PRETEND PLAY AND RESILIENCY:
A FOLLOW-UP STUDY OF SCHOOL-AGED CHILDREN

By

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# Table of Contents

Abstract ......................................................................................................................... 5  
Introduction .................................................................................................................... 7  
Method ............................................................................................................................ 23  
Measures ......................................................................................................................... 27  
Results ............................................................................................................................. 32  
Discussion ........................................................................................................................ 41  
Tables .............................................................................................................................. 54  
Appendices ..................................................................................................................... 61  
Bibliography .................................................................................................................... 72
List of Tables

Table 1: Descriptive Statistics of the Sample…………………………………………54

Table 2: Pearson Product-Moment Correlations of Measures with Age and Verbal IQ…………………………………………………………………………55

Table 3: Longitudinal Pearson Product-Moment Correlations for Pretend Play and Criteria (Controlling Verbal IQ)………………………………………………56

Table 4: Longitudinal Pearson Product-Moment Correlations for Pretend Play and Criteria (Controlling Age)………………………………………………………57

Table 5: Concurrent Pearson Product-Moment Correlations with Resiliency………58

Table 6: Pearson Product-Moment Correlations Among Concurrent Variables……59

Table 7: Summary of Hierarchical Regression Analyses……………………………60
Pretend Play and Resiliency: A Follow-up Study of School-Aged Children

Abstract

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Research has consistently demonstrated relationships between pretend play and various aspects of children’s adaptive functioning. However, there is little longitudinal research supporting the predictive power of play. The aim of the present study was to investigate whether early pretend play predicted resiliency and components of adaptive functioning over a four-year period. Participants included thirty-one girls in the fourth through eighth grades.

Results showed that early play predicted children’s later divergent thinking abilities and positive affect. Pretend play also predicted mathematics achievement over a four-year period. Examination of divergent thinking over the four-year period supported its stability over time. Play did not predict later resiliency or coping. Concurrently, greater divergent thinking ability was related to mathematics achievement. The present study provides important longitudinal evidence for the predictive power of pretend play in children’s development and adaptive functioning.
Introduction

The important role of play in child development has been well demonstrated. Not only does children’s play behavior reflect developmental level, play is also thought to facilitate developmental change (Krasnor & Pepler, 1980). Pretend play specifically has been shown to relate to cognitive and affective aspects of children’s development (Russ, 2004). While many studies have found a relation between pretend play and children’s adaptive functioning in the short term, fewer have examined the stability of these associations over time. The current study investigates the relationship between early pretend play and children’s resiliency four years later. Theoretically, the cognitive and affective processes in play should contribute significantly to children’s ability to function in adaptive ways. This study introduces individual resiliency as a measure of adaptive functioning in children.

The purpose of the present study was fourfold. The primary question was whether the cognitive and affective aspects of children’s pretend play would relate to resiliency at a four-year follow-up. A second aim was to examine the longitudinal relationships among early play and later measures of divergent thinking, coping, and affect. A third aim was to explore the relation between early pretend play and later academic achievement. Finally, the study examined concurrent relationships among measures of resiliency, divergent thinking, coping, and affect in school aged children to identify components of resiliency.

Resiliency

Resilience in children can serve as a protective factor against all kinds of life adversity. Broadly defined, resilience is the process of, or ability to, withstand and
recover from adverse life experiences that threaten or disturb stability (Masten, 2011). Resilience research has focused on determining what contributes to this attribute in children, especially in those faced with extreme adversity who continue on a normal developmental trajectory rather than developing some form of pathology (Garmezy & Rutter, 1983; Garmezy, Masten, & Tellegen, 1984; Luthar, 1991, 2003). As highlighted by Sandra Prince-Embury (2010), there is a difference between resilience and resiliency. Resilience refers to the interaction between individual/group variables and context, while resiliency more specifically refers to attributes of the individual, independent of the presence of negative life events or trauma (Luthar & Zelazo, 2003). The present study assessed individual resiliency rather than contextual resilience. Masten (2011) used the terms “variable-focused models” and “person-focused models” to describe the same distinction in terminology. While variable-focused models examine relations among variables of interest involving resilience (i.e. type of adversity exposure, personal resources, or outcomes), person-focused models study whole individuals, comparing resilient and non-resilient subjects.

Resilience literature has largely trended toward variable-focused models, often using subjects with a common context, such as survivors of natural disaster (Masten & Obradovic’, 2008) or victims of child maltreatment (Cicchetti & Rogosch, 1997; Cicchetti & Toth, 2000). However, studying individual resiliency via person-focused models allows researchers to identify naturally occurring profiles (Masten, 2011). In addition, recent research has taken a life course perspective to the study of outcomes such as Post-Traumatic Stress Disorder, focusing on identifying risk factors present as early as infancy and childhood. Factors found to confer risk for PTSD following a
trauma include social withdrawal, low social support, and pre-trauma low self-esteem (Trickey, Siddaway, Meiser-Stedman, Serpell, & Field, 2012). Measuring these factors at the individual level holds potential for identifying children who may be at-risk, or low in resiliency. While techniques for measuring resiliency have varied widely in the literature, some studies have used “competence” as an outcome measure (Masten & Coatsworth, 1998; Masten, 2011). Competence, in this sense, refers to strengths or positive protective factors present in the individual child such as academic achievement, lower stress levels, or getting along with other children. Studies that use multiple criteria to measure competence are central to identifying factors that are broadly important to resiliency. Because the present study used a non-clinical sample with presumably minimal exposure to negative life events, it adopted a person-focused model, examining individual resiliency rather than contextual resilience.

**Measuring Resiliency**

Sandra Prince-Embury (2006, 2007) developed the Resiliency Scales for Children and Adolescents (RSCA) to meet the need for an assessment tool of individual resiliency. It is best conceptualized as a screener for individual attributes that contribute to resiliency, as it does not account for exposure to negative life events or trauma (Naglieri, LeBuffe, & Ross, 2013). The RSCA was an appropriate tool for the present study, as the sample of girls was unlikely to have experienced significant life stressors typically measured in assessments of resilience. It consists of three subscales based on constructs that have emerged from previous research (Prince-Embury, 2008). The first two, Sense of Mastery and Sense of Relatedness, focus on positive processes present in the individual. Together they form the Resource Index. The third subscale is Emotional
Reactivity, which is subtracted from the Resource Index to yield a Vulnerability Index score. These three subscales largely expand on Masten et al.’s (1999) components of “adaptation” in children and adolescents, which consisted of academic achievement, friendship, and anti-social versus rule-abiding behavior. What follows are brief descriptions of each subscale and the research supporting their efficacy for measuring resiliency in children.

As a construct, sense of mastery includes individual characteristics such as optimism, adaptability, and self-efficacy (Prince-Embury, 2006, 2007). Such attributes have been recognized by previous literature as important contributors to resiliency. The Kauai Longitudinal Study, which followed a group of children from birth to age thirty-two, examined outcomes for children classified as “high-risk” due to poverty, low maternal education, and family discord such as divorce or paternal mental illness (Werner, 1989). One-third of these children were deemed “resilient,” avoiding learning/behavior problems, delinquency, and mental illness into young adulthood. In a later summary of the results, Werner (1993) identified engagement in a variety of activities and hobbies as a significant contributor to children’s resiliency. She reflected, “Such activities provided them with solace in adversity and a reason to feel proud” (p. 504). In addition, these children grew into adolescents with positive self-esteem and an internal locus of control. Their sense of mastery, then, continued to contribute to their resiliency into adolescence. This finding is echoed by Cowen and colleagues’ work (1991), which showed that school-aged children’s positive expectations about their self-efficacy predicted better stress resiliency.
Both sense of mastery and sense of relatedness are direct reflections of Ann Masten and colleagues’ idea of competence (Masten & Coatsworth, 1998; Masten & Powell, 2003). Children’s sense of relatedness contributes to their feeling competent in the context of relationships with others. Prince-Embury’s Sense of Relatedness scale measures trust, perceived support, comfort with others, and tolerance, all of which add to children’s overall sense of security with their place among the people in their world (Prince-Embury, 2006, 2007). Werner (1989) found that resilient children were described by caregivers as having positive social orientation as infants and toddlers. They tended to get along well with classmates in elementary school and sought support outside their families through close friendships. In addition, the follow-up of these high-risk children in their thirties showed that support from a partner remained a significant contributor to their resiliency (Werner, 1993). The existence of relationships and social support have been linked to resiliency across many ages and contexts (Kaufman et al., 2004; Werner & Smith, 1982, 1992). Therefore, children who are better able to trust others and can maintain a supportive network of relationships should be more adept at navigating everyday challenges and negative life events.

The final aspect of resiliency as presented by Prince-Embury (2006, 2007) is emotional reactivity. Emotional reactivity has been defined as the speed and intensity of a child’s response to negative emotion (Rothbart & Derryberry, 1981). It has also been conceptualized as a child’s pre-existing level of arousability or vulnerability to losing control of his/her emotions (Prince-Embury, 2008). While it departs from the positive, competence-related orientation of the previous two constructs, emotional reactivity adds an important piece to individual resiliency—children’s ability to take life events in stride.
and employ their resources versus losing control of their emotions in the face of adversity. Even if a child possesses self-confidence and feels supported and connected to people, poor emotion regulation skills can interfere with overall resiliency and the positive outcomes that it facilitates. The Emotional Reactivity Scale measures sensitivity to negative emotions, recovery from emotional reactions, and resulting impairment of function (Davidson, 2000; Prince-Embry, 2010). Emotion regulation, the opposite of emotional reactivity, has been shown to promote resiliency (Cicchetti & Tucker, 1994; Rothbart & Bates, 1998; Thompson, 1990). Again, Werner’s (1989) study showed that the high-risk children who emerged as resilient were classified as even-tempered, even as infants. Measuring children’s emotional reactivity, therefore, should contribute an important piece to the full picture of their resiliency.

The main themes emerging from the resiliency literature – adaptation to new experiences, control over emotions, comfort in social interactions – are also reflected in the processes present in children’s pretend play. Both the cognitive and affective dimensions of pretend play that contribute to children’s development mirror the important areas of resiliency.

**Pretend Play**

One type of children’s play is pretend play, which involves the use of make-believe, fantasy, and symbolism (Fein, 1981). As children progress developmentally, their play moves from reacting to objects, to exploring properties of objects, to using objects as symbols (Belsky & Most, 1981). Symbolic representation is a hallmark feature of pretend play. Russ (2004) highlighted the different aspects of pretend play, which include cognitive, affective, and interpersonal domains.
The importance of play in children’s developing cognition was emphasized by Piaget (1962), who cited play as a vehicle for children’s integration of new experiences into their cognitive representation of the world. According to Russ (2004), the key cognitive processes that occur during play include fantasy/make-believe, symbolism, organization, and divergent thinking. Through play, children develop cognitive skills such as perspective-taking, problem solving, and producing new ideas. Singer and Singer (1990) specified that play can facilitate cognitive development through expanding vocabulary, pairing objects with actions, forming schemas for various events, and learning strategies for problem solving.

