive development overall. It will be important to continue to examine the relationships
between pretend play and creativity and to test play interventions specifically within the preschool-age group. Improvements made during this unique stage of development could have long-lasting positive effects on the child’s general development.
Table 1: Session Outline

<table>
<thead>
<tr>
<th>Session</th>
<th>Intervention Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Session 1</strong></td>
<td><em>Child meets with investigator blind to their condition and completes baseline tasks</em></td>
<td><em>Child meets with investigator blind to their condition and completes baseline tasks</em></td>
</tr>
<tr>
<td></td>
<td>• Affect in Play Scale-Preschool</td>
<td>• Affect in Play Scale-Preschool</td>
</tr>
<tr>
<td></td>
<td>• Multidimensional Fluency Task</td>
<td>• Multidimensional Fluency Task</td>
</tr>
<tr>
<td></td>
<td>• Storytelling Task</td>
<td>• Storytelling Task</td>
</tr>
<tr>
<td><strong>Session 2</strong></td>
<td><em>Child meets with play facilitator</em></td>
<td><em>Child meets with play facilitator</em></td>
</tr>
<tr>
<td></td>
<td>• Play Intervention Session</td>
<td>• Puzzles/Coloring sheets/Assemble toys</td>
</tr>
<tr>
<td><strong>Session 3</strong></td>
<td><em>Child meets with play facilitator</em></td>
<td><em>Child meets with play facilitator</em></td>
</tr>
<tr>
<td></td>
<td>• Play Intervention Session</td>
<td>• Puzzles/Coloring sheets/Assemble toys</td>
</tr>
<tr>
<td><strong>Session 4</strong></td>
<td><em>Child meets with play facilitator</em></td>
<td><em>Child meets with play facilitator</em></td>
</tr>
<tr>
<td></td>
<td>• Play Intervention Session</td>
<td>• Puzzles/Coloring sheets/Assemble toys</td>
</tr>
<tr>
<td><strong>Session 5</strong></td>
<td><em>Child meets with investigator blind to their condition and completes outcome tasks</em></td>
<td><em>Child meets with investigator blind to their condition and completes outcome tasks</em></td>
</tr>
<tr>
<td></td>
<td>• Affect in Play Scale-Preschool</td>
<td>• Affect in Play Scale-Preschool</td>
</tr>
<tr>
<td></td>
<td>• Multidimensional Fluency Task</td>
<td>• Multidimensional Fluency Task</td>
</tr>
<tr>
<td></td>
<td>• Storytelling Task</td>
<td>• Storytelling Task</td>
</tr>
</tbody>
</table>
Table 2: Main Dependent Variables

<table>
<thead>
<tr>
<th>Child Measures</th>
<th>Variable</th>
<th>Construct Measured</th>
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</thead>
<tbody>
<tr>
<td>Affect in Play Scale-Preschool version</td>
<td>Pretend Play</td>
<td>Pretend Play</td>
</tr>
<tr>
<td></td>
<td>Functional Play</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No Play</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Imagination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elaboration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comfort</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Positive Affect</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Negative Affect</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Undefined Affect</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Variety of Affect</td>
<td></td>
</tr>
<tr>
<td>Multidimensional Stimulus Fluency</td>
<td>Fluency</td>
<td>Divergent Thinking</td>
</tr>
<tr>
<td>Measure</td>
<td>Novelty</td>
<td></td>
</tr>
<tr>
<td>Storytelling Task</td>
<td>Creativity</td>
<td>Creative Storytelling</td>
</tr>
<tr>
<td></td>
<td>Imagination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Novelty</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Likeability</td>
<td></td>
</tr>
</tbody>
</table>
Table 3: Baseline Means and Standard Deviations for Major Variables

<table>
<thead>
<tr>
<th>APS-P</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretend Play</td>
<td>8.89 (4.99)</td>
</tr>
<tr>
<td>Functional Play</td>
<td>3.61 (4.01)</td>
</tr>
<tr>
<td>No Play</td>
<td>2.49 (4.70)</td>
</tr>
<tr>
<td>Imagination</td>
<td>3.02 (1.33)</td>
</tr>
<tr>
<td>Organization</td>
<td>2.98 (1.37)</td>
</tr>
<tr>
<td>Elaboration</td>
<td>2.68 (1.15)</td>
</tr>
<tr>
<td>Comfort</td>
<td>3.10 (1.30)</td>
</tr>
<tr>
<td>Total Affect</td>
<td>25.51 (21.04)</td>
</tr>
<tr>
<td>Positive Affect</td>
<td>8.99 (11.20)</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>10.90 (12.42)</td>
</tr>
<tr>
<td>Undefined Affect</td>
<td>5.63 (6.53)</td>
</tr>
<tr>
<td>Variety of Affect</td>
<td>4.46 (2.95)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MSFM</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluency</td>
<td>17.29 (5.74)</td>
</tr>
<tr>
<td>Novelty</td>
<td>4.10 (2.61)</td>
</tr>
<tr>
<td>Storytelling Creativity</td>
<td>3.10 (1.08)</td>
</tr>
</tbody>
</table>

n = 41
APS-P: Affect in Play Scale-Preschool version
MSFM: Multidimensional Stimulus Fluency Measure
Table 4: Partial Correlations Controlling for Age among Pretend Play, Divergent Thinking, and Creative Storytelling at Baseline

