

# Effects of Caregiver–Child Interactions on Play Occupations Among Young Children Institutionalized in Eastern Europe

Lisa A. Daunhauer, Wendy J. Coster, Linda Tickle-Degnen,  
Sharon A. Cermak

## KEY WORDS

- caregiver–child interaction
- institutionalization
- pediatrics
- play

**OBJECTIVE.** We investigated whether children institutionalized in an orphanage would engage in more developmentally competent play with their caregivers as opposed to playing alone and whether specific qualities of caregiver–child interactions were associated with more developmentally competent play.

**METHOD.** Twenty-six children, ages 10 to 38 months, participated in independent play sessions and in a play session with a caregiver. Interrater reliability for coding play performance was established using the weighted kappa statistic ( $M = .82$ ). Twelve pediatric experts rated both child and caregiver behaviors for the interactive sessions (mean effective reliability with intraclass correlations = .89).

**RESULTS.** The children demonstrated more developmentally competent play when interacting with a caregiver than when playing alone,  $t(25) = -1.88, p \leq .04$ , one-tailed. The effect size was moderate ( $d = .53$ ). Longer periods of institutionalization were associated with less improvement in play performance from independent to interactive play sessions ( $r = -.51, p \leq .01$ ). Successful engagement for the child was associated with having a caregiver who provided more structure and assistance and who was directive and encouraging ( $r = .82, .75, .75$ , and  $.64$ , respectively).

**CONCLUSION.** Caregivers facilitated more developmentally competent participation in play with children residing in an orphanage, despite the fact that these interactions occurred in an environment vulnerable to many challenges not typical of an exclusive caregiver–child relationship. Findings are discussed in the context of environmental challenges and occupational therapy practice.

Daunhauer, L. A., Coster, W. J., Tickle-Degnen, L., & Cermak, S. A. (2007). Effects of caregiver–child interactions on play occupations among young children institutionalized in Eastern Europe. *American Journal of Occupational Therapy, 61*, 429–440.

**Lisa A. Daunhauer, ScD**, is Assistant Professor, Department of Occupational Therapy, College of Applied Human Sciences, Colorado State University, Fort Collins, CO 80523-1573; ldaun@cahs.colostate.edu.

**Wendy J. Coster, PhD**, is Chair and Associate Professor, Department of Occupational Therapy and Rehabilitation Counseling, Director, Programs in Occupational Therapy and Therapeutic Studies, College of Health and Rehabilitation Sciences, Boston University.

**Linda Tickle-Degnen, PhD**, is Associate Professor, Boston School of Occupational Therapy, Tufts University, Boston.

**Sharon A. Cermak, EdD**, is Professor, Department of Occupational Therapy and Rehabilitation Counseling, Programs in Occupational Therapy and Therapeutic Studies, Boston University.

A child's participation in daily activities is often facilitated by guidance from a parent, caregiver, or other skilled member of society (Rogoff, 1990; Tomasello, Kruger, & Ratner, 1993; Vygotsky, 1978). Previous research on home-reared children with either typical or delayed development has found that caregiver interactions can support or constrain children's participation in activities such as mealtime and play (Kadlec, Coster, & Tickle-Degnen, 2005; Ray, 2000; Rogoff, Mistry, Goncu, & Mosier, 1993). Many activities and caregiver–child interactions may be disrupted when a child lives in an institutional environment such as an orphanage (Ainsworth, 1965; Bowlby, 1953; Gunnar, Bruce, & Grotevant, 2000). Not surprisingly, institutionalization has been associated with significant delays in all areas of development, including growth, language, cognition, motor skills, social-emotional skills, and behavior (Ames et al., 1997; O'Connor et al., 2000; Rutter & English–Romanian Adoptees Study Team, 1998).

The state of inquiry on the developmental status of children living in maternal deprivation, such as those in orphanages, has several gaps. Although developmental difficulties in many areas have been documented in children living in institutions, little is known about their participation in daily occupations. Children

raised in institutions, who typically are deprived of the social relationships and attachments that come from being raised in a family, are part of an unfortunate experiment in human nature by virtue of their caregiving environment. It is not known whether caregiver interactions support or constrain children's participation in daily life when the caregiver and child interact in a relationship that significantly differs from that of an exclusive parent-child relationship. Clinically, it is important to investigate caregiver-child interactions—particularly for children with developmental delays and children experiencing adverse early environments—to provide guidance for practitioners in understanding how challenging tasks affect child behavior and caregiver responses and deciding what interactions best facilitate participation and development for these children.