The affective processes present in pretend play include emotional expression, expression of affect themes, enjoyment of play, and emotion regulation (Russ, 2004). Creating their own pretend play scenarios allows children to experiment with emotions in a safe context (Singer, 1995). Fein (1987) asserted that children use play to develop an affective symbol system, which functions to build an associative network around various emotions. As Russ (1993) further explained, the expression of emotion and incorporation of affect-laden fantasy into play may broaden children’s network of affect-laden associations. It is important to recognize that both positive and negative affect are important to children’s emotional development. Children’s practice, through play, with overall openness to affective states can translate to their emotional experience of positive and negative life events.

Children’s play has also been shown to relate to interpersonal processes (Butcher & Niec, 2005; Niec & Russ, 2002). In social pretend play, children as young as age four learn to collaborate in using objects as props, establishing shared meanings (e.g., “This
stack of blocks is the house.”) (Morgenthaler, 2006). Fisher’s (1992) meta-analysis of 46 studies showed that social pretend play relates to better socioemotional functioning. Although social pretend play decreases as children enter elementary school, they continue to use pretend play in more solitary settings (Manning, 2006). Various studies have linked pretend play to interpersonal skills such as perspective taking (Ashaibi, 2007; Shirk & Russell, 1996), empathy (Hughes, 1999; Seja & Russ, 1999), development of relational schemas (Fromberg, 2002), and prosocial behavior (Fehr & Russ, 2013).

*Play and Divergent Thinking*

In school-aged children, pretend play relates to dimensions of creativity such as storytelling and divergent thinking (Fisher, 1992; Hoffman & Russ, 2012; Singer & Singer, 1990). Divergent thinking, a major component of creativity, refers to children’s ability to generate a variety of ideas. Divergent thinking in particular has related to pretend play in a variety of studies in different research laboratories (e.g., Fisher, 1992). Hoffman and Russ (2012) found positive correlations between the cognitive and affective domains of pretend play and children’s divergent thinking abilities, independent of verbal intelligence. Greater variety of affect categories expressed in pretend play related to better divergent thinking. Other studies have found similar relations between both positive and negative affect in play and divergent thinking (Lieberman, 1977; Russ & Grossman-McKee, 1990; Russ & Schafer, 2006). Of the cognitive dimensions of pretend play, both imagination and organization have been shown to relate to divergent thinking (Hoffman & Russ, 2012), a relation that remains stable over time (Russ, Robins, & Christiano, 1999).
Further, some experimental studies have shown that play facilitates the development of divergent thinking skills (Dansky, 1980; Dansky & Silverman, 1973). There is mixed evidence in this area of research, and some researchers have proposed the existence of some third variable that accounts for the relation between play and divergent thinking (Lillard et al., 2013).

Divergent thinking is an important part of children’s adaptive functioning, primarily because it relates to problem-solving ability. It has been suggested that creative problem solving mediates the relationship between pretend play skills and coping abilities (Carson, Bittner, Cameson, Brown, & Meyer, 1994; Russ, 1988). Children who have good divergent thinking skills should be able to generate a number of solutions to everyday problems.

**Play and Coping**

Coping is another commonly examined correlate of pretend play. The cognitive processes involved in pretend play, such as divergent thinking, organization, and transformation, are thought to mediate the relation between play and coping (Russ, 2004; Singer & Singer, 1990). Studies using the Affect in Play Scale (APS; Russ, 1993, 2004) have found that children with good pretend play skills demonstrate effective coping in a variety of contexts (Christiano & Russ, 1996; Goldstein & Russ, 2000-2001). Fantasy, imagination, and organization in pretend play were shown to predict the number of coping responses children could generate as well as the quality of these responses over a four-year period (Russ, Robins, & Christiano, 1999). Goldstein & Russ (2000-2001) found that imagination and fantasy were associated with a greater number as well as a variety of coping strategies. The relation between cognitive domains of
pretend play and coping skills has been demonstrated longitudinally, as well.

Imagination and organization related to coping over 18 months (Fiorelli & Russ, 2012), and fantasy in pretend play related to number of coping strategies ten years later (Russ et al., 1999). The relation between pretend play and coping has held up across a variety of contexts and over time, emerging as one of the most robust correlates of pretend play. The present study introduced a teacher report of coping to further test the stability of this relation over time.

*Play and Affect*

A connection has also been demonstrated between pretend play and children’s affect or mood (Fiorelli & Russ, 2012; Udwin, 1983). Singer & Rummo (1973) found that children with more imaginative elements in their play were more joyful than their less imaginative peers. Fiorelli & Russ (2012) found that frequency of positive affect expression in children’s pretend play was related to more positive affect ratings on the Positive and Negative Affect Schedule for Children (PANAS-C). The same study showed that positive affect in pretend play, assessed 18 months prior, continued to relate to positive affect on the PANAS-C at follow-up. This suggests that children who are able to express more positive emotion in their play may be able to maintain more positive mood states over time.

*Play and Academic Achievement*

The relation between play and academic achievement has theoretical foundations in Vygotsky’s conceptualization of play as the “leading edge of development” (1978). According to Vygotsky, one function of children’s play is to develop a symbol system to accompany and enrich their emerging language learning. Recent research supports the
link between play and language development (Bergen & Mauer, 2000; Christie & Roskos, 2006). Seo and Ginsburg (2003) also found a relation between play and mathematical skills, observing that 4- and 5- year old children build knowledge of foundational mathematics concepts through free play. Other researchers have asserted that the link between play and academic achievement is mediated by factors such as improved focus/concentration (Pellegrini, 2005) or development of socially appropriate behavior that facilitates school adjustment (Golinkoff, Hirsh-Pasek, & Singer, 2006). While the aforementioned research is based more in free play and physical play, research on pretend play also supports its connection to academic achievement. Singer & Rummo (1973) found that children whose play contained more imaginative elements performed better in school, suggesting that cognitive components of pretend play may translate into the academic setting. It has also been demonstrated that greater frequency of pretend play is linked to better literacy skills (Pellegrini & Galda, 1993; Roskos & Christie, 2001). The present study sought to understand the longitudinal relation between children’s pretend play skills and their academic achievement in both verbal and quantitative domains.

*Longitudinal Correlates of Play*

Few studies have examined the longitudinal correlates of pretend play. One such study by Russ, Robins, & Christiano (1999) showed promising results that demonstrate the importance of early pretend play in children’s adaptive functioning. In a four-year follow-up study when children were in 5th and 6th grades, early pretend play related to divergent thinking fluency (number of different uses generated for an object) and self-reported coping ability, independent of verbal intelligence. At an additional follow-up in
11\textsuperscript{th} and 12\textsuperscript{th} grades, early pretend play again related to divergent thinking scores (Russ & Cooperberg, 2003). Mullineaux & Dilalla (2009) reported that realistic role-play at age 5 predicted early adolescents’ performance on an alternate uses test at age 10-15. The longitudinal prediction of coping from pretend play has also been demonstrated. Fiorelli & Russ (2012) found that imagination in pretend play among school-aged girls predicted coping responses 18 months later. The present study examined longitudinal correlates of pretend play, particularly the relation between various domains of play and resiliency.

**Play and Resiliency**

Because play has been shown to relate to various areas of adaptive functioning in children, it should in turn relate to resiliency as children age. The importance of adaptive functioning in resilience research and intervention was recently recognized by Ann Masten (2011): “Mobilizing or improving adaptive systems is the most ambitious form of intervention, designed to increase the enduring capacity of the person for development and resilience” (p. 502). Because the cognitive and affective domains of play relate differentially to various aspects of adaptive functioning, the pattern of differential relation likely translates into the three areas of resiliency measured by the Resiliency Scales for Children and Adolescents (RSCA).

**Sense of Mastery**

A child’s sense of mastery is comprised of qualities such as optimism, general positive affect, and adaptability to new or challenging situations, most notably the child’s ability to effectively problem-solve. It is also characterized by a feeling of overall self-efficacy (Prince-Embury, 2006, 2007). Sense of mastery as an outcome of
children’s play has been theorized as early as Erikson (1963), who observed that children use play to gain mastery over traumatic experiences and daily conflicts. More recently, Pearson, Russ, & Spannagel (2008) proposed the idea that children develop a “sense of agency” (p. 115) through pretending, becoming more powerful in the context of play. They use this idea to introduce a possible relation between pretend play and hope, theorizing that the sense of agency felt during pretend play may generalize to everyday life. If this relationship holds true, pretend play should be related to sense of mastery.

Additional studies support the plausible relation between both the affective and cognitive domains of pretend play and sense of mastery. The affective components of pretend play have been shown to relate to children’s affect and mood, both concurrently and over time. Udwin (1983) found that greater positive affect in play related to greater overall positive affect in preschool children. Fiorelli & Russ (2012) showed a similar relation that persisted over 18 months in school age children. The cognitive components of play also relate to qualities involved in children’s sense of mastery. A strong link has emerged between children’s pretend play and creative problem solving abilities. Children whose play is imaginative and well organized have better divergent thinking (Hoffman & Russ, 2012) and insight (Russ, Fiorelli, & Spannagel, 2011), two qualities vital to creative problem solving.

*Sense of Relatedness*

Children with a strong sense of relatedness feel secure in their relationships with caregivers and peers, are able to make friends, and trust others (Prince-Embury, 2006, 2007). In addition, they show tolerance of others and are able to forgive people.
Although affect and emotions are strong components of relatedness, current research has shown that the cognitive, rather than affective, dimensions of pretend play (imagination, organization, and comfort) relate the most strongly to this component of resiliency. More imagination in pretend play is related to less observed aggression in social interactions (Singer & Singer, 1990), indicating children’s level of ease and comfort with peers. Other studies have combined imagination and organization into one element of “fantasy,” which has been linked to greater ability to understand others’ emotions (Niec & Russ, 2002; Seja & Russ, 1999) and better perspective taking (Fisher, 1992). Several studies have examined the amount of pretend play that children engage in, which most closely resembles the Affect in Play Scale measure of comfort in play. Greater levels of pretend play are associated with greater conflict resolution and self-regulation (Fantuzzo, Sekino, & Cohen, 2004), which should translate to success in relationships with others.

*Emotional Reactivity*

The final component of resiliency, emotional reactivity, is characterized by sensitivity to negative emotions, difficulty modulating reactions, difficulty recovering from a negative state, and impairment resulting from emotional reactions (Prince-Embry, 2006, 2007). Both cognitive and affective aspects of pretend play relate to this construct of emotional reactivity, although the following studies use “emotion regulation,” as an outcome, the opposite of emotional reactivity. It can be reasonably assumed that where various aspects of play relate to better emotion regulation, they would negatively relate to emotional reactivity. All three cognitive components of pretend play have been shown to relate to emotion regulation in school-aged children.
(Hoffman & Russ, 2012). In preschool samples, comfort in play, measured as time spent engaging in pretend play, has related to greater emotional understanding and emotion regulation (Galyer & Evans, 2001; Lindsey & Colwell, 2003).

Affect in play may also predict emotional reactivity in children. Greater frequency and variety of affect expression in play as well as frequency of positive affect in play have all been shown to relate to better emotion regulation in children (Hoffman & Russ, 2012). In another study, greater frequency of affect expression in play was associated with higher scores on a teacher report of emotion regulation (Moore & Russ, 2008). Children who are able to express more affect in their play also have better coping strategies (Christiano & Russ, 1996) and less anxiety (Grossman-McKee, 1989), allowing them to better process emotions in daily life and cope with negative affect.