<table>
<thead>
<tr>
<th></th>
<th>MSFM Fluency b</th>
<th>MSFM Novelty b</th>
<th>Storytelling Creativity b</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APS-P b</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretend Play</td>
<td>.31*</td>
<td>.23 (.21)</td>
<td>.33* (.33*)</td>
</tr>
<tr>
<td>Functional Play</td>
<td>-.09</td>
<td>-.07 (-.07)</td>
<td>-.06 (-.07)</td>
</tr>
<tr>
<td>No Play</td>
<td>-.25</td>
<td>-.17 (-.16)</td>
<td>-.28* (-.29*)</td>
</tr>
<tr>
<td>Imagination</td>
<td>.36*</td>
<td>.25* (.23 +)</td>
<td>.27* (.26*)</td>
</tr>
<tr>
<td>Organization</td>
<td>.35*</td>
<td>.35* (.32*)</td>
<td>.37* (.36*)</td>
</tr>
<tr>
<td>Elaboration</td>
<td>.39*</td>
<td>.29* (.25+)</td>
<td>.32* (.30*)</td>
</tr>
<tr>
<td>Comfort</td>
<td>.40*</td>
<td>.25* (.22)</td>
<td>.32* (.31*)</td>
</tr>
<tr>
<td>Total Affect</td>
<td>.36*</td>
<td>.22 (.20)</td>
<td>.33* (.32*)</td>
</tr>
<tr>
<td>Positive Affect</td>
<td>.29*</td>
<td>.32* (.29*)</td>
<td>.23* (.23+)</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>.22</td>
<td>.07 (.06)</td>
<td>.19 (.19)</td>
</tr>
<tr>
<td>Undefined Affect</td>
<td>.27</td>
<td>.01 (.00)</td>
<td>.28* (.28*)</td>
</tr>
<tr>
<td>Variety of Affect</td>
<td>.25</td>
<td>.27* (.26+)</td>
<td>.40** (.39**)</td>
</tr>
</tbody>
</table>

*Correlations with Age computed with two-tailed tests of significance. All other correlations computed with one-tailed tests of significance. Numbers in ( ) are zero-order correlations without controlling for age.

b n = 41

* n = 38

*p < .08, *p < .05, **p < .01

APS-P: Affect in Play Scale-Preschool version

MSFM: Multidimensional Stimulus Fluency Measure
Table 5: APS-P Intracorrelations at Baseline

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pretend Play</td>
<td>-.47**</td>
<td>-.66**</td>
<td>.88**</td>
<td>.82**</td>
<td>.82**</td>
<td></td>
</tr>
<tr>
<td>2. Functional Play</td>
<td>-.47**</td>
<td>--</td>
<td>-.35*</td>
<td>.39**</td>
<td>-.34*</td>
<td>-.36**</td>
</tr>
<tr>
<td>3. No Play</td>
<td>-.66**</td>
<td>-.35*</td>
<td>--</td>
<td>-.59**</td>
<td>-.58**</td>
<td>-.56**</td>
</tr>
<tr>
<td>4. Imagination</td>
<td>.88**</td>
<td>-.39**</td>
<td>-.59**</td>
<td>--</td>
<td>.91**</td>
<td>.92**</td>
</tr>
<tr>
<td>5. Organization</td>
<td>.82**</td>
<td>-.34*</td>
<td>-.58**</td>
<td>.91**</td>
<td>--</td>
<td>.92**</td>
</tr>
<tr>
<td>6. Elaboration</td>
<td>.82**</td>
<td>-.36*</td>
<td>-.56**</td>
<td>.92**</td>
<td>.92**</td>
<td>--</td>
</tr>
<tr>
<td>7. Comfort</td>
<td>.77**</td>
<td>-.15</td>
<td>-.68**</td>
<td>.88**</td>
<td>.86**</td>
<td>.87**</td>
</tr>
<tr>
<td>8. Total Affect</td>
<td>.79**</td>
<td>-.40**</td>
<td>-.49**</td>
<td>.74**</td>
<td>.67**</td>
<td>.71**</td>
</tr>
<tr>
<td>9. Positive Affect</td>
<td>.53**</td>
<td>-.26</td>
<td>-.34*</td>
<td>.61**</td>
<td>.53**</td>
<td>.54**</td>
</tr>
<tr>
<td>10. Negative Affect</td>
<td>.60**</td>
<td>-.35*</td>
<td>-.34*</td>
<td>.57**</td>
<td>.54**</td>
<td>.57**</td>
</tr>
<tr>
<td>11. Undefined</td>
<td>.47**</td>
<td>-.19</td>
<td>-.34*</td>
<td>.27*</td>
<td>.24</td>
<td>.28*</td>
</tr>
</tbody>
</table>

Correlations computed with one-tailed tests of significance.

n = 41

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

APS-P: Affect in Play Scale-Preschool version
Table 6: Repeated Measures ANOVA for Play Intervention Effects