We examined caregiver-child interactions during play occupations in an Eastern European orphanage. We chose play as a means of studying caregiver-child interactions given findings from a preliminary time use study conducted at the same site. The results of that study indicated that children at the orphanage spent the largest proportion of their waking hours (36%) in nonengaged, downtime activities such as lying or standing without doing anything else (Daunhauer, Bolton, & Cermak, 2005). However, the next most frequently observed activity in the institution was play (27%). Interestingly, a comparison group of children participating in U.S. child care spent a congruent amount of their waking hours playing (25%), although their play skills appeared more developmentally competent (Daunhauer et al. 2005). Other daily activities in the institution, such as mealtime and dressing, had an assembly-line format, allowing for little caregiver-child interaction. In addition, only 24% of the institutionalized group's activities were spent engaged with a caregiver, as opposed to 53% of the U.S. child care group (Daunhauer et al., 2005). Recently, Kronenberg and Pollard (2005) described this type of deprivation from engagement in meaningful activities and roles as *occupational apartheid*.

It is helpful to understand (a) the theory related to caregiver-child interactions and (b) the relationship of play and development when considering how caregivers may facilitate development through play. Rogoff (1990) theorized that children learn and develop through participation in routine daily activities with the guidance of a partner, even if those activities are not specifically educational. According to Rogoff, caregiver-child relationships consist of both implicit and explicit interactions, which may occur through instructional strategies, such as giving directions and modeling, or through supportive strategies, such as use of affect and responsiveness. Partnership (intersubjectivity) between caregivers and children helps children achieve

higher levels of participation and success. The process of adjusting assistance and encouraging a child's participation in tasks has been referred to as *scaffolding* (Wood, Bruner, & Ross, 1976). Other developmentalists have further characterized sociocultural learning as including a developmental progression starting with imitation and instructed learning and ending with collaborative learning (Tomasello et al., 1993).

In many cultures, play is a ubiquitous childhood activity (Anderson, 1997). Play has been related to cognitive development and social competence in both theory (Piaget, 1951; Vygotsky, 1978) and empirical evidence (Fisher, 1992). Numerous factors affect children's play competence, including their cognition, language skills, attention, and motor skills as well as the type of assistance and interactions their caregivers provide (Doctoroff, 1996; Power, 2000). Researchers commonly describe and quantify play participation by level of complexity using categories such as object play (e.g., exploration, object manipulation, pretend play) and social play (e.g., parallel play and interactive play; Power, 2000). It has been challenging for researchers, however, to define causality in this relationship. As Power emphasized, intelligent children may do many things well, including playing.

## Caregiver-Child Interactions and Play Performance

Despite the difficulty in defining causality in independent play performance and development, researchers have been able to relate specific caregiver interactions during the context of caregiver-child interactive play to the children's performance in object play, pretend play, and later cognitive development. Research done in this area typically captures caregiver-child interactions and the child's play performance on video while the dyad plays in a laboratory or, sometimes, in the home (e.g., Bornstein & Tamis-LeMonda, 1997). Findings have indicated that home-reared children initiate or participate in play at more developmentally competent levels (e.g., symbolic play in contrast to object exploration) more frequently and for longer periods when interacting with a caregiver than when playing by themselves (Belsky, Goode, & Most, 1980; Bornstein, Haynes, O'Reilly, & Painter, 1996; Bornstein, Haynes, Pascual, Painter, & Galperin, 1999; Doctoroff, 1996; Fiese, 1990; Lawson, Parrinello, & Ruff, 1992; Slade, 1987; Vibbert & Bornstein, 1989). These findings also were true for children with developmental delays or at risk for developmental delays (e.g., Landry & Chapieski, 1989).

Although children's play skills and engagement improved when in collaborative play with a caregiver, the

literature indicates that certain qualities of caregiver interactions may play a large role in the child's performance. Various styles of caregiver interactions (e.g., responsive, directive) have been found to influence the types of play in which a child engages. Moreover, caregiver interaction styles may differ according to the child's level of development or risk for developmental delays. For example, Fiese (1990) found a positive relationship between exploratory play and the mother's questioning and intrusion, but the same qualities were negatively correlated with symbolic play. Other researchers have found that caregivers of children with delays or at risk for delays may compensate for their child's challenges by providing more assistance or different qualities of interactions than caregivers of typically developing children (Hanzlik, 1990; Kadlec et al., 2005).