**Original Study: 2008-2009 School Year**

The present study followed up a study designed to examine relationships among pretend play, creativity, emotion regulation, and executive functioning in children (Hoffman & Russ, 2012). The participants were 61 students in Kindergarten through fourth grade enrolled in a private school for girls. Pretend play processes were assessed using the Affect in Play Scale (APS), which measures cognitive and affective dimensions of play. In addition, participants’ creativity, coping skills, emotion regulation, and executive functioning were assessed.

Results showed that various aspects of pretend play were significantly related to creativity, emotion regulation, and coping. The cognitive components of imagination and organization in pretend play related to divergent thinking ability. Children who exhibited better-organized play with more imaginative elements generated a greater
number and variety of responses in a divergent thinking task. Of the affective components of play, variety of affect was related to fluency in divergent thinking, while positive affect related to storytelling. Children with more positive affect in their play told stories rated as more likeable, creative, and imaginative. The cognitive domains of pretend play also related to children’s self-reported coping skills. Finally, significant relationships emerged between parent-reported emotion regulation and both the cognitive and affective aspects of pretend play. No significant relationships were found with executive functioning.

**Follow-Up After 18 Months**

A follow-up with participants from the original study after 18 months examined longitudinal relations among pretend play, subjective well-being, and coping abilities (Fiorelli & Russ, 2012). In this study, 30 participants from the original sample were administered two measures from the previous study, the Affect in Play Scale-Brief Rating (APS-BR) and the School Coping Scale, in addition to two measures of subjective well-being, the Multidimensional Student Life Satisfaction Scale for Children (MSLSS-C) and the Positive and Negative Affect Schedule for Children (PANAS-C). Results indicated that children’s baseline imagination in pretend play related to the frequency of effective coping responses they generated at the follow-up. The study also found that frequency of affect expression in play related to positive affect on the PANAS-C. No significant relationships were found between play and life satisfaction. Because this study administered the play scale again, it was also able to establish the stability of the cognitive components of children’s play over time.
Given the results from the original and follow-up studies, the association between children’s early pretend play and divergent thinking skills, coping abilities, and emotion regulation should theoretically be maintained over time. These findings lay the foundation for a relationship between play and resiliency.

Summary

Research in the area of resilience has many unanswered questions about what contributes to resiliency in individuals. Examining the relation between children’s pretend play and resiliency may shed further light on the process by which children become resilient. A recent call for research stated:

“Instead of delineating the goal as ‘understanding resilience well enough to promote it,’ the reformulated goal is to promote resilience well enough to understand it. In other words, the mission of this new work is to increase knowledge on resilience processes through deliberate and theory-informative change research” (Masten, 2011, p. 503).

The present study worked toward this goal by investigating correlates of resiliency, both in the child’s current state and longitudinally over a four-year period. It tested the theory that because pretend play ability relates to important areas of adaptive functioning, play should also relate to resiliency. Both the affective and cognitive domains of children’s pretend play are associated with constructs such as positive affect, creative problem solving, divergent thinking, emotion regulation, and empathy. These areas are important parts of the three dimensions of resiliency highlighted by Sandra Prince-Embry (2006, 2007), sense of mastery, sense of relatedness, and emotional reactivity. Thus, pretend play should theoretically be associated with children’s resiliency.
In addition to resiliency, the present study also examined the longitudinal relations between pretend play and divergent thinking, coping, affect, and academic achievement in school-aged children. Previous longitudinal studies have supported the relationship between pretend play and divergent thinking as well as coping abilities. The present study took a multimethod approach to assessment with a combination of self-report measures, teacher reports, and school achievement records. Its aim was to establish longitudinal correlates of play in school age children. In addition, concurrent relations among resiliency and other measures of adaptive functioning were explored in order to identify possible components of resiliency.

### General Hypotheses

The primary hypothesis was that early measures of pretend play would predict scores on a measure of individual resiliency, controlling for verbal intelligence, at a four-year follow-up. Second, we hypothesized that pretend play would relate to measures of children’s coping, divergent thinking, and positive affect over time. Third, we predicted that children’s pretend play would relate to their later academic achievement test scores. Finally, we believed that significant concurrent relationships would emerge among resiliency, coping, divergent thinking, and affect.

### Method

#### Original Study

Participants of the original study were 61 students in a private school for girls in Kindergarten through fourth grade. The study took place during the 2008-2009 school year. Each child was administered the Affect in Play Scale and Guilford’s Alternate Uses
task in addition to other baseline measures. The Vocabulary subtest of the Wechsler Intelligence Scale for Children – Fourth Edition (WISC-IV) was administered to assess verbal ability. The WISC-IV Vocabulary scores were also used as a measure of verbal ability in the present study.

*Affect in Play Scale (APS).* The APS is a standardized 5-minute play task designed to measure various dimensions of children’s pretend play. Children receive two puppets and three blocks and are given the following instructions:

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

The child is informed when there is one minute left. If the child stops playing during the 5-minute period, the prompt, “There's still time left, keep playing,” is given. The task is discontinued if the child cannot play after a 2-minute period.

The child’s play is scored from the videotape using a criterion-based rating scale. There are five main scores: (1) Organization, the quality of the plot and the complexity of the story, scored from 1 - 5; (2) Imagination, the novelty and uniqueness of the play including the child’s ability to use fantasy elements, scored from 1 - 5; (3) Comfort, a global rating of the child’s comfort engaging in play and their level of enjoyment, scored from 1 -5; (4) Frequency of Affect, a total count of affect units expressed within the play narrative. For example, a child might have the puppets say “Yikes, a monster!” or “Wee! This slide is fun!” and (5) Variety of Affect, a total count of the number of affect categories out of 11 possible categories, expressed during the play. The 11 affect categories include: Happiness/Pleasure, Anger/Aggression, Sadness/Hurt,

A detailed scoring manual for the APS has been developed (See Appendix A). Past studies have reported the interrater reliability of the APS to be high, consistently in the .80s and .90s. Internal consistency for the affect scores on the APS using the Spearman-Brown split-half reliability is also high (.85; Seja & Russ, 1999). The APS has a large body of validity studies demonstrating associations with theoretically relevant criteria (see Russ, 2004).

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

*Wechsler Intelligence Scales for Children – Fourth Edition (WISC-IV).* The Vocabulary subtest of the WISC-IV was administered as an estimate of children’s verbal ability. Participants were asked to define words of increasing difficulty and their answers were scored on a scale from 0 to 2, assessing verbal fluency, concept formation, and word knowledge. Of all the subtests on the WISC-IV, the vocabulary subtest is generally the
best estimate of overall intelligence. The Vocabulary subtest has been validated for children ages 6 to 16 and has demonstrated strong reliability and validity through correlations with other measures of intelligence and academic achievement (Wechsler, 2003).

4-Year Follow-Up: The Present Study

Participants

Recruitment letters were sent to parents of the 46 girls who participated in the original sample and were still enrolled at the school. A total of 31 girls returned consent forms and participated in this study, yielding a participation rate of 67%. Participants were in the 4th through 8th grades, ages 9 to 14, with a mean age of 11.1 years and a standard deviation of 1.7. There were ten fourth graders, four fifth graders, three sixth graders, six seventh graders, and eight eighth graders. Information regarding ethnic background or socioeconomic status was not collected in this study, though the private school has a majority of Caucasian students.

A power analysis done with G*Power indicated that 31 participants would provide .53 power for a medium effect size. Because partial correlations were used to control for verbal IQ, a degree of freedom was lost and power may have decreased. This power is lower than what is preferred for a fair test of all hypotheses, but the number of original participants available at the school restricted the possible sample size.

Procedure

The follow-up assessment occurred in the Fall of 2012 and the Spring of 2013, approximately four years following the baseline assessment. Children met with the examiner in groups of 3-10 students, by grade level, for one 45-minute session. The
assessment included Guilford’s Alternate Uses Task, the Resiliency Scales for Children and Adolescents (RSCA), and the Positive and Negative Affect Schedule for Children (PANAS-C). Each child’s teacher was asked to complete the Coping Competence Scale (CCS), and records of each consented participant’s aimsweb standardized achievement test scores were released by the school. Two measures from the original study, the APS and the Vocabulary score from the WISC-IV, were used as predictors in the present study.

Measures

Resiliency Scales for Children and Adolescents (RSCA; Prince-Embury, 2006, 2007). The RSCA is a self-report questionnaire designed to assess children’s individual resiliency. It consists of three subscales: Sense of Mastery (20 items), Sense of Relatedness (24 items), and Emotional Reactivity (20 items). Children rated each statement on a 5-point Likert scale from Never (0) to Almost Always (4). Examples include, “I can get past problems in my way,” and “When I am upset, I get into trouble.” All three scales have shown good internal consistency for children ages 9-15: Sense of Mastery alpha coefficient was .87; Sense of Relatedness alpha coefficient was .90; and Emotional Reactivity alpha coefficient was .91 (Prince-Embury, 2007). The RSCA also generates two index scores, Resource Index and Vulnerability Index, both with excellent internal consistency at .94 and .94. Test–retest reliability has yielded correlations of 0.70 to 0.92, over an average interval of twelve days. To establish construct validity of the index and subscale scores, the RSCA was correlated with the Beck Youth Inventories (BYI-II, Beck, Jolly, & Steer, 2005), the Reynolds Bully Victimization Scale (BVS; Reynolds, 2004), and the Brown ADD Scales for Children (Brown, 2001). RSCA scores
correlated in the predicted directions for a diverse clinical sample of children (Prince-Embury, 2010; Sink & Mvududu, 2010). For example, higher scores on the RBV, indicating children experiencing higher levels of bullying, correlated with higher Emotional Reactivity scores and lower Sense of Mastery and Relatedness scores. There is also some evidence of criterion validity, as children’s RSCA scores have successfully differentiated clinical and nonclinical populations (Prince-Embury, 2008). The present study’s analyses focused on the three subscale scores rather than the index scores.

*Guilford’s Alternate Uses Task*. As in the original study, Wallach and Kogan’s (1965) adaptation of Guilford’s (1950) Alternate Uses task was used to measure children’s divergent thinking. Wallach & Kogan’s (1965) group instructions were used, and children were given two minutes for each item.

Two scores were calculated: (1) Fluency, the total number of acceptable answers the child generated, and (2) Originality, the number of answers a child gave that less than 1% of other participants (no more than two children) also gave.

*Positive and Negative Affect Schedule for Children (PANAS-C)*. The PANAS-C is a 30-item self-report measure designed to assess state affect, or recent experiences of positive and negative affect, in children in fourth through eighth grades. The scale asked children to report on how they had been feeling over the past two weeks using a 5-point Likert scale. Scoring generated a Positive Affect score and a Negative Affect score that are independent of each other.

The PANAS-C (Laurent et al., 1999) is an adapted version of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) intended for children in grades 4-8. The PANAS-C has good psychometric properties, with reliability
alpha coefficients for the two scales ranging from .89 to .94 (Laurent et al., 1999). Convergent and divergent validity for the PANAS-C has also been demonstrated by Laurent et al. (1999), who found that the Positive Affect scale negatively correlated with the Children’s Depression Inventory (CDI) and the Negative Affect scale positively correlated with self-report measures of anxiety and depression. Results from the 18-month follow-up study showed that frequency of positive affect in pretend play related to the Positive Affect scale of the PANAS-C over time (Fiorelli & Russ, 2012).