<table>
<thead>
<tr>
<th>APS-P</th>
<th>Baseline (^a)</th>
<th>Outcome (^b)</th>
<th>Sig.</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Play Inv.</td>
<td>Control</td>
<td>Play Inv.</td>
<td>Control</td>
</tr>
<tr>
<td>Pretend Play</td>
<td>8.45 (5.33)</td>
<td>9.32 (4.73)</td>
<td>9.95 (4.35)</td>
<td>9.81 (4.51)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Play</td>
<td>2.53 (4.74)</td>
<td>2.45 (4.79)</td>
<td>0.30 (0.57)</td>
<td>1.33 (3.47)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imagination</td>
<td>2.90 (1.29)</td>
<td>3.14 (1.39)</td>
<td>3.50 (1.24)</td>
<td>3.62 (1.36)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organization</td>
<td>2.90 (1.41)</td>
<td>3.05 (1.36)</td>
<td>3.40 (1.23)</td>
<td>3.24 (1.14)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elaboration</td>
<td>2.50 (1.10)</td>
<td>2.86 (1.20)</td>
<td>3.10 (0.97)</td>
<td>3.19 (1.21)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variety of Affect</td>
<td>4.15 (3.36)</td>
<td>4.76 (2.55)</td>
<td>5.25 (2.65)</td>
<td>5.62 (2.97)</td>
</tr>
<tr>
<td>Positive Affect</td>
<td>8.08 (11.02)</td>
<td>9.85 (11.57)</td>
<td>11.20 (11.97)</td>
<td>9.00 (10.66)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Affect</td>
<td>10.60 (12.11)</td>
<td>11.18 (13.00)</td>
<td>9.35 (7.13)</td>
<td>11.52 (8.92)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undefined Affect</td>
<td>4.73 (6.61)</td>
<td>6.48 (6.50)</td>
<td>6.75 (6.71)</td>
<td>9.67 (9.03)</td>
</tr>
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<td></td>
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</tr>
<tr>
<td>MSFM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluency</td>
<td>17.35 (6.29)</td>
<td>17.24 (5.32)</td>
<td>17.30 (6.67)</td>
<td>14.38 (4.15)</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>Novelty</td>
<td>4.45 (2.98)</td>
<td>3.76 (2.21)</td>
<td>5.10 (4.34)</td>
<td>3.62 (2.20)</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Storytelling Creativity</td>
<td>2.81 (1.11)</td>
<td>3.14 (1.13)</td>
<td>2.87 (1.17)</td>
<td>3.38 (1.05)</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

\(^a\) n = 41

\(^b\) n = 41 for APS-P and MSFM variables, n = 40 for Storytelling Creativity

APS-P: Affect in Play Scale-Preschool version

MSFM: Multidimensional Stimulus Fluency Measure

\(\eta_p^2 =\) Partial eta-squared
Table 7: Means and Standard Error of Change Variables for MANOVA

<table>
<thead>
<tr>
<th>Change in Pretend Play</th>
<th>Intervention Mean (SE)</th>
<th>Control Mean (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.50 (1.05)</td>
<td>0.49 (1.02)</td>
</tr>
<tr>
<td>Change in Imagination</td>
<td>0.60 (0.28)</td>
<td>0.48 (0.27)</td>
</tr>
<tr>
<td>Change in Organization</td>
<td>0.50 (0.19)</td>
<td>0.19 (0.19)</td>
</tr>
<tr>
<td>Change in Elaboration</td>
<td>0.60 (0.19)</td>
<td>0.33 (0.19)</td>
</tr>
<tr>
<td>Change in Positive Affect</td>
<td>3.12 (1.94)</td>
<td>-0.85 (1.89)</td>
</tr>
<tr>
<td>Change in Variety of Affect</td>
<td>1.10 (0.55)</td>
<td>0.86 (0.54)</td>
</tr>
</tbody>
</table>

n = 41
Table 8: Gender Differences at Baseline

<table>
<thead>
<tr>
<th>Variable</th>
<th>Females $^a$</th>
<th>Males $^b$</th>
<th>t</th>
<th>$\eta^2$</th>
<th>Effect size*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS-P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretend Play</td>
<td>8.20 (4.80)</td>
<td>9.78 (5.21)</td>
<td>-1.01</td>
<td>.03</td>
<td>Small</td>
</tr>
<tr>
<td>Functional Play</td>
<td>4.13 (4.04)</td>
<td>2.94 (3.98)</td>
<td>0.94</td>
<td>.02</td>
<td>Small</td>
</tr>
<tr>
<td>No Play</td>
<td>2.65 (4.69)</td>
<td>2.28 (4.85)</td>
<td>0.25</td>
<td>.00</td>
<td>Small</td>
</tr>
<tr>
<td>Imagination</td>
<td>2.74 (1.25)</td>
<td>3.39 (1.38)</td>
<td>-1.58</td>
<td>.06</td>
<td>Medium</td>
</tr>
<tr>
<td>Organization</td>
<td>2.74 (1.25)</td>
<td>3.28 (1.49)</td>
<td>-1.26</td>
<td>.04</td>
<td>Small</td>
</tr>
<tr>
<td>Elaboration</td>
<td>2.57 (1.24)</td>
<td>2.83 (1.04)</td>
<td>-0.74</td>
<td>.01</td>
<td>Small</td>
</tr>
<tr>
<td>Comfort</td>
<td>2.96 (1.26)</td>
<td>3.28 (1.36)</td>
<td>-0.78</td>
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</tr>
<tr>
<td>Total Affect</td>
<td>23.22 (17.55)</td>
<td>28.44 (25.04)</td>
<td>-0.79</td>
<td>.02</td>
<td>Small</td>
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<tr>
<td>Positive Affect</td>
<td>6.29 (9.84)</td>
<td>12.44 (12.12)</td>
<td>-1.80</td>
<td>.08</td>
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<tr>
<td>Negative Affect</td>
<td>11.34 (11.96)</td>
<td>10.33 (13.32)</td>
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<td>.00</td>
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</tr>
<tr>
<td>Undefined Affect</td>
<td>5.59 (5.97)</td>
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<td>-0.04</td>
<td>.00</td>
<td>Small</td>
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<tr>
<td>Variety of Affect</td>
<td>4.52 (2.98)</td>
<td>4.39 (2.99)</td>
<td>0.14</td>
<td>.00</td>
<td>Small</td>
</tr>
<tr>
<td>MSFM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluency</td>
<td>15.87 (5.69)</td>
<td>19.11 (5.42)</td>
<td>-1.85$^+$</td>
<td>.08</td>
<td>Medium</td>
</tr>
<tr>
<td>Novelty</td>
<td>3.65 (2.21)</td>
<td>4.67 (3.01)</td>
<td>-1.25</td>
<td>.04</td>
<td>Small</td>
</tr>
<tr>
<td>Storytelling Creativity</td>
<td>2.89 (1.08)</td>
<td>3.37 (1.04)</td>
<td>-1.44</td>
<td>.05</td>
<td>Small</td>
</tr>
</tbody>
</table>