Some of the caregiver qualities on which researchers in this area have typically focused include directiveness, intrusiveness, responsiveness, and sensitivity (Bornstein & Tamis-LeMonda, 1997; Fenson & Ramsay, 1981; Fiese, 1990; Henderson, 1984; Henderson & Moore, 1980; Hill & McCune-Nicolich, 1981; Kindermann, 1993; Sorce & Emde, 1981; Tamis-LeMonda & Bornstein, 1991). Several studies have emphasized a caregiver's emotional support when facilitating activities such as play. For example, higher levels of play in 2-year-olds with Down syndrome were associated with mothers who exhibited more sensitivity ( $r = .75$ ) and more stimulation and higher mutuality (Crawley & Spiker, 1983). Lawson et al. (1992) also found that infant attention during interactive play was related to the mothers' responsiveness but not to intrusiveness or pleasure expressed during the interaction. Bornstein and Tamis-LeMonda found through home observations that maternal responsiveness during mother-infant interactions when the infants were 5 months old could predict both attention and level of symbolic play at 13 months.

Unlike responsiveness and sensitivity, the role of directiveness has been less clear in the literature. In some studies, directiveness has been viewed as an insensitive caregiver quality (e.g., Fiese, 1990). Other studies have found strong associations between directiveness and higher-level play skills or child engagement in daily tasks (Kadlec et al., 2005; Lawson et al., 1992). Caregivers may use directiveness when a child is less competent, uninterested in an activity, or at risk for developmental delays (Crawley & Spiker, 1983; Hanzlik, 1990; Hanzlik & Stevenson, 1986; Henderson, 1984; Huang & Oi, 2001; Kadlec et al., 2005; Landry, Smith, Swank, & Miller-Loncar, 2000). For example, Crawley and Spiker found that caregiver directiveness was related to patterns of caregiver sensitivity in mothers of toddlers with Down syndrome. However, researchers are only beginning to study and understand how different dis-

abilities and behavioral phenotypes in children affect caregiver-child interactions (Biringen, Fidler, Barrett, & Kubicek, 2005). Further knowledge through behavioral observation is needed to provide an understanding of how practitioners can best support caregivers of children with developmental delays.

## Purpose

A paucity of research specifically examines caregiver-child interactions in the context of daily life in institutional settings. Children residing in institutions are likely to be both developmentally delayed and at risk for impaired social relationships in daily occupations such as play (Maclean, 2003). Evidence indicates that interactions between caregivers and their children (whether typically developing or developmentally delayed) can support participation in play activities for home-reared children (e.g., Doctoroff, 1996). It is not known, however, whether the same mechanisms support or constrain children's play participation when the child and caregiver interact in an institutional setting. It is critical to observe these interactions in everyday tasks to understand how they affect child and caregiver responses and to develop evidence-based interventions to best facilitate children's participation and development. We therefore asked two questions:

1. Will institutionalized children demonstrate more developmentally competent play when interacting with a caregiver than when playing alone?
2. What are the qualities of interactions between the caregivers and institutionalized children associated with the children's most developmentally competent level of play?

## Method

This investigation used a relational and repeat-measure design. Video footage of 26 children playing alone (independent) and then with a caregiver (interactive) was coded for developmental levels of play. An expert panel of judges then viewed videotaped clips of the interactive sessions to rate caregiver and child qualities.

### Participants

*Children.* Twenty-six children ages 10 to 38 months residing in a Romanian orphanage participated (see Table 1). To be eligible for the study, a child must have been institutionalized for a minimum of 1 month, must have had no major diagnosable conditions such as sensory deficits (e.g., blindness or deafness) or physical disabilities (e.g., cerebral palsy), and must not have been under consideration for a

**Table 1. Child Participant Characteristics**

Characteristic	<i>M</i>	<i>SD</i>	Range
Age (months)	20.30	8.46	9.80–38.29
Months in orphanage	14.61	10.47	1.00–35.30
Developmental age <sup>a</sup>	9.00	4.44	5.00–20.00
Development quotient <sup>a</sup>	45.26	13.28	20.82–71.72
Raw score <sup>a</sup>	75.46	18.11	55.00–120.00

Note. *N* = 26 (15 boys, 11 girls).