Coping Competence Scale—Revised (CCS-R; Moreland & Dumas, 2008). The CCS-R is an adaptation of the CCS, originally designed to assess children’s coping aptitude (Dumas et al., 1999). It has been used as a self-report measure with children (Prinz et al., 2000) and has also been administered to both parents and teachers (Moreland & Dumas, 2008). The CCS-R consists of 26 items, each on a scale from 0 “Not at all” to 3 “Very much.” Scoring yielded affective, social, and achievement domains. Internal consistency for the overall score is excellent at .91, with subscales between .76 and .84 (Moreland & Dumas, 2008). The present study focused analyses on the three subscales.

In the present study, 17 teachers completed one scale for each individual child assigned to him/her. Teacher assignment was done by the school and was based on each teacher’s degree of interaction with the students, thus the large number of teacher reporters. For example, the fourth grade students’ homeroom teachers had the most interaction with them, so each participant’s homeroom teacher was asked to complete a CCS-R for that child. For older students, the teacher with whom they had the most classes or contact was chosen.
**Aimsweb achievement test scores.** Aimsweb is an assessment system designed to monitor students’ reading and math performance in Grades K-8. A series of brief, 1-8 minute tests are administered to students at various time points during the school year. All students in the present study are tested three times during the academic year, and at-risk students may be monitored more frequently.

The aimsweb system is based on the principle of Curriculum-Based Measurement (CBM), which is used by teachers to assess student progress without re-administering time consuming, statewide standardized tests (Shinn & Shinn, 2002). The use of CBM as a measure of student achievement has been supported across multiple states who report moderate to strong correlations between students’ performance on CBM and state achievement test scores (Powell-Smith, 2004; Shapiro, Keller, Lutz, Santoro, & Hintze, 2006). The present study used the Reading Fluency (Reading-CMB), Reading Comprehension (Maze), Math Computation (M-COMP), and Math Concepts and Applications (M-CAP) aimsweb tests as measures of students’ academic achievement. Raw scores were transformed into standardized scores based on national grade norms in order to allow comparison of scores across grades.

**Specific Hypotheses**

1. Resiliency: Baseline APS scores would relate to a current measure of resiliency.
   a. The cognitive components of play (imagination and organization) would relate positively to two domains of resiliency, sense of mastery and sense of relatedness, and would relate negatively to the third domain, emotional reactivity.
b. Frequency of positive affect in play would relate to sense of mastery.

c. Frequency of positive affect, overall affect, and variety of affect in play
   would negatively relate to emotional reactivity.

2. Coping: The cognitive components of play (imagination and organization) would
   relate to teacher-reported affective, achievement, and social coping ability.

3. Divergent Thinking: The cognitive components of play (imagination and
   organization) would relate to divergent thinking fluency and originality. The
   affective components of play (variety of affect and frequency of positive and
   negative affect) would also relate to divergent thinking fluency and originality.

4. Affect: The cognitive components of play (imagination and organization) would
   positively relate to current levels of positive affect. The affective components of
   play (variety of affect and frequency of positive affect) would also relate to
   positive affect scores.

5. Achievement: The cognitive components of baseline APS scores (imagination and
   organization) would relate to current amsweb academic achievement test scores
   for Reading Fluency, Reading Comprehension, Math Computation, and Math
   Concepts & Applications.

Data Considerations

In this sample of 31 participants there were some missing data. Three participants
from the original sample did not wish to be videotaped during the pretend play task,
leaving 28 participants with APS scores. Two participants from the original sample did
not complete a second baseline session and thus are missing baseline divergent thinking
scores. A few students were absent on the days the aimsweb achievement tests were given, so there are 29 scores for reading fluency, 30 for reading comprehension, and 30 for math concepts & applications. One participant skipped several items on the Resiliency Scales, resulting in invalid scores for Sense of Mastery, Resource Index, and Vulnerability Index. Lastly, one participant skipped all of the negative items on the PANAS-C, and thus has no score. Because of these participant requests and absences, each measure had a slightly different sample of participants. Descriptive statistics of all variables are reported in Table 1. The data were examined for outliers. No outliers were found that would alter the correlations.

Results

Data Analyses

Data analysis examined longitudinal relationships between early play and current resiliency, divergent thinking, coping, affect, and academic achievement. In addition, exploratory analyses examined the concurrent relations among resiliency, divergent thinking, coping, affect, and achievement.

Pearson product-moment correlations were used to test for significant longitudinal relations among correlates of pretend play, controlling for verbal IQ. They were also used to explore associations among current measures of adaptive functioning. Hierarchical multiple regression was used to determine which play variables predicted divergent thinking, coping, affect, and achievement, controlling for verbal IQ and age. Standard multiple regression was used to examine the concurrent relations among these variables. Baseline divergent thinking was controlled for when investigating the relation between
pretend play and later divergent thinking. An alpha value of .05 was used for all statistical tests. One-tailed tests were used for a priori hypotheses.

*Verbal Ability*

Scores on the Vocabulary section of the Wechsler Intelligence Scale for Children–Fourth Edition (WISC-IV) administered at baseline were used as an estimate of verbal IQ. It should be noted that although the stability of IQ over time can vary, the present study did not give another current measure of verbal IQ, as it was used as a control variable. Verbal IQ was held constant in analyses to assess the relation between play and other variables, independent of verbal intelligence. In the current sample, participants had a mean score of 12.29 (SD = 2.42, Range = 8 to 17). The WISC-IV has a standardized mean of 10 and standard deviation of 3, so the present sample’s mean score was approximately two thirds of a standard deviation above average. Verbal ability did not correlate significantly with any pretend play, divergent thinking, resiliency, or coping variables. Verbal ability did correlate with achievement variables of Reading Fluency, \( r(29) = .48, p < .01 \), and Reading Comprehension, \( r(30) = .48, p < .01 \). There was a negative relationship between verbal ability and PANAS-C Positive Affect \( r(31) = -.44, p < .05 \).

*Age*

In the present sample, significant relationships emerged among age and most of the other measures (See Table 2). Children’s age related to the three pretend play variables of Organization \( [r(28) = .38, p < .05] \), Imagination \( [r(28) = .47, p = .01] \), and Positive affect \( [r(28) = .37, p = .05] \). Age also related to the resiliency variables of Sense of Mastery, \( r(30) = .52, p < .01 \), and Sense of Relatedness, \( r(31) = .36, p < .05 \). Children’s
age correlated positively with divergent thinking Fluency, \( r(31) = .53, p < .01 \). A negative relationship emerged between age and Social coping competence, \( r(31) = -.38, p < .05 \), such that older children were rated as less competent in social coping skills than younger children. Finally, age was related to the academic achievement scores for Math computation, \( r(31) = .54, p < .01 \), and Math concepts/applications, \( r(30) = .53, p < .01 \). No relation was found between age and verbal IQ or age and affect on the PANAS-C.

When age was controlled in longitudinal analyses with pretend play, correlations remained significant between Organization in play and divergent thinking Fluency, \( r(25) = .45, p < .01 \), and Math computation, \( r(25) = .37, p < .05 \). The relationship between divergent thinking Fluency and Imagination in play dropped below significance, \( r(25) = .25, p = .11 \), but the magnitude was still a small effect size. The same was true for divergent thinking Originality and Positive affect in play \( r(25) = .26, p = .10 \). Additional significant relationships also emerged between pretend play variables and Sense of Relatedness as well as coping (See Table 4). These relationships show that age acted as a suppressor variable, masking relationships that were significant after age was controlled.

**Interrater Reliability**

Interrater reliability for the Affect in Play Scale was calculated for the baseline sample using 20 randomly chosen participants. Interrater reliability was assessed using a rigorous form of intraclass correlation coefficient that measures absolute agreement rather than just consistency between raters (Shrout & Fleiss, 1979). A two-way random effects model was used, testing for absolute agreement using a 95% confidence interval. The average scores for the intraclass coefficients were: .94 for organization, .96 for
imagination, .95 for comfort, .96 for frequency of affect, .97 for variety of affect, .95 for positive affect, and .98 for negative affect.

*Longitudinal Correlates of Play*

*See Table 3.*

*Play and Resiliency.* None of the early play scores related longitudinally to scores of resiliency from the RSCA.

*Play and Coping.* Pretend play scores did not relate longitudinally to teacher reports of coping in the expected direction. Frequency of affect in play was negatively related to Social coping, \( r(25) = -0.33, p < 0.05 \). Positive affect in play was also negatively related to Social coping, \( r(25) = -0.31, p = 0.05 \). Children who had more overall affect in their play, particularly positive affect, were rated by teachers as lower in social coping skills.

*Play and Divergent Thinking.* A major hypothesis was supported in that early pretend play significantly related to divergent thinking. All analyses involving pretend play controlled for verbal IQ. The cognitive aspects of pretend play, organization and imagination, related to divergent thinking fluency with a time span of four years (See Table 3). Organization in play positively correlated with divergent thinking Fluency, \( r(25) = 0.51, p < 0.01 \), and Imagination in play also positively correlated with Fluency, \( r(25) = 0.39, p < 0.05 \). Children whose play was rated as better organized and containing more imaginative elements also generated more responses on the divergent thinking task. The magnitudes of these correlations were medium to large effect sizes (Cohen, 1992). Looking at affect in play, Positive affect in play related to divergent thinking Originality, \( r(25) = 0.36, p < 0.05 \). Children who expressed greater amounts of positive affect in their
play generated more original responses on the divergent thinking task. The magnitude of
this correlation was a medium effect size.

A hierarchical regression analysis was computed to determine the contribution of
children’s pretend play to divergent thinking beyond that of age and verbal IQ (See Table
7). Two predictors were entered into Step 2 to represent pretend play: Organization and
Positive affect in play. Age and verbal IQ accounted for 17% of the variance in divergent
thinking (See Table 7). Age was the only significant contributor to the equation.
Organization in play accounted for 8% of the variance in divergent thinking when added
to the model, but its contribution did not reach significance, F (2, 23) = 1.94, p = .17. The
only significant contributor to the equation with all variables entered was age, accounting
for 12% of the variance in divergent thinking.

In examining the longitudinal relation between pretend play and divergent
thinking, it was also possible to take into account children’s initial, or baseline, divergent
thinking scores. When controlling for baseline divergent thinking Fluency, the
relationship between early pretend play and current divergent thinking Fluency was again
significantly positively correlated. Organization in play related to divergent thinking
Fluency r(22) = .54, p < .01, as did Imagination in play r(22) = .35, p < .05. Children
whose early pretend play was rated as more organized and more imaginative generated
more alternate uses on the divergent thinking task four years later, independent of their
baseline divergent thinking skills. The magnitude of these effects was large for
Organization and medium for Imagination.

Longitudinal relations also emerged between divergent thinking and achievement.
Children’s baseline divergent thinking scores related to math achievement four years
later. Controlling for verbal IQ, divergent thinking Fluency related to Math computation, $r(26) = .40$, $p < .05$. In addition, divergent thinking Originality related to both Math computation, $r(26) = .39$, $p < .05$, and Math concepts & applications, $r(25) = .47$, $p < .05$. Children who supplied more original responses in the divergent thinking task had higher math achievement scores four years later.