$^a$n = 23
$^b$n = 18
$p < .08$, two-tailed, df = 39
APS-P: Affect in Play Scale-Preschool version
MSFM: Multidimensional Stimulus Fluency Measure
$\eta^2$=Eta-squared
*Effect size (Cohen, 1988):
  .01=Small
  .06=Medium
  .14=Large
Appendix A

Session Materials
A.1: Play Intervention Manual

For each Intervention:

Time: 15-20 minutes, approximately 5 stories/session (2 affect, 2 fantasy with rotation),
then 1 story that the child makes up on their own.

Set up: Toys are laid out on the play table before the start of each intervention. More toys are added in the second and third sessions.

Purpose: The purpose of the “combination” group of affect and imagination is to:

1. Increase the child’s divergent thinking, fantasy ability, and organizational skills.
2. Increase the child’s affective exploration as well as increase variety/frequency of affect

Suggested Toys:

- Human-like doll figures- in bendable plastic. Include a variety of races and both genders
- Accessories for doll figures- e.g. sports equipment, book, clothes to wear
- Legos
- Plastic animal figures
- Stuffed animal figures
- Blocks
- Cars
- Balls

General Introduction to Intervention:

I have some toys for you to play with. I want you to make up stories about different things. So, you can make up a story and play it out with the toys. I will tell you when we are going to switch stories! Have the dolls and animals talk out loud so that I can hear you.

I want you to make up a story with a beginning, middle, and end. Think about what will happen next in the story. Use your imagination and make up new things. Have the toys and dolls talk out loud so I can hear you.”

Let’s start. **Make up a story about a boy/girl who gets ready for school...**
Structure for Imagination Story:

Once you have read the script above, it is up to you to again structure the play session. You have some flexibility in this. We recommend starting with story about a child getting ready for school. It is a story that has a lot of structure and is low in fantasy content. You can then work up to a story with less structure/more fantasy. Again, the child should finish the session with making up a story of their own.

- Begin with “a child getting ready for school”. Begin all stories with, *Make up a story about__________.*
- Follow the child’s lead by letting him/her decide who the characters are, telling you what to do, and letting the story go where it takes him/her.
- Reinforce the child with verbal praise whenever he/she shows signs of divergent thinking, good use of fantasy, or organization
- Use prompts to help guide the play

List of Imagination Stories:

Make up a story about a boy (or girl) who...

- … gets ready for a day of school
- … gets ready for bed
- … goes to the zoo
- … goes to the store
- … is a superboy or supergirl
- … goes to the moon
- … lives in a city underwater
- … can talk to animals
… has magic powers

… lives in a castle

**Examples of Prompts:** These statements should be interspersed through-out the play session to help guide the play.

- What’s happening?
- What will happen first? What happens next?
- What is that?
- Show me (Use this if child is simply narrating instead of acting out with dolls)
- Use this to be/pretend/make-up (Use these prompts to encourage child to use objects in alternative ways)
- Make up a different ending (Try to do this with at least one story every session. Once a child has ended the story, ask him/her how it could have ended differently. Then have him/her act it out)
- Model ideas (This is your chance to be creative & show off your play skills. Demonstrate how objects can be used differently or how fantasy can be integrated into the story line.)
- Summarize the story (Once the story is over, to help solidify organization skills, give a brief summary of what happened.)

**Reinforcement and Reflection for good imagination:** It is crucial to reinforce the child’s use of imagination and organizational skills. Below are some examples but feel free to reinforce in a way that seems natural/authentic to you:

- You used the beanbag to pretend it was something else! That was good!
- That’s so cool how you pretended the doll could fly!
- Wow, that never happens in real life! What a fun idea!
- That was a really good story. In the beginning you__________, then you ____________, then in the end you______________. That really made sense!
To switch a story:  Now I have a different story…

If did imagination story, then switch to affect story. Give appropriate introduction (i.e., if switching to an affect story, “Make up a story with a lots of feelings. Have the dolls talk out loud and say and show how they are feeling. Make up a (happy, sad, scary, etc.) story about________. Now remember, make up a story with a lot of feelings.