<sup>a</sup>Scores on the second edition of the Bayley Scales of Infant Development (Bayley, 1993).

diagnosis of autism. To participate in the study, each child had to pass the “sits steadily for 30 s while playing with a toy” item from the second edition of the Bayley Scales of Infant Development (BSID–II; Bayley, 1993). All children who met the criteria were tested. Of the 31 children who met the inclusion criteria, 26 completed the entire protocol. Three were unable to complete testing: One showed extreme fear responses, one became ill, and one was excluded from the sample because of suspected hearing loss.

**Caregivers.** All orphanage caregivers who had worked for at least 1 month with the child study participants were invited to participate. Eleven caregivers (1 man, 10 women) consented to be in the study and were videotaped during interactive play sessions with a child. The caregivers ranged in age from 25 to 46 (*M* = 33.00). All caregivers had worked in their current positions a minimum of 2 years and

had the equivalent of a high school degree (one had a college degree). The caregiver-to-child ratio varied given the time of day and ever-changing orphanage census, but usually at least one caregiver was available for each group of 8 to 10 children; during many mornings, the ratio was one to six or fewer children.

**Judges.** Twelve pediatric professionals (9 occupational therapists, 3 early childhood educators) volunteered to judge the videotape clips. Their pediatric experience ranged from 4 to 25 years (*M* = 12.75), and their age ranged from 28 to 55 (*M* = 42.33).

### Materials and Instruments

**Play Materials.** Two toy sets were used. The first consisted of exploratory toys novel to the children in their specific details but comparable to toys that had been donated to the institution over the previous years (e.g., a squeaky animal, a tambourine, a stacking busy tower, a spoon from the children’s daily utensils). The second set consisted of symbolic toys to provide ample opportunity to elicit the children’s optimal symbolic play skills (e.g., baby doll with cap, bottle, mugs and bowls, train cars). The toys were purposely chosen to reflect objects typical of life in and around the orphanage.

**Instrument.** The judges used the Caregiver–Child Interaction Rating Scale (CIRS), which was developed for this

**Table 2. Caregiver Interaction Rating Scale (CIRS): Items, Judges’ Reliability, and Factor Loadings**

Domain	Judges’ Effective Reliability <sup>a</sup>	Factor Loading <sup>b</sup>	Composite (Factor)	Combined Judges’ Effective Reliability Composite
Pair qualities				
In sync	.94	NA	NA	NA
Mutually engaged	.92	NA	NA	NA
Caregiver qualities				
Encouraging	.92	.83	Social–emotional support	.95
Not anxious	.87	.66		
Playful	.93	.89		
Responsive	.91	.94		
Warm	.94	.81		
Assists	.68	.92	Task support	.87
Directive	.83	.78		
Structures	.67	.87		
Child qualities				
Engaged	.93	.82	Successfully engaged	.98
Frustrated	.87	–.79		
Interested	.92	.85		
Not anxious	.79	.69		
Persistent	.91	.95		
Self-directed	.89	.71		
Successful	.95	.91		
Happy	.95	.93	Playfulness	.97
Playful	.94	.81		
Responsive	.93	.81	Responsiveness	.94
Seeks help	.82	.89		

Note. NA = not applicable.

<sup>a</sup>Intraclass correlations.

<sup>b</sup>The factor loading is the correlation between each variable of the CIRS (e.g., Encouraging) and the factor (e.g., Social–Emotional Support).

study, to rate video clips of the interactive sessions (see Table 2). Using a 7-point Likert scale, judges rated items relevant to understanding caregiver–child interactions that could be quickly observed. The CIRS has three domains—Pair Qualities, Caregiver Qualities, and Child Qualities. Twenty-one items were selected based on a review of literature on child–caregiver interaction in play (Belsky et al., 1980; Bornstein & Tamis-LeMonda, 1997; Bornstein et al., 1996; Doctoroff, 1996; Fiese, 1990; Lawson et al., 1992; Ray, 2000; Slade, 1987; Vibbert & Bornstein, 1989), studies of child–therapist interaction in sensory integration intervention (Coster, Tickle-Degnen, & Armenta, 1995; Dunkerley, Tickle-Degnen, & Coster, 1997; Tickle-Degnen & Coster, 1995), and the primary investigator’s clinical experience working with children residing in institutions.