Finally, the longitudinal relation between baseline divergent thinking and current divergent thinking was examined to determine the stability of the measure over time. Baseline divergent thinking Fluency was related to current Fluency score, $r(29) = .34$, $p < .05$. Baseline divergent thinking Originality was also related to current Originality score, $r(29) = .36$, $p < .05$. These results demonstrate that children’s divergent thinking abilities stayed relatively stable over time.

Play and Affect. The cognitive components of early pretend play related to children’s current affective state on the PANAS-C. Controlling for verbal IQ, Organization in play related to Positive affect, $r(25) = .42$, $p < .05$. Imagination in play also related to children’s reports of Positive affect, $r(25) = .40$, $p < .05$, indicating that children whose early play contained greater levels of organization and imagination reported higher levels of positive affect four years later. The magnitudes of these correlations were medium effect size.

Further analysis of these relationships used hierarchical multiple regression to determine the contribution of children’s early pretend play to affect on the PANAS-C beyond that of age and verbal IQ. Age and IQ accounted for 26% of the variance in affect. Although Organization in play accounted for 8% of the variance when added to the model, its contribution did not reach significance. The only significant contributor to
the equation with all variables entered was verbal IQ, accounting for 25% of the variance in affect on the PANAS-C.

*Play and Achievement.* Analysis of students’ aimsweb scores showed that early play predicted math achievement longitudinally. Play did not, however, relate positively to verbal achievement. All analyses reported controlled for verbal IQ. Aimsweb scores were converted to standard scores to facilitate comparison across grade levels.

Organization in play related to children’s Math computation skills, $r(25) = .47, p = .01$, as did imagination in play, $r(25) = .41, p < .05$. Among the affective components of pretend play, Positive affect in play also related to Math computation scores, $r(25) = .38, p < .05$. Children whose early play was more organized and imaginative, and contained greater levels of positive affect, performed better on a test of math computation skills. Children’s reading scores, however, correlated negatively with play scores. All three cognitive components of play correlated in the negative direction with reading fluency:

Organization at $r(23) = -.37, p < .05$, Imagination at $r(23) = -.48, p < .05$, and Comfort at $r(23) = -.43, p < .05$. In addition, Variety of affect in play related negatively to reading fluency $r(23) = -.37, p < .05$.

Hierarchical multiple regression showed similar findings to the trends for divergent thinking and affect. Age and verbal IQ accounted for 13% of the variance in Math computation. Organization in play accounted for 5% of the variance when added to the model, but its contribution was not significant. The only significant contributor to the equation with all variables entered was age, accounting for 12% of the variance in math achievement.

*Interrelationships Among Concurrent Measures*
**Resiliency.** Using two-tailed tests, the resiliency scales related to both child-reported affect and academic achievement (See Table 5). Sense of Relatedness scores were negatively related to Negative affect on the PANAS-C, \( r(30) = -.51, p < .01 \), indicating that children who felt more connected to other people and secure in their relationships reported lower levels of negative affect. Conversely, scores on the Vulnerability Index related positively to Negative affect, \( r(29) = .41, p < .05 \). Children who were considered more vulnerable due to lower levels of self-efficacy and relatedness and higher levels of emotional reactivity, reported higher levels of negative affect.

Resiliency was also related to children’s math achievement. Controlling for verbal IQ, Sense of Mastery was related to both Math computation skills, \( r(27) = .46, p = .01 \), and Math concepts & applications, \( r(26) = .49, p < .01 \). Children who reported higher levels of optimism and self-efficacy scored higher on tests of math achievement. Resiliency did not relate to reading fluency or comprehension scores.

Some unexpected relationships were found between the resiliency scales and teacher reports of coping on the CCS. The two positive subscales, Sense of Mastery and Sense of Relatedness, and their index score, the Resource Index, showed negative relationships with teacher reports of coping. Sense of Mastery was negatively related to Social coping, \( r(30) = -.40, p < .05 \), indicating that children reporting higher levels of self-efficacy and optimism were rated by their teachers as lower in social coping abilities. Sense of Relatedness was negatively correlated with Achievement coping, \( r(31) = -.39, p < .05 \), indicating that children who reported greater connectedness and comfort with others were rated by their teachers as lower in achievement-related coping. The Resource Index, which provides an overall estimate of a child’s individual resiliency, was
negatively correlated with both Achievement coping, $r(30) = -.40, p < .05$, and Social coping, $r(30) = -.40, p < .05$.

Divergent Thinking. Creativity, measured via divergent thinking, related to children’s current math achievement scores. Controlling for verbal IQ, divergent thinking Fluency related to both Math computation skills, $r(28) = .47, p < .01$, and Math concepts & applications, $r(27) = .58, p < .01$. Children who generated more alternate uses scored higher on tests of math achievement. This relation was also significant after controlling for children’s original divergent thinking Fluency scores. Again, current divergent thinking Fluency related to both Math computation, $r(26) = .41, p < .05$, and Math concepts & applications, $r(25) = .52, p < .01$.

Standard multiple regression analyses were computed to determine the contributions of early pretend play (Organization and Positive affect) and current divergent thinking (Fluency and Originality) to math achievement. Results showed that the overall model accounted for a significant amount of the variance in Math computation, $F(4, 23) = 3.16, p < .05$. When examined individually, divergent thinking Fluency accounted for 7% of the variance in Math computation skills, and Positive affect in play accounted for 4% of the variance. None of the variables by themselves made a significant unique contribution to the model. While this is relatively unusual, tolerance statistics showed that Fluency overlaps a good deal with the other variables in the model. Thus, the unique contribution of Fluency to math computation skills is not statistically significant.
Discussion

The major findings of the present study were significant relationships between children’s early pretend play and divergent thinking, positive affect, and academic achievement over a four-year period. These longitudinal findings provide evidence for the predictive power of play in aspects of children’s adaptive functioning. The stability of divergent thinking skills over time was also demonstrated. Finally, concurrent relationships with resiliency indicated that math achievement and affect are linked to children’s sense of mastery and sense of relatedness. It should be noted that verbal ability did not significantly relate to play skills, and all significant relationships remained significant when verbal ability was controlled for. This indicates that play is a resource for development separate from intelligence. However, significant relationships emerged between children’s age and most other variables. While previous studies using the APS have not found age to be a significant factor, the spread of ages for this sample was large (ages 9 to 14), which likely impacted the results.

Description of Sample

Overall, the play scores for the present sample were substantially higher than in other studies using the APS. A review of play scores on the APS over twenty years showed that mean scores for Imagination among 11 studies ranged from 1.90 to 2.91 (Russ & Dillon, 2011), whereas the mean score for Imagination in the present sample was 3.04 (See Table 1). Among the affect scores, the mean score for Frequency of Affect was 23.36 in the present study, compared to means ranging from 8.78 to 22.23 in the review of play studies. Variety of Affect means ranged from 2.48 to 4.01, with the present sample’s mean at 3.82. Means for Positive affect and Negative affect in play were also
high in the present sample compared to the review of play studies. Mean Positive affect was 13.07 (compared to 5.00 to 8.50), and mean Negative affect was 10.29 (compared to 2.34 to 14.47). The higher play scores in the present sample may either reflect the large age range or the superior play skills found in this population. Means for divergent thinking, resiliency, coping, affect, and achievement were comparable to means reported in the literature for each domain (Cappa, Begle, Conger, Dumas, & Conger, 2011; Coholic, Eys, & Lougheed, 2012; Fiorelli & Russ, 2012; Hoffman & Russ, 2012; Shinn & Shinn, 2002).

Comparing the participants from the present sample to those who did not participate from the original sample (due to either leaving the school or choosing not to participate), the only difference that emerged was in the Variety of Affect score. Participants in the present sample had significantly higher Variety of Affect scores at baseline than those who did not participate ($F=4.69, p < .05$), indicating that they showed a wider range of affect in their play, both positive and negative.

**Longitudinal Correlates of Play**

_Divergent Thinking_. The major finding of this study was that children’s pretend play predicted their divergent thinking skills over time. Specifically, children whose play was more organized and imaginative were able to generate more alternate uses for everyday objects, independent of verbal ability. While pretend play and divergent thinking were also related at baseline (Hoffman & Russ, 2012), their relation was maintained at the four-year follow-up even when baseline divergent thinking scores were controlled. This indicates that aspects of pretend play predict the continued development of divergent thinking over time. Similar results were found in another longitudinal study,
in which imagination in pretend play predicted divergent thinking four years later (Russ, Robins, & Cristiano, 1999). Both of these longitudinal studies used different administrators for the play and divergent thinking tasks, addressing recent critiques that significant results found in studies of play and creativity may be attributed to experimenter bias (Lillard et al., 2013).

Of the affective components of pretend play, positive affect in play predicted divergent thinking originality over a four-year period. Children who expressed more positive affect in their play were able to generate more original uses for everyday objects. Previous studies have found similar positive correlations between affect in play and divergent thinking longitudinally, but they did not reach significance (Russ, Robins, & Cristiano, 1999).

A hierarchical multiple regression analysis was performed to determine whether pretend play contributed to the variance in divergent thinking over and above age and verbal intelligence. Analysis showed that age accounted for more variance in divergent thinking fluency than did pretend play. While age appears to be a significant factor in children’s divergent thinking abilities, pretend play has still emerged as one of many important contributors to divergent thinking. Divergent thinking was also found to be relatively stable over time. Even though the task was administered individually at baseline and in a group format in the present study, children’s scores at baseline were predictive of their scores four years later.

In further analyzing the construct of divergent thinking, the present study found a significant relation between divergent thinking fluency at baseline and math achievement scores over time. Children with better divergent thinking skills scored higher on tests of
math computation, and math concepts and applications four years later. This suggests that divergent thinking skills may be an important component of math achievement specifically, as divergent thinking did not relate to reading achievement. Some aspect of the creative thought process may translate into math achievement. The tasks may share common elements such as nonverbal, fluid reasoning or processing speed. The relation also appears to be independent of instructional techniques in mathematics, as all participants in the present sample have been exposed to the same math instruction. While relatively few studies have examined the relation between creativity and achievement, one study measured divergent thinking in groups of gifted boys. Higher divergent thinking scores were strongly correlated ($r = .68$) with membership in the “math and science gifted” group (Runco, 1999). However, a high correlation was also found for the “high overall IQ” group. Future research should further investigate divergent thinking as a potential contributor to children’s math achievement.

**Affect.** Children’s early pretend play was predictive of later positive affect on the PANAS-C. The cognitive components of play, organization and imagination, emerged as significant predictors. Although a low positive correlation was found between positive affect in play and positive affect on the PANAS-C, it did not reach significance. Previous research supports the relation between pretend play and affect/mood state (Singer & Rummo, 1973; Udwin, 1983). The present findings are similar to results from the 18-month follow-up with this group of children (Fiorelli & Russ, 2012). The 18-month follow-up showed significant correlations between frequency of affect in play and positive affect on the PANAS-C, whereas in this study only the cognitive components of play predicted positive affect. Relations among the cognitive components of play and
positive affect did not reach significance in the 18-month follow-up. These results, combined with previous research, show that both cognitive and affective elements of pretend play are longitudinal predictors of children’s affect. It may be that children who use play to practice with emotional expression and affect-laden fantasy become more open to affective states over time. Overall openness to affective states can transfer to children’s emotional experience of positive and negative life events (Russ, 1993).