Structure for an Affect Story:

Once you have read the script above, it is up to you to structure the play session. You have some flexibility in this, however, we recommend starting with 1 of the negative-affect stories. Children seem to find it easier to exaggerate sad or scared affect and it is very easy to model crying or scared-whimpering, for example. (The third story should then be an imagination story). The fourth story should be a positive affect story, so that the session ends on an upbeat note. During the intervention, it is more important that the child plays for twenty minutes rather than produce four different stories. If the child only has time for a negative affect story, the child will be asked to end the story with a happy ending. If the child has time for a final story, we recommend that the story be about whatever the child chooses. However, if she/he makes it a sad story, make sure to introduce a happy ending.

Choose which story to being with and state: *Make up a (sad, scary, happy, etc) story about________.*

- Follow the child’s lead by letting him/her decide who the characters are, telling you what to do, and letting the story go where it takes him/her.
- Reinforce the child with verbal praise whenever he/she demonstrates affect expression
- Use prompts to help guide the play
Negative Affect Stories:

*Make up a sad story about...*

...a doll who lost her toy

*Make up a scary story about...*

... a boy/girl who hears a scary noise

*Make up an angry story about...*

... two dolls who want the same toy

Positive Affect Stories:

*Make up a happy story about...*

... a boy/girl who gets a new bike

... a boy/girl who is going to the zoo

...a boy/girl at a birthday party

*Make up a caring story about...*

... a boy/girl taking a puppy for a walk

... a boy/girl making cookies with someone in his/her family

... a boy/girl giving a present to someone

Examples of Prompts: These statements should be interspersed through-out the play session to help guide the play.

- Reflect feeling label (e.g. That doll seems sad; I can tell from her voice she’s excited; she must be mad that...)

- How is he/she feeling? (Ask this about the other characters in the story- in addition to the main character)

- Feeling because... (Find out why the doll is feeling a certain way)
Model feelings (This is your chance to have some fun- use an exaggerated tone of voice, facial expression, show the doll jumping up and down with excitement, or holding his head in his hands as he cries.)

How is he/she feeling now? (Have the child label the doll’s feelings at different points during the story)

**Reinforcement and Reflection for good affect expression:** It is crucial to reinforce the child’s affect expression. Below are some examples but feel free to reinforce in a way that seems natural/authentic to you:

- You made that doll seem so mad. Your tone of voice really made her sound angry!
- That’s neat how first the doll was crying because she was sad but then you showed she was happy by laughing really hard
- Wow, what a good job showing she’s scared. Look at how she’s shaking in fear!

*Note: Although you are allowed to structure the play session and story stems given based on the child’s preferences and play needs, we suggest you follow the suggested order of stories on the following page. These stories have been tested with a variety of preschool-aged children and were chosen because they were effective with most children. The stories start with more basic material in session one and gradually introduce more complex imagination and affect ideas. It is recommended that this order be followed and deviations only occur in the case of not having enough time in a particular session to include the third story or if a child seems to need to continue with more basic stories before introducing stories with more complex ideas.*
Suggested Session Guide

Session 1

- General Introduction
- Imagination Introduction
- Story: “gets ready for school” (imagination)
- Use To switch a story instructions, introducing Affect story
- Story: “boy/girl who hears a scary noise” (negative affect, scary)
- Use To switch a story instructions, introducing Imagination story
- Story: “goes to the moon” (imagination)
- Story: “make up a story about anything you want”

Session 2

- General Introduction
- Affect Introduction
- Story: “sad story about a doll who lost his/her favorite toy” (negative affect, sad)
- Use To switch a story instructions, introducing Imagination story
- Story: “boy/girl who lives in an underwater city” (imagination)
- Use To switch a story instructions, introducing Affect story
- Story: “caring story about a boy/girl who takes his/her dog for a walk” (positive affect, caring/happy)
- Story: “make up a story about anything you want”

Session 3

- General Introduction
- Affect Introduction
- Story: “angry story about two dolls who want the same toy” (negative affect, angry)
- Use To switch a story instructions, introducing Imagination story
- Story: “boy/girl who has superpowers” (imagination)
- Use To switch a story instructions, introducing Affect story
- Story: “caring story about a boy/girl who gives a present to someone” (positive affect, caring/happy)
- Story: “make up a story about anything you want”
A.2: Control Instructions

Instructions for Control Group:

I have some puzzles and coloring sheets and crayons for you to play with. I want you to pick a puzzle or coloring sheet to start out with and when you are finished you can do something different. You can talk out loud about the colors in the picture and what you see.
A.3: Fidelity Rating Form for Play Facilitators

Play Facilitator Checklist: Intervention Group

Story prompts given and indicate if the child used the story prompt

1.

2.

3.

4. make up their own story:

General impressions of play
Did stories have a beginning, middle, and end? Any noticeable changes from the previous session?

What emotions were seen in their play? Were they able/willing to explore emotions when given a prompt? Any noticeable changes in variety and frequency of emotions in play?

What imaginative elements were in the play? Were they able to give alternative uses for items? Any noticeable changes from previous sessions?
Did you:

Imagination Stories
- Use these prompts to encourage child to use objects in alternative ways
- Ask child to make up a different ending with at least one story?
- Did you summarize the story?
- Were you able to model ideas? What ideas did you try to model?