### Procedure

Informed consent was obtained, and all participants were treated in accordance with the ethical standards of the American Psychological Association (2001). Each child par-

ticipated in two 6-min independent play sessions: one with the exploratory toys and one with the symbolic toys. After the independent play was completed, each child participated in an additional 6-min interactive session with a known caregiver. The caregivers were instructed to play with the child as they normally would. To promote the use of both social–emotional and task support, the caregivers were told to choose toys from one or both of the two toy sets that they thought would be appropriate for the child. They also were instructed to use their knowledge of the child to arrange the toys to best suit the child’s needs (e.g., to present them singly, while others were out of sight, or to present them together).

### Coding and Analysis

*Play Session Coding.* Play performance levels were assigned using a mutually exclusive 13-level Developmental Play Scale (DPS) constructed for this study (e.g., Nicolich, 1977; see Table 3 for scale and literature citations). Play performance on the DPS ranges from simple exploratory play

**Table 3. Developmental Play Scale (DPS)**

Behavior	Definition	Studies Using Comparable Definitions and Levels
1. Mouthing	Places or holds object (e.g., block) in mouth	Belsky & Most (1981), Caruso (1993), Fenson, Kagan, Kearsely, & Zelazo (1976), Knox & Mailloux (1997)
2. Simple manipulation	Guides manipulation visually (no indiscriminate banging); must last minimum of 5 s and cannot be coded in other categories (e.g., poke doll, jab, squeeze, shake)	Belsky & Most (1981), Caruso (1993), Fenson et al. (1976), Knox & Mailloux (1997)
3. Functional	Uses unique visually guided manipulation appropriate to an object (e.g., twists knob)	Belsky & Most (1981), Bornstein, Haynes, O’Reilly, & Painter (1996), Knox & Mailloux (1997), Tamis-LeMonda & Bornstein (1991)
4. Relational	Puts two objects together inappropriately (e.g., uses plastic hammer to pound glass door)	Belsky & Most (1981), Knox & Mailloux (1997), Bornstein et al. (1996), Tamis-LeMonda & Bornstein (1991)
5. Functional/relational	Puts two objects together appropriately (e.g., drops ball in ball drop)	Belsky & Most (1981), Knox & Mailloux (1997), Bornstein et al. (1996), Tamis-LeMonda & Bornstein (1991)
6. Enactive naming (presymbolic)	Approximates a pretend activity (e.g., tries to brush own hair with doll brush)	Belsky & Most (1981), Bornstein et al. (1996), McCune (1995), Nicolich (1977), Tamis-LeMonda & Bornstein (1991)
7. Pretend self (presymbolic)	Engages in pretend play involving self (e.g., feeds self a doll bottle)	Belsky & Most (1981), Bornstein et al. (1996), Knox & Mailloux (1997), McCune (1995), Nicolich (1977), Tamis-LeMonda & Bornstein (1991)
8. Pretend other (first symbolic stage)	Engages in pretend play not involving self (e.g., feeds doll with doll bottle)	Belsky & Most (1981), Bornstein et al. (1996), Knox & Mailloux (1997), McCune (1995), Nicolich (1977), Tamis-LeMonda & Bornstein (1991)
9. Sequence pretend	Varies a pretend act in a minor way (e.g., pretends to eat play food and share some with a playmate) or engages in several schemes related to one another (e.g., hugs doll, feeds it, puts it down for a nap)	Belsky & Most (1981), Bornstein et al. (1996), Knox & Mailloux (1997), McCune (1995), Nicolich (1977), Tamis-LeMonda & Bornstein (1991)
10. Substitution	Uses object for something other than its overt purpose (e.g., uses a pen as a doll bottle)	Belsky & Most (1981), McCune (1995), Nicolich (1977)
11. Sequence pretend substitution	Uses object for something other than its overt purpose by substituting the object for another (e.g., puts self in hammock to take a rocket trip)	Belsky & Most (1981), Bornstein et al. (1996), McCune (1995); Nicolich (1977), Tamis-LeMonda & Bornstein (1991)
12. Sequence pretend double substitution	Uses two objects for something other than their overt purpose by substituting them for others (e.g., uses hammock as a rocket and peg as a picnic lunch for the adventure)	Belsky & Most (1981), McCune (1995), Nicolich (1977)
13. Planned symbolic sequence	Indicates a plan through verbal or nonverbal communication (e.g., says “let’s take a trip” and pretends to pack)	McCune (1995), Nicolich (1977)

(e.g., Level 1, mouthing) to sophisticated pretend play (e.g., Level 13, planned symbolic sequence).