Achievement. Another hypothesis was supported in that the cognitive components of play related to children’s math achievement. In addition, positive affect in play related to math achievement. While previous research has supported the relation between play and overall academic achievement, math is rarely mentioned on its own. More commonly highlighted is the link between play and early language learning or literacy. However, in the present sample, no positive relationships were present between play and reading achievement. One possible explanation is the special focus on science and math in this particular academic setting. This all-girls school strives to stimulate interest in math and science, areas traditionally dominated by males. The school encourages experiential, hands-on learning through “tinkering stations” in the hallways and real-world engineering projects in the community. It is possible, then, that processes present in pretend play such as symbolism, organization, and experimentation transfer to math achievement in a setting where similar processes are emphasized in math instruction.

On the contrary, both cognitive components of play and variety of affect in play were negatively related to reading fluency scores. The reading comprehension and reading fluency scores correlated very differently with play scores. While play showed no
relation to reading comprehension, better play seemed to predict lower reading fluency scores. The danger in interpreting the aimsweb tests broadly is their intentionally brief and simple design. The reading fluency test measures how many words a child can read correctly within a certain time frame. The reading fluency score, then, reflects solely the child’s reading speed and accuracy over one brief period. While a more comprehensive set of reading/language measures might be expected to relate to play, it is not surprising that neither imagination nor affect present in play correlated positively with these brief measures. The significant negative relationships are an anomaly that is unlikely to translate into clinical or practical significance.

Resiliency. Contrary to hypotheses, play did not relate longitudinally to resiliency. One possible explanation could be that the RSCA measures a state of the child rather than an enduring trait. This is supported by the fact that the RSCA relates to the PANAS-C, a measure of current affect. Another possibility is that children are not accurate reporters of their resiliency. Given that age was so highly correlated with RSCA scores, it may be that children become more accurate reporters as they age. Although the RSCA is validated for children in the present sample’s age range, the wide age range may have exacerbated reporting differences from younger to older children, disguising a potential relation between play and resiliency. Given the variety of complicating factors, the present study cannot draw conclusions about the relation between play and resiliency.

Coping. The relation between play and coping also did not support the hypotheses. None of the correlations related in the expected direction when controlling for verbal intelligence, and there was a pattern of negative correlations among the affective play variables and the social and affective coping subscales. There are two
likely reasons why pretend play did not relate to the measure of coping used in the present study. One complicating factor was the large number of individual teachers who filled out the CCS. Assignment of teachers to complete the measure was carried out by the school, which chose to seek out the teacher who knew each child best. It is possible that this variety of teachers may have had different rating standards. The second factor was the validity of the scale in measuring coping. In further examining the CCS items, it is possible that the measure is not valid for what the present study defined as “coping.” The School Coping Scale (SCS), the child self-report measure used in the baseline sample and at the 18-month follow-up, assesses the child’s problem-solving skills and ability to generate a variety of effective coping responses when presented with difficult situations. By contrast, the CCS questions span several dimensions that do not fit with the more narrow definition of coping based on the SCS. The CCS may be better characterized as a measure of “prosocial behavior,” “adaptive functioning,” or “adjustment.” Overall, teacher assignment factors as well as the validity of this measure for the present study leave us unable to draw conclusions about the longitudinal relation between play and coping.

Concurrent Measures

Concurrent measures were analyzed separately from their longitudinal relation with play. One specific purpose was to investigate components of resiliency. Exploratory analyses were also performed examining relations among the various concurrent measures.

Components of Resiliency. Significant relationships emerged between resiliency and affect and math achievement. Sense of Relatedness was negatively related to
negative affect. Children who reported feeling more secure in their relationships and comfortable around other people also reported lower levels of negative affect. Similarly, the Vulnerability Index was positively related to negative affect. Thus, higher levels of negative affect accompany greater vulnerability to stress and negative outcomes following negative life events. One possible application of this finding would be the use of the PANAS-C as a screening instrument for children who may be particularly vulnerable to stress. Although the PANAS-C was designed as a current measure of children’s affect/mood (within the past two weeks), multiple administrations could reveal those children who consistently report high levels of negative affect. The advantage of using the PANAS-C rather than the resiliency scales is that it takes less time to administer and it is freely available. Future research might investigate this possibility.

Resiliency also related to concurrent math achievement scores. Children who reported greater Sense of Mastery also scored higher on math achievement tests. It is possible that with the emphasis and importance placed on math at the school in the present study, children who excel in math may feel particularly confident in their overall abilities. If they are praised for their math skills, they may have greater optimism and self-efficacy than children at the school who struggle with math. There is also a theme among the Sense of Mastery scale items of problem-solving abilities. Some of the questions include, “I am good at fixing things,” “I am good at figuring things out,” “If I have a problem, I can solve it,” and “I can think of more than one way to solve a problem.” It is possible that problem-solving skills share similar reasoning or thought processes with math skills, contributing to the relation between this domain of resiliency and math achievement.
Several negative relationships emerged between resiliency and teacher-reported coping. Overall, higher self-reported resiliency correlated with lower teacher-reported coping ability. However, the pattern of negative relationships persisted across the positive resiliency scales and the negative emotional reactivity scale. This pattern of relationships does not fit with theory of resiliency and coping or with the typical interrelations among the resiliency subscales. If a construct relates negatively to the positive-resiliency subscales, it should relate positively to the negative-resiliency subscale. Given the limitations of the coping measure, it is not worthwhile to analyze these negative relationships. It seems that the CCS was not a valid measure in the present sample.

*Divergent Thinking and Achievement.* Divergent thinking fluency was positively related to math achievement concurrently. Even controlling for verbal intelligence and for divergent thinking at baseline, children who had higher divergent thinking scores performed better on tests of math skills. This provides additional support for the idea that similar processes are involved in generativity or problem solving and mathematics. Similar to the relation between play and mathematics achievement, math and divergent thinking may share processes such as advanced reasoning and thinking “outside the box.” This idea was supported in a recent study showing that in adults, divergent thinking ability was specifically related to fluid intelligence (Nusbaum & Silvia, 2011). Further exploration of the processes common to play, divergent thinking, and mathematics skills may yield interesting ideas about teaching or promoting mathematics achievement in children.

*Age.* In the present sample, age was a variable that unexpectedly impacted many relationships. While previous studies using the APS have not found significant
relationships with age, the present sample showed positive correlations between age and Organization, Imagination, and Positive affect on the APS. The original sample was made up of children in Kindergarten through fourth grade, which represents a wider age range than is typical with the APS. It is possible that this age range captured developmental differences that are usually not present to a significant degree among children closer in age. A similar rationale may explain the significant relationships between age and Sense of Mastery, Sense of Relatedness, and divergent thinking Fluency. It is logical, for example, that most fourteen-year-olds would be able to supply a greater number of alternate uses than most nine-year-olds.

Age also related to Social coping competence, although the relation was in the negative direction. Younger children were rated by teachers as having better social coping skills than older children. Among the problems with the CCS was that teacher assignment was not consistent across grades. While teachers of the older children were assigned between one and two children’s questionnaires, the bulk of younger children (current fourth graders) were assigned to one single teacher. It is possible that teacher bias elevated the scores for the younger children. It is also possible that some of the content on the Social coping scale is more apparent in younger children. For example, items such as “Cares about other people when they get hurt,” and “Cares about other people’s feelings,” may be easier to determine for teachers of younger children.

When age was controlled in the longitudinal analyses of pretend play, unexpected significant relationships were found between pretend play and Sense of Relatedness in resiliency. Given the developmental challenges associated with this age range, it is possible that the older children (7th and 8th graders) reported lower levels of
relatedness. Girls on the older end of this sample are in a developmental window in which relationships tend to be more tumultuous, children become more self-conscious and self-centered, and the onset of puberty triggers hormonal changes and less stable emotions. The negative correlations observed may therefore reflect a distinct developmental difference among the older and younger children in the sample.

Hierarchical multiple regression analyses examined pretend play, age, and verbal IQ as predictors for divergent thinking and math achievement. Age was the only predictor that accounted for a significant proportion of the variance in both divergent thinking (12%) and math achievement (12%). The finding that age related positively to math achievement was anomalous. Scores were standardized based on each grade’s norms to allow comparison across grades, so it is unexpected that a significant correlation emerged among these standard scores. It is possible that the published norms unintentionally carry an age-related bias.

Verbal Intelligence. Verbal intelligence was another unexpected contributor to several relationships. Verbal IQ accounted for 25% of the variance in children’s affect on the PANAS-C. Verbal intelligence was negatively related to positive affect, indicating that children with higher verbal abilities reported lower levels of positive affect. It is possible that in the private school in the present sample, higher standards and greater levels of stress are associated with intelligence and high achievement. Thus, children who have higher intelligence and experience a stronger sense of competition or stress may have less positive affect than children who fall in the middle or bottom range of intelligence. It is also possible, and perhaps more likely, that children with higher verbal intelligence have a better understanding of the PANAS-C measure. They may be better
able to comprehend the listed emotion words and may also have a more realistic sense of their emotions. For example, many younger children are dichotomous in their responses, rating their experience of positive emotions as 5 (Extremely) and the negative emotions as 1 (Very slightly or not at all). Children with higher verbal intelligence may be less liberal with their positive ratings, recognizing that they have not felt “Extremely excited” or “Extremely energetic” for the majority of time over the past two weeks.

Verbal intelligence also related positively to reading achievement, but not to math achievement. This finding is logical, as the verbal intelligence measure is the vocabulary section of the WISC-IV, a verbal measure that should theoretically be related to reading achievement scores. This finding provides some validity for the aimsweb measures, as both domains relate in the expected direction to verbal intelligence.

Limitations

This study has a number of limitations that may have impacted both the findings and the overall generalizability of results. First, the longitudinal design restricted the possible sample size. The resulting sample of 31 children is small, which limits the available statistical power and consequently the likelihood of finding significant results. It is possible that the contribution of pretend play to adaptive functioning variables in the multiple regressions may have reached significance with a larger sample. A small sample size also limited the analyses we were able to perform to determine the nature of the contribution of age to the variables studied. Second, the sample was made up of female, mostly Caucasian, students in a private school setting. Ethnicity, gender, and socioeconomic status were not fully represented. Thus, the generalizability of these results to other populations may be limited. Finally, the present sample was made up of
children particularly skilled in pretend play. The mean play scores across domains were higher than most means reported in other studies using the APS. Higher play scores compared to the average may have limited the possible scope of findings.

**Future Directions**

The present study opens the door for several lines of future research. Replication of results with a different population, specifically with a sample of low-income families or children who have poor play skills, would help to clarify the stability of the longitudinal correlates of play, particularly resiliency. Another research question that emerged is the nature of the relationship among pretend play, divergent thinking, and math achievement. Identifying similar processes involved in all three domains may lead to investigation of ways to utilize pretend play or divergent thinking in promoting math achievement. This is a promising idea for teaching girls especially, as the present study showed significant concurrent and longitudinal relationships in an all-female sample.