Affect Stories
- Reflect feeling label (e.g. That doll seems sad; I can tell from her voice she’s excited; she must be mad that…)
- Ask how the characters in the story are feeling?
- Ask why a character felt a certain way?
- Did you ask the child to label the dolls feelings at different points of the story?
- Model feelings? What feelings did you try to model?
Play Facilitator Checklist: Control Group

What activities were chosen

General impressions of play - Any noticeable changes in play and interactions with play facilitator?

Did you
- Ask the child questions about the activity? (ex. What color will you use? Where does this part go? Can you find the piece that goes here?)
- Praise the child for good effort!! Examples of praise:
- Follow your child’s lead and let them choose which of the activities to do and when to change to a new activity.
# A.4: Fidelity Rating Form for Independent Observer

Fidelity Checklist

<table>
<thead>
<tr>
<th>Category:</th>
<th>Check off each time play facilitator does this:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Praise/Positive Reinforcement for On-task Behavior, Following Directions, Effort, etc.</strong>&lt;br&gt;Examples: Cool! Good idea. I like that you... You’re working hard on that. Thanks for keeping that on the table.</td>
<td></td>
</tr>
<tr>
<td><strong>Praise for Fantasy in Play</strong>&lt;br&gt;Examples: Wow! That is a cool idea. I like how you used that block as a rocket. That was really cool how you ended the story that way!</td>
<td></td>
</tr>
<tr>
<td><strong>Praise for Emotion Expression in Play</strong>&lt;br&gt;Examples: Wow, she is really happy! You did a great job showing how all the dolls felt in that story. I could really tell how angry that doll was because you...</td>
<td></td>
</tr>
<tr>
<td><strong>Describe/Summarize (Just like a sports announcer: “He’s doing X”)</strong>&lt;br&gt;Examples: First X happened, and then X. You’re putting that piece together first. The doll fell. You’re using pink for that flower. You’re putting that piece there.</td>
<td></td>
</tr>
<tr>
<td><strong>Model or Prompt Imagination in Play</strong>&lt;br&gt;Examples: Maybe we could pretend this block is the surfboard. What else could we use for a rocket? Facilitator having doll or animal talk to child’s doll.</td>
<td></td>
</tr>
<tr>
<td><strong>Model, Label, or Prompt Feelings in Play</strong>&lt;br&gt;Examples: He sounds sad. She’s angry! How can the doll show he feels X? Facilitator’s doll crying, jumping up and down, or verbally expresses feelings (I’m excited!, Whee!, Uh-oh)</td>
<td></td>
</tr>
<tr>
<td><strong>Model or Prompt On-task Behavior</strong>&lt;br&gt;Examples: This puzzle piece has X on it-can you find another piece that has X? I’m finding where this piece goes. I’m coloring this flower pink. Demonstrating connecting pieces for building toy. Showing child puzzle pieces or method to put puzzle together (e.g., edges first).</td>
<td></td>
</tr>
<tr>
<td><strong>Interacting with Child using Questions or Prompts</strong>&lt;br&gt;Examples: What happens next? What color is that? Where will that piece go? I wonder what will happen next. I wonder where that piece will go.</td>
<td></td>
</tr>
</tbody>
</table>
Fidelity Rating of Investigator’s Behavior:

1. How much verbal praise does the Investigator give the child?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>No praise given</td>
<td>Some praise</td>
<td>Praise given throughout session</td>
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</tr>
</tbody>
</table>

2. How much warmth does the Investigator exude toward the child?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>No warmth, critical or harsh</td>
<td>Some warmth and criticism, ambivalent</td>
<td>Great deal of warmth</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. How much does the Investigator engage with the child’s during the task (showing interest, verbally or nonverbally acknowledging)?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all focused or acknowledging child</td>
<td>Engaged, some acknowledgement but with periods of distraction</td>
<td>Entirely engaged and acknowledging child’s behavior</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. How much direction or redirection does the Investigator give?

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<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great deal of redirection or direction, child has no input</td>
<td>Some direction/ redirection, Investigator directing child</td>
<td>No direction, completely follows child’s lead/choices</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. How much does the Investigator stay on task (working on task at hand and discussing topics related to current task)?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all on task, discussing unrelated things</td>
<td>Somewhat on task, some discussion of unrelated things</td>
<td>Completely on task, minimal deviations from task</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix B

Measures
**B.1: Affect in Play Scale-Preschool version (APS-P) Manual**

Kaugars & Russ (2009)

Affect in Play Scale-Preschool version (APS-P)

**MATERIALS**

In the development of the APS-P, age-appropriate toys were selected that are easy for young children to manipulate and play with and that might elicit symbolic and fantasy play. The following items were selected:

- **4** Soft, stuffed animals (e.g., “Beanie Baby” size): one elephant, one bear, one shark, one dog
- **1** Soft, stuffed animal smaller than the others: one bunny
- **4** Small plastic animals: giraffe, cheetah, hippo, camel
- **1** Plastic car
- **1** Multicolor “Koosh” ball
- **3** Plastic, stackable cups

The various animals were intended to elicit a range of emotional expressions including aggression (e.g., shark) and nurturance (e.g., small bunny). Several items could have a variety of uses in children’s play such as the cups and “hairy ball.”