A research assistant naïve to the study purpose recorded the most developmentally competent level of play performance observed in each 10-s interval of the videotaped play sessions. To assess reliability, the primary investigator coded 30% of the video sessions. Weighted kappa analyses were used to account for agreement by chance and for the distance between raters' scores (e.g., scores of 2 and 3 would be considered closer and more reliable than scores of 1 and 10).

*Play Data Analysis.* The values of the most developmentally competent (highest) play level achieved in each of the thirty-six 10-s segments were added to obtain exploratory and symbolic scores for the independent sessions. These scores were then averaged to derive a total independent play score for each participant. The final score for the interactive session was obtained by adding the value of the most developmentally competent (highest) play level achieved in each of the thirty-six 10-s segments of the interactive session.

*Judges' Ratings of Caregiver–Child Qualities.* One-minute clips featuring the children's most developmentally competent (highest) coded level of play from the interactive session were combined in random order on a master tape. The duration of the clips was based on Ambady and Rosenthal's (1992) meta-analytic findings that "thin slices" of behavior (30 s to 5 min) capture information just as reliably as longer clips. Using the CIRS, the judges were instructed to rate these 1-min clips from each dyad immediately after viewing them using their "gut reactions." Judgment studies traditionally have been used in the social sciences because they elicit reliable judgments of the qualities of human behaviors often lost in traditional behavioral coding (Ambady & Rosenthal, 1992).

*Analysis of Judges' Ratings of Caregiver–Child Qualities.* Reliability was calculated for the judges' ratings of the CIRS variables and the resulting composite variables using intra-class correlations (ICCs; Shrout & Fleiss, 1979). The ICCs were a measure of the effective reliability for 12 judges rather than that for a single judge. An average of the judges' ratings, effective reliability, is stronger than a single judge's rating because random errors from individual judges cancel each other (Rosenthal, 1987). A reliability coefficient of .70 was the criterion for determining whether a variable demonstrated adequate reliability.

Factor analyses were performed separately on the caregiver and child variables of the CIRS to determine whether composite variables (factors) could be formed to reduce the number of variables analyzed. First, principal component analyses, along with examination of eigenvalues, scree plots, and correlational analyses, were used to determine the number of factors. Then the factors were rotated with uncorre-

lated (orthogonal) solutions using the most common method, Varimax.

## Results

### Reliability

The average interrater reliability for coding the children's play performance with the DPS for both the independent and interaction play sessions was strong using the weighted kappa statistic ( $M = .82$ ). The breakdown of the interrater reliability for the play sessions—*independent exploratory, independent symbolic, and interactive*—also was strong ( $M = .96, .74, \text{ and } .80$ , respectively). A kappa of .60 or above is considered substantial interrater agreement, and .40 to .60 is considered moderate agreement (Portney & Watkins, 2000).

The effective reliability coefficients of the judges' ratings of caregiver qualities (CIRS) averaged .84 (.67–.94). Two categories, Assistance and Structures, fell just below the .70 criterion (.68 and .67, respectively). These two variables were kept for two reasons: (a) they were in close proximity to the criterion, and (b) when these two variables were combined into a composite with another variable in the factor analysis, the total effective reliability for that composite was acceptable. The reliability coefficients of the child qualities averaged .90 (.79–.95), and the pair qualities averaged .93 (.92–.94). The effective reliabilities for all caregiver and child composite variables were acceptable (.87–.98; see Table 2).

### Findings for Question 1

Question 1 was, Will institutionalized children demonstrate more developmentally competent play when interacting with a caregiver than when playing alone? The children demonstrated significantly more competent play when interacting with a caregiver ( $M = 131.27, SD = 51.39$ ) than when playing independently ( $M = 109.58, SD = 40.74$ );  $t(25) = -1.88, p \leq .04$ , one-tailed. The effect size of the difference was moderate ( $d = .53$ ), indicating that average play with a caregiver was 0.5 standard deviation units greater than average independent play.