Future research investigating the relation between pretend play and resiliency in children may want to adopt a different approach. Although individual resiliency is an important construct, resilience in the face of life stress may be more theoretically related to pretend play. Children may be more likely to use and develop their pretend play skills if they have experienced negative life events that require coping. Future research might assess life stressors among children in addition to their resilience and play skills. Given the high play scores in the present sample, it is possible that the relation between play and resiliency was not accurately represented. A more diverse population may also yield a different pattern of responses.
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*Descriptive Statistics of the Sample*

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Table 2
Pearson Product-Moment Correlations of Measures with Age and Verbal IQ

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n = 28-31
†p = .05 *p < .05 **p < .01
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<tr>
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<table>
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<td>Sense of Relatedness *</td>
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</tr>
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<table>
<thead>
<tr>
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\[ n = 25 \quad ^{b}n = 24 \quad ^{c}n = 23 \]
\[ \iffloor p = .05 \quad ^{*}p < .05 \quad ^{**}p < .01 \]

Note: Partial correlations, controlling for Verbal IQ, shown in parenthesis.
Table 4
Longitudinal Pearson Product-Moment Correlations for Pretend Play and Criteria (Controlling Age)

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<td>.22 (.04)</td>
<td>.24 (.06)</td>
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<td>.20 (.12)</td>
<td>.32* (.26)</td>
<td>.00 (-.06)</td>
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<td>.15 (-.13)</td>
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<td>-.11 (-.06)</td>
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<tr>
<td>Achievement: aimsweb</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading fluency c</td>
<td>-.17 (-.11)</td>
<td>-.30 (-.24)</td>
<td>-.34* (-.33†)</td>
<td>-.32 (-.27)</td>
<td>-.29 (-.24)</td>
<td>-.33* (-.29)</td>
<td>-.19 (-.16)</td>
</tr>
<tr>
<td>Reading comprehension b</td>
<td>.04 (-.05)</td>
<td>.02 (-.03)</td>
<td>.02 (-.02)</td>
<td>.12 (.12)</td>
<td>.01 (-.01)</td>
<td>.01 (-.01)</td>
<td>.22 (.23)</td>
</tr>
<tr>
<td>Math computation a</td>
<td>.50** (.37*)</td>
<td>.43* (.24)</td>
<td>.19 (.16)</td>
<td>.30 (.13)</td>
<td>.30 (.14)</td>
<td>.36* (.20)</td>
<td>.13 (.01)</td>
</tr>
<tr>
<td>Math concepts &amp; applications b</td>
<td>.26 (.07)</td>
<td>.22 (-.03)</td>
<td>-.08 (-.16)</td>
<td>.15 (-.05)</td>
<td>.05 (-.18)</td>
<td>.17 (-.03)</td>
<td>.07 (-.06)</td>
</tr>
</tbody>
</table>

*n = 25  
*n = 24  
*n = 23  
†p = .05  
*p < .05  
**p < .01  

Note: Partial correlations, controlling for age, shown in parenthesis
Table 5
Concurrent Pearson Product-Moment Correlations with Resiliency

<table>
<thead>
<tr>
<th>Coping</th>
<th>Sense of Mastery</th>
<th>Sense of Relatedness</th>
<th>Emotional Reactivity</th>
<th>Resource Index</th>
<th>Vulnerability Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement coping</td>
<td>-.32</td>
<td>-.39*</td>
<td>.14</td>
<td>-.40*</td>
<td>.31</td>
</tr>
<tr>
<td>Affective coping</td>
<td>-.19</td>
<td>-.23</td>
<td>-.18</td>
<td>-.23</td>
<td>.03</td>
</tr>
<tr>
<td>Social coping</td>
<td>-.40*</td>
<td>-.29</td>
<td>-.16</td>
<td>-.40*</td>
<td>.17</td>
</tr>
</tbody>
</table>

| Divergent thinking   |                   |                      |                      |                |                    |
| Fluency             | .15               | -.10                 | .29                  | .06            | .14                 |
| Originality         | .04               | -.06                 | .14                  | .02            | .08                 |

| Affect: PANAS        |                   |                      |                      |                |                    |
| Positive affect      | .17               | .30                  | -.01                 | .27            | -.19                |
| Negative affect      | -.34              | -.51**               | .20                  | -.49**         | .41*                |

| Achievement: aimsweb |                   |                      |                      |                |                    |
| Reading fluency      | -.12              | -.27                 | .15                  | -.21           | .25                 |
| Reading comprehension | -.08              | -.16                 | .31                  | -.12           | .23                 |
| Math computation     | .46**             | .18                  | .06                  | .37*           | -.24                |
| Math concepts & applications | .49**             | .20                  | .22                  | .40*           | -.16                |

\( n = 29-31 \)

\*p < .05 \quad \text{**p} < .01
Table 6
*Pearson Product-Moment Correlations Among Concurrent Variables*

<table>
<thead>
<tr>
<th></th>
<th>Coping</th>
<th>Divergent thinking</th>
<th>PANAS-C</th>
<th>Achievement: aimsweb</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ach</td>
<td>Aff</td>
<td>Soc</td>
<td>Fluency</td>
</tr>
<tr>
<td><strong>Coping</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achievement</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affective</td>
<td>.60**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>.67**</td>
<td>.78**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td><strong>Divergent thinking</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluency</td>
<td>.03</td>
<td>-.09</td>
<td>-.20</td>
<td>1.00</td>
</tr>
<tr>
<td>Originality</td>
<td>-.05</td>
<td>-.23</td>
<td>-.23</td>
<td>.66**</td>
</tr>
<tr>
<td><strong>Affect: PANAS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>-.13</td>
<td>-.13</td>
<td>-.17</td>
<td>.02</td>
</tr>
<tr>
<td>Negative</td>
<td>.33</td>
<td>.02</td>
<td>.28</td>
<td>-.05</td>
</tr>
<tr>
<td><strong>Achievement: aimsweb</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read Flu</td>
<td>-.09</td>
<td>-.09</td>
<td>-.09</td>
<td>.29</td>
</tr>
<tr>
<td>Read Comp</td>
<td>.40*</td>
<td>.11</td>
<td>.07</td>
<td>.16</td>
</tr>
<tr>
<td>Math Comp</td>
<td>.31</td>
<td>.10</td>
<td>.08</td>
<td>.49**</td>
</tr>
<tr>
<td>Math Conc/App</td>
<td>.01</td>
<td>-.16</td>
<td>-.22</td>
<td>.56**</td>
</tr>
</tbody>
</table>

n = 28-31
*p < .05     **p < .01
### Table 7

**Summary of Hierarchical Regression Analyses**

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Divergent Thinking Fluency</th>
<th>PANAS-C Positive Affect</th>
<th>aimsweb: Math Computation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>β</td>
</tr>
<tr>
<td>Verbal IQ</td>
<td>.59</td>
<td>.42</td>
<td>.23</td>
</tr>
<tr>
<td>Age</td>
<td>1.39</td>
<td>.61</td>
<td>.39*</td>
</tr>
<tr>
<td>APS-Organization</td>
<td>1.52</td>
<td>.81</td>
<td>.34</td>
</tr>
<tr>
<td>APS-Positive affect</td>
<td>-.01</td>
<td>.08</td>
<td>-.02</td>
</tr>
</tbody>
</table>

n = 28-31

*p < .05  **p < .01
Appendix A: Affect in Play Scale Administration and Scoring Manual

Appendix: Affect in Play Scale*

Sandra W. Russ
Case Western Reserve University

The Affect in Play Scale (APS) consists of a standardized play task and a criterion-based rating scale. The APS is appropriate for children 6–10 years of age, which includes children in Grades 1 through 3.

The Affect in Play Scale measures the amount and types of affect expression in children’s fantasy play. The scale rates the frequency and intensity of affective expression, variety of affect categories, quality of fantasy, imagination, comfort in play, and integration of affect. Play sessions are 5-minute standardized puppet play periods.

THE APS PLAY TASK

The play task consists of two human puppets, one boy and one girl, and three small blocks that are laid out on a table (see Fig. A.1 for puppets). The puppets have neutral facial expressions. Both Caucasian and African-American versions of puppets are used, depending upon the child population. The blocks are brightly colored and of different shapes. The play props and instructions are unstructured enough so that individual differences in play can emerge. The task is administered individually to the child and the play is videotaped. The instructions for the task are:

I’m here to learn about how children play. I have here two puppets and would like you to play with them any way you like for five min-

*Copyright © 1985 by Sandra W. Russ.
utes. For example, you can have the puppets do something together. I also have some blocks that you can use. Be sure to have the puppets talk out loud. The video camera will be on so that I can remember what you say and do. I’ll tell you when to stop.

The child is told when there is one minute left with the instruction, “You have one minute left.”

**Prompts and Special Circumstances**

1. If the child does not know to put on the puppets, tell the child to put them on. Let the child know when they can start and start timing from that point.

2. If the child does not start to play, prompt the child after 30 seconds by saying “Go ahead, have the puppets do something together.” Two prompts of this sort can be given. After two minutes of no play, the task should be discontinued.

3. If the child plays but does not have the puppets talk, prompt with “Have the puppets talk out loud so I can hear” after 30 seconds. Two prompts can be given, spaced about one minute apart.

4. If a child has been playing, but then stops before time is up, prompt with “You still have time left, keep on playing.” Prompt a second time if needed with “Keep on playing, I’ll tell you when to stop.” Most children who already played will be able to continue with prompts. If they cannot, then discontinue after two minutes of no play.

5. Be sure not to give any verbal reinforcement during the child’s play. It is important however to be attentive and watch the child and be interested. After the child has finished, say “That was good” or “That was fine.”

---

**FIG. A.1. Puppets for the Affect in Play Scale.**
6. Be sure to stop after five minutes. A wristwatch with a second hand is adequate. Time in an unobtrusive manner.

THE APS RATING SCALE

The APS measures the amount and types of affective expression in children’s fantasy play. The APS measures affect themes in the play narrative. Both emotion-laden content and expression of emotion in the play are coded. The APS also measures cognitive dimensions of the play, such as quality of fantasy and imagination.

Both Holt’s (1977) Scoring System for Primary Process on the Rorschach and Singer’s play scales were used as models for the development of the scoring system. In addition, the work of Izard (1977) and Tomkins (1962, 1963) was consulted to ensure that the affect categories were comprehensive and covered all major types of emotion expressed by children in the 4–10 age group.

There are three major affect scores for the APS:

1. **Total frequency of units of affective expression.** A unit is defined as one scorable expression by an individual puppet. In a two puppet dialogue, expressions of each puppet are scored separately. A unit can be the expression of an affect state, an affect theme, or a combination of the two. An example, of an affect state would be one puppet saying “This is fun.” An example of an affect theme would be “Here is a bomb that is going to explode.” The expression can be verbal (“I hate you”) or non-verbal (one puppet punching the other). The frequency of affect score is the total number of units of affect expressed in the five minute period. If non-verbal activity, such as fighting, occurs in a continuous fashion, a new unit is scored every five seconds.

2. **Variety of affect categories.** There are 11 possible affect categories. The categories are: Happiness/Pleasure; Anxiety/Fear; Sadness/Hurt; Frustration/Disappointment; Nurturance/Affection; Aggression; Competition; Oral; Oral Aggression; Sexual; Anal. The variety of affect score is the number of different categories of affect expressed in the 5-minute period. Affect categories can be classified as positive affect (Happiness, Nurturance, Competition, Oral, Sexual) and negative affect (Anxiety, Sadness, Aggression, Frustration, Oral Aggression, Anal). Another classification is primary process affect (Aggression, Oral, Oral Aggression, Sexual, Anal) and non-primary process affect (Happiness, Sadness, Anxiety, Frustration, Competition, Nurturance).