**INSTRUCTIONS**

With the entire materials readily accessible but out of the child’s sight, introduce the task with the following instructions:

_I am here to learn about how children play. In this basket I have some toys that we’re going to play with today. Let’s see what’s inside. (Show elephant) Oh look, this is a elephant. (Show bear) This is a bear. (Show dog) This is a dog. (Show shark) This is a shark. I have some cups. (Present three cups) Let’s count together and see how many there are. One, two, three. Good. (Show car) What is this? A car. See, it’s grey. Oh look, here are some more animals. (Show giraffe) What animal is this? That’s right. It’s a giraffe. (Show cheetah) This is a cheetah. (Show hippo) This is a hippo. (Show camel) What animal is this? That’s right, it’s a camel. (Show ball) This is a ball. What color do you see? That’s right. It’s orange._

_That’s all the toys in the basket. Now we’re going to make up a story using the toys on the table. See how you can play with the toys. This is the bear. (Exaggerate voice tones) He says, “I’m really hungry! Where can I find some food? (Goes over to cups) Oh look, I found some cookies. I love cookies. Yum! Yum! Here’s another cup. Oh yucky! I don’t like what’s inside there! Yuck!” Now you keep playing. What happens next? Make up a story and I’ll tell you when to stop._

- After 5 minutes, the task should be discontinued with the following comment:
Stop. You did a good job. Now you can help me put all the toys back in the basket.

- If the child does not play within 30 seconds of the task beginning, the examiner should prompt the child up to two times with the following prompt. The second prompt should be given one minute after the first. Go ahead. Play with the toys and make up a story.

- If the child does not play within two minutes of the task starting, the task should be discontinued.

- If the child appears to be playing but does not talk or talks very quietly, he or she should be encouraged to talk louder. Once again, the second prompt to talk should be given one minute after the first prompt. This prompt can be used again if the child has started talking but later stops talking again and it appears the child has “forgot” the instructions to talk out loud. This prompt should only be used twice if the child chooses to play without talking. Be sure to talk out loud so I can hear you.

- If the child begins playing and then stops, the examiner should give the following prompt. This prompt can be used as many times as necessary throughout the five minutes. You still have some time left. Go ahead, keep playing.

- One minute after stopping play, the child should be given the following prompt: Keep on playing. I’ll tell you when to stop.

**SCORING**

There are nine primary scores:

- **Frequency of affect expression**: the number of instances in which the child expresses any affect.
- **Variety of affect categories**: the number of different types of affect categories the child expresses (out of 12 possible affect categories).
- **Frequency of positive affect**: the number of instances in which the child expresses one of five positive affect themes.
- **Frequency of negative affect**: the number of instances in which the child expresses one of six possible affect themes.
- **Fantasy mean**: mean of imagination, organization, and elaboration scores.
- **Comfort**
- **No Play**: the number of 20-second intervals in which the child predominantly did not move the objects or interact with them.
- **Functional Play**: the number of 20-second intervals in which the child predominantly used simple, repetitive muscle movements with or without objects.
- **Pretend Play**: the number of 20-second intervals in which the child predominantly engaged in symbolic or pretend play.
Guidelines for scoring affect expression
Affect expression is scored as a frequency count. In addition, the type of affect expression is scored. Both verbal and nonverbal expressions are scored. For example, one animal hitting another animal is considered an example of aggressive affect. Noises and sound effects that children make are coded as affect if they appear to be related to the children’s play (e.g., roar, zoom, and boom).

The following categories are used to describe children’s affect expression:

**Positive Affect:**
- Nurturance/affection
- Happiness/pleasure
- Competition
- Oral
- Sexual

**Negative Affect:**
- Aggression
- Anxiety/fear
- Sadness/hurt
- Frustration/disappointment/dislike
- Oral aggression
- Anal

Undefined

Raters should be familiar with the category criteria for affect expression used when scoring the Affect in Play Scale. Affect expression should be scored as “undefined” when noises and sound effects are not clearly consistent with one of the other affect categories.

Guidelines for scoring fantasy
Imagination and Pretense

1. No pretending. The properties of the object are the stimulus. Child is stimulus bound by the materials. No imitations of object or animal sounds.

2. Few fleeting instances (~3) of pretending activities but very simple (e.g., moves car with sounds).

3. Some pretending, but simple activities/themes and child does not continue the situation for very long (e.g., animals eating nondescript food from cups).

4. Moderate amount of pretending, introduction of few novel situations (e.g., several animals go to eat, animals interact with one another). May have developed pretending but not continue for the entire duration of 5 minutes.

5. Frequent pretending with more original and creative elements.

Organization and Coherence

1. No pretense, play not organized.

2. Fragmented, isolated, unrelated pretend events, disjointed.

3. Some loosely related events.
(4) Related events organized in a short, temporal sequence but no one theme sustained very long. Several schemas are related to one another in a sequence.

(5) More coherent, related sequences of events, possibly some narration and description of activities. Child indicates pretend acts are planned before being executed (e.g., “I’m going to bite you and eat you up,” “Let’s go to the store”).

Elaboration: Complexity of themes, sound effects/voice tones, character development, use of different toys

(1) Isolated events with no embellishment.
(2) Minimal embellishment in one area.
(3) More embellishment in two dimensions.
(4) Moderate embellishment in three areas.
(5) Highly elaborate episodes of pretend play with elaboration in all four areas, many details, high activity.