3. **Mean intensity of affective expression (1–5 rating).** This rating measures the intensity of the feeling state or content theme. Each unit of affect is rated for intensity on a 1–5 scale.
Organization

This rating scale measures the quality of the plot and the complexity of the story:

1. Series of unrelated events, no cause and effect, disjointed.
2. Some cause and effect; series of loosely related events.
3. Cause and effect, organized in a temporal sequence, but no overall integrated plot.
4. More cause and effect, close to an integrated plot.
5. Integrated plot with beginning, middle and end.

Imagination

This rating scaled measures the novelty and uniqueness of the play and the ability to pretend and use fantasy. Ability to transform the blocks and pretend with them.

1. No symbolism or transformations, no fantasy.
2. One or two instances of simple transformations. No novel events. Very few fantasy events in the story.
3. Three or more transformations. Some fantasy and pretend events, such as “Let’s play house.” Some variety of events. No novel events or events removed from daily experience.
4. Many transformations. Variety of events. Some novel fantasy events. Some fantasy with unusual twists or removed from daily experience such as living in a castle or building a space ship. Other characters in addition to the two puppets are included in the story.
5. Many transformations and many fantasy themes. Novelty of ideas is evident. Fantasy has new twists and often has elements outside of daily experience.

Comfort

A global rating for the child’s comfort in play measures the involvement of the child in the play and the enjoyment of the play. The lower end of the scale rates comfort more than enjoyment and the higher end of the scale weighs pleasure and involvement.

1. Reticent; distressed. Stops and starts.
2. Some reticence and stiffness.
3. OK but not enjoying and involved. Continues to play.
4. Comfortable and involved.
5. Very comfortable, involved and enjoying the play.
Appendix B: Student Measures

Resiliency Scales for Children and Adolescents

Here is a list of things that happen to people and that people think, feel, or do. Read each sentence carefully, and circle the one answer (Never, Rarely, Sometimes, Often, or Almost Always) that tells about you best.

THERE ARE NO RIGHT OR WRONG ANSWERS.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

1. Life is fair.
2. I can make good things happen.
3. I can get the things I need.
4. I can control what happens to me.
5. I do things well.
6. I am good at fixing things.
7. I am good at figuring things out.
8. I make good decisions.
9. I can adjust when plans change.
10. I can get past problems in my way.
11. If I have a problem, I can solve it.
12. If I try hard, it makes a difference.
13. If at first I don’t succeed, I will keep on trying.
14. I can think of more than one way to solve a problem.
15. I can learn from my mistakes.
16. I can ask for help when I need to.
17. I can let others help me when I need to.
18. Good things will happen to me.
19. My life will be happy.
20. No matter what happens, things will be all right.

For T scores, see Table A.1.

TS RS
Here is a list of things that happen to people and that people think, feel, or do. Read each sentence carefully, and circle the one answer (Never, Rarely, Sometimes, Often, or Almost Always) that tells about you best.

THERE ARE NO RIGHT OR WRONG ANSWERS.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I can meet new people easily.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>2</td>
<td>I can make friends easily.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>3</td>
<td>People like me.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>4</td>
<td>I feel calm with people.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>5</td>
<td>I have a good friend.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>6</td>
<td>I like people.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>7</td>
<td>I spend time with my friends.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>8</td>
<td>Other people treat me well.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>9</td>
<td>I can trust others.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>10</td>
<td>I can let others see my real feelings.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>11</td>
<td>I can calmly tell others that I don’t agree with them.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>12</td>
<td>I can make up with friends after a fight.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>13</td>
<td>I can forgive my parent(s) if they upset me.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>14</td>
<td>If people let me down, I can forgive them.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>15</td>
<td>I can depend on people to treat me fairly.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>16</td>
<td>I can depend on those closest to me to do the right thing.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>17</td>
<td>I can calmly tell a friend if he or she does something that hurts me.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>18</td>
<td>If something bad happens, I can ask my friends for help.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>19</td>
<td>If something bad happens, I can ask my parent(s) for help.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>20</td>
<td>There are people who will help me if something bad happens.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>21</td>
<td>If I get upset or angry, there is someone I can talk to.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>22</td>
<td>There are people who love and care about me.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>23</td>
<td>People know who I really am.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>24</td>
<td>People accept me for who I really am.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
</tbody>
</table>

*For 7 scores, see Table A.1.*

TS  RS

4
Here is a list of things that happen to people and that people think, feel, or do. Read each sentence carefully, and circle the one answer (Never, Rarely, Sometimes, Often, or Almost Always) that tells about you best.

**THERE ARE NO RIGHT OR WRONG ANSWERS.**

<table>
<thead>
<tr>
<th>1. It is easy for me to get upset.</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>People say that I am easy to upset.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>I strike back when someone upsets me.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>I get very upset when things don’t go my way.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>I get very upset when people don’t like me.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>I can get so upset that I can’t stand how I feel.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>I get so upset that I lose control.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I get upset, I don’t think clearly.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I get upset, I react without thinking.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I get upset, I stay upset for about one hour.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I get upset, I stay upset for several hours.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I get upset, I stay upset for the whole day.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I get upset, I stay upset for several days.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I am upset, I make mistakes.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I am upset, I do the wrong thing.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I am upset, I get into trouble.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I am upset, I do things that I later feel bad about.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I am upset, I hurt myself.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I am upset, I hurt someone.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
<tr>
<td>When I am upset, I get mixed-up.</td>
<td>Never</td>
<td>Rarely</td>
<td>Sometimes</td>
<td>Often</td>
<td>Almost Always</td>
</tr>
</tbody>
</table>

For T scores, see Table A.1.
Alternate Uses Test

Now, I am going to name an object, any kind of object, like a light bulb, and it will be your job to tell me all the different ways that the object could be used. Any object can be used in a lot of different ways. For example, think about string. What are some of the ways you might use string? Now I'm going to name different objects and I want you to tell me all the different ways you could use the object that I name. You’ll have two minutes to think of all the ways to use each object, and I’ll tell you when to turn the page.

The first object is a Newspaper- Write down all the different ways you can use a newspaper.

Objects:
- Newspaper
- Button
- Key
- Shoe
- Car Tire
- Knife
Feelings and Emotions

This scale consists of a number of words that describe different feelings and emotions. I will read each item and you should circle the appropriate answer next to that word.

Indicate to what extent you have felt this way during the past few weeks.

<table>
<thead>
<tr>
<th>Word</th>
<th>Very slightly or not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interested</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Sad</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Frightened</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Alert</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Excited</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Ashamed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Upset</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Happy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Strong</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Nervous</td>
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<td>2</td>
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<td>4</td>
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<tr>
<td>Guilty</td>
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<td>2</td>
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<td>4</td>
<td>5</td>
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<td>Energetic</td>
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<td>2</td>
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<td>5</td>
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<td>Calm</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
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<td>Miserable</td>
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<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Jittery</td>
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<td>2</td>
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<td>5</td>
</tr>
<tr>
<td>Cheerful</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Active</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<td>Proud</td>
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<td>2</td>
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<td>4</td>
<td>5</td>
</tr>
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<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Lonely</td>
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<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Mad</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Fearless</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Disgusted</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Blue</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Daring</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Gloomy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Lively</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Coping Competence Scale

Below are some items that describe children’s behaviors. The list covers a wide variety of behaviors. For each item, please indicate how much this behavior describes this child’s behavior now or within the past six months, from “Not at all” to “Just a little” to “Pretty much” to “Very much.” While some items may be more specific to the child’s home life, please use your knowledge of the child and best judgment to inform your choices.

1. Talks about his/her feelings, beliefs, experiences in an interesting way at the right time
   - Not at all
   - Just a little
   - Pretty much
   - Very much

2. Listens with interest to what others say
   - Not at all
   - Just a little
   - Pretty much
   - Very much

3. Persuades others with reasonable words
   - Not at all
   - Just a little
   - Pretty much
   - Very much

4. Does what is asked when reasonable requests are made
   - Not at all
   - Just a little
   - Pretty much
   - Very much

5. Stands up for own point of view without being a bully
   - Not at all
   - Just a little
   - Pretty much
   - Very much

6. Uses questions to understand people and things
   - Not at all
   - Just a little
   - Pretty much
   - Very much

7. Lets others speak without interrupting them
   - Not at all
   - Just a little
   - Pretty much
   - Very much

8. Communicates well with others to deal successfully with difficulties
   - Not at all
   - Just a little
   - Pretty much
   - Very much

9. Helps around the home (for example: chores)
   - Not at all
   - Just a little
   - Pretty much
   - Very much

10. Concentrates well when learning something new
    - Not at all
    - Just a little
    - Pretty much
    - Very much

11. Picks up or cleans up after self
    - Not at all
    - Just a little
    - Pretty much
    - Very much

12. Asks lots of questions about the way things work
    - Not at all
    - Just a little
    - Pretty much
    - Very much

13. Finishes tasks that he/she starts
    - Not at all
    - Just a little
    - Pretty much
    - Very much

14. Interested in reading or in being read to
    - Not at all
    - Just a little
    - Pretty much
    - Very much

15. Gets dressed with little or no help
    - Not at all
    - Just a little
    - Pretty much
    - Very much

16. Shows interest in learning
    - Not at all
    - Just a little
    - Pretty much
    - Very much

17. Shows interest in numbers, counting or arithmetic (for example: counting money)
    - Not at all
    - Just a little
    - Pretty much
    - Very much
<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Not at all</th>
<th>Just a little</th>
<th>Pretty much</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.</td>
<td>Remembers instructions well</td>
<td>Not at all</td>
<td>Just a little</td>
<td>Pretty much</td>
<td>Very much</td>
</tr>
<tr>
<td>19.</td>
<td>Is kind to other children</td>
<td>Not at all</td>
<td>Just a little</td>
<td>Pretty much</td>
<td>Very much</td>
</tr>
<tr>
<td>20.</td>
<td>Is often forgiving and understanding</td>
<td>Not at all</td>
<td>Just a little</td>
<td>Pretty much</td>
<td>Very much</td>
</tr>
<tr>
<td>21.</td>
<td>Cooperates with adults and does what is asked</td>
<td>Not at all</td>
<td>Just a little</td>
<td>Pretty much</td>
<td>Very much</td>
</tr>
<tr>
<td>22.</td>
<td>Is often patient with other people</td>
<td>Not at all</td>
<td>Just a little</td>
<td>Pretty much</td>
<td>Very much</td>
</tr>
<tr>
<td>23.</td>
<td>Stays calm when he/she is frustrated</td>
<td>Not at all</td>
<td>Just a little</td>
<td>Pretty much</td>
<td>Very much</td>
</tr>
<tr>
<td>24.</td>
<td>Cares about other people’s feelings</td>
<td>Not at all</td>
<td>Just a little</td>
<td>Pretty much</td>
<td>Very much</td>
</tr>
<tr>
<td>25.</td>
<td>Respects other people’s property or belongings</td>
<td>Not at all</td>
<td>Just a little</td>
<td>Pretty much</td>
<td>Very much</td>
</tr>
<tr>
<td>26.</td>
<td>Cares about other people when they get hurt</td>
<td>Not at all</td>
<td>Just a little</td>
<td>Pretty much</td>
<td>Very much</td>
</tr>
</tbody>
</table>
Bibliography