**Guidelines for scoring comfort**
This score reflects a child’s interest, involvement, and comfort with the play activity.

(1) No interest in play, reticent, distressed, talks only to examiner about other things.
(2) Passive, superficial interest in toys, some reticence to play.
(3) Moderate interest in toys, some distractibility, not enjoying or involved in play. Playing but not a lot of affect in facial expressions.
(4) Good absorption in play activities, comfortable, enjoying play.
(5) Very involved, tone of voice and affect indicate that child is completely immersed in and enjoying the play.

**Guidelines for scoring type of play**
For each 20-second interval, the rater should indicate which of the three types of play was the predominant activity (i.e., occurs for greater than or equal to 10 seconds within each 20-second interval):

No play: Child does not move the objects or interact with them. The child may hold an object but does not move it. The child may name an object or describe its actual properties, for example, count the number of cups. Instances in which the child is absently moving a toy in a repetitive fashion but attending to another activities are also coded in this category (e.g., short motor movements rolling ball while talking to examiner about unrelated topic).

Functional play: Child makes simple, repetitive muscle movements with or without the objects. For example, a child may throw the ball up and down, push the car back and forth without making any sounds, stack the cups, or line up the animals.

Symbolic or pretend play: The following activities are examples/characteristics of symbolic or pretend play.
- Familiar activities may be performed in the absence of the necessary materials or customary social context.
- Activities may not be carried to their usual outcome.
- Inanimate objects may be treated as animate (e.g., the stuffed bear may talk).
- One object or gesture may be substituted for another (e.g., the cup may be a bathtub).
- The child may perform an activity usually done by someone or something else (e.g., pretend to be a dog).
- Speech may be substituted for action (e.g., “Let’s pretend we’re going to bed”).
- Language may be used to describe a situation (e.g., “Let’s pretend this is the swimming pool”).

The child does not have to explicitly discuss pretending for the activity to be categorized as pretense.

REFERENCES


Sample APS-P Scoring Sheet

<table>
<thead>
<tr>
<th>Child #</th>
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</tbody>
</table>
B.2: Multidimensional Stimulus Fluency Measure (MSFM)

Godwin & Moran (1990)

Tell me all the ways you can think of that you can use a box. (prompt at the end: Can you think of any other ways that you can use a box?)

Tell me all the ways you can think of that you can use paper. (prompt at the end: Can you think of any other ways that you can use paper?)

Tell me all the things that you can think of that are red. (prompt at the end: Can you think of anything else that is red?)

Tell me all the things that you can think of that are round. (prompt at the end: Can you think of anything else that is round?)

What could this be? (yellow half circle) (prompt at the end: Can you think of anything else this could be?)

What could this be? (blue shape similar to letter "J") (prompt at the end: Can you think of anything else this could be?)
B.3: Storytelling Task

Consensus scoring system defined by Hennessey & Amabile (1988)

Administration: A Boy, a Dog and a Frog, a picture book by Mercer Mayer (1967)

Prompt at Baseline: I want you to tell me the story in this book. 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 ahead.

Prompt at Outcome: The next task we are going to do uses this book. Remember how you made up a story before but we only used the first half of the book? Now I would like you to tell me a story using the second half. We will start here (show page to start) and go all the way to the end. I can’t see the pictures, so make sure to tell me a story so that I will understand it. Make it the kind of story that we would read in a book. I am going to write down what you say, so I may have to ask you to slow down at times. Go ahead.
Dear Rater,

Thank you for taking the time to help score these stories. For each story, please read the story completely and then fill out a scoring sheet. Remember to put the story/participant number on each scoring sheet. There are 4 scales, each going from 1 to 5, measuring the creativity, imagination, novelty of ideas, and likeability of the child’s story. Please just circle the appropriate numbers to score.

The scales have purposely been left somewhat ambiguous, so that each scorer may interpret the criteria to mean whatever he or she thinks is the most appropriate or important. You are not meant to take a long time in considering scores after reading each story. Please do not try to think of outside, concrete anchor points for scoring, but instead score the stories relative to each other.

I have included photocopies of the pages of the storybook that the children are describing, if you wish to follow along with a visual aid. This might help you decide which stories make sense or are more imaginative.

Thank you again,
Karla
Participant # ___________________

**Imagination Demonstrated by Storyteller**

*Please rate the amount of additions to the story beyond what is present in the pictures (motives, feelings, thoughts, dialogue, other characters in the story not on the page, background info, etc.).*

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<td>Imagination</td>
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**Creativity of the Story**

*Please rate the amount of novel additions to the story that are useful (addition adds to the story) and make sense within the context of the story. In other words, the story benefits because this was added.*

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**Novelty of the Ideas**

*Please rate the uniqueness of the imaginative aspects in the child’s story (qualitative judgment of how novel, rare, or unusual the additions are).*

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**Likeability of the Story**

*Please rate the degree to which you were interested in and enjoyed the overall story.*

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References


Hoffmann, J. (2012). A pretend play group intervention for elementary school children (Doctoral dissertation). Case Western Reserve University, Cleveland, OH.


Russ, S. W., Moore, M., & Farber, B. (2004, July). *Effects of play training on play, creativity and emotional processes*. Poster session presented at the annual meeting of the American Psychological Association, Honolulu, HI.