Post hoc analyses examining factors related to changes in play indicated that longer periods of institutionalization were associated with less improvement in play performance from the independent to interactive play sessions ( $r = -.51, p \leq .01$ ). A small, nonsignificant relationship was found between the children's ability to improve play performance from the independent to interactive condition and their general cognitive status as measured by the BSID-II ( $r = -.11, ns$ ). Finally, small to moderate correlations between

between the two conditions and the caregiver qualities Structures and Directive were found ( $r = .31$  and  $.26$ ,  $p \leq .05$ , respectively).

### Findings for Question 2

Question 2 was, What are the qualities of interactions between the caregivers and institutionalized children associated with the child's most developmentally competent level of play? Several strong relationships emerged from the judges' ratings of caregiver and child qualities using the CIRS (see Table 4). The caregiver quality Not Anxious was positively correlated with the child quality Not Anxious and negatively correlated with the child quality Frustrated ( $r = .80$  and  $-.82$ , respectively). The child quality Successful was judged to be positively correlated (a) to the caregiver qualities Assists, Directs, and Structures ( $r = .75$ ,  $.75$ , and  $.82$ , respectively) and (b) to the caregiver qualities Encouraging and Warm ( $r = .64$  and  $.55$ , respectively).

On the basis of the principal component analyses, two caregiver composites (factors) and three child composites (factors) were created. The two caregiver composites were Social–Emotional Support (created by averaging the ratings of the caregiver qualities Encouraging, Not Anxious, Playful, Responsive, and Warm; average intercorrelation of individual items  $r = .83$ ) and Task Support (created by averaging the ratings of Assists, Directive, and Structures; average intercorrelation of individual items  $r = .86$ ; see Table 2). The Social–Emotional Support composite accounted for 67.3% of the variance of the caregiver items, and the Task Support composite accounted for 14.0% of the item variance.

The three child composites were Successfully Engaged (created by averaging the items Engaged, Frustrated, Interested, Not Anxious, Persistent, Self-Directed, and Successful; average intercorrelation of individual items  $r = .82$ ); Playfulness (created by averaging the items of Happy and

Playful; average intercorrelation of individual items  $r = .87$ ); and Responsiveness (created by averaging the items Responsive and Seeks Help; average intercorrelation of individual items  $r = .85$ ; see Table 2). The composites Successfully Engaged, Playfulness, and Responsiveness accounted for 45.5%, 24.0%, and 10.4% of the variance, respectively.

We examined the relationship between the caregiver composites (Social–Emotional Support and Task Support) and child composites (Successfully Engaged, Playfulness, and Responsiveness) to the pair qualities Mutually Engaged and In Sync (see Table 5). Task Support from the caregiver and Mutually Engaged from the pair qualities highly correlated with the children being Successfully Engaged ( $r = .80$  and  $.73$ , respectively). Finally, the pair qualities Mutually Engaged and In Sync were correlated ( $r = .61$ ).

## Discussion

This study investigated whether children institutionalized in an orphanage would engage in more developmentally competent play with their caregivers as opposed to playing alone and whether specific qualities of caregiver–child interactions were associated with more developmentally competent play.

### Caregiver Interaction and Developmentally Competent Play

Like home-reared children (e.g., Belsky et al., 1980; Doctoroff, 1996; Fiese, 1990; Slade, 1987), these institutionalized children demonstrated significantly more developmentally competent play when interacting with caregivers than when playing alone. The medium effect size ( $d = .53$ ) is important to consider; conceptually, the medium effect size indicates that the difference in play skills between the independent and interactive sessions would be easily observable in a clinical setting (Portney & Watkins, 2000).

**Table 4. Caregiver–Child Interaction: Correlations Between Child and Caregiver Qualities**

Child Qualities	Caregiver Qualities							
	Assists	Directive	Encouraging	Not Anxious	Playful	Responsive	Structures	Warm
Engaged	.53	.80**	.62*	.38	.40	.48	.65	.46
Frustrated	-.59*	-.69*	-.80**	-.82*	-.51	-.62*	-.64*	-.59*
Happy	-.20	-.32	-.15	.02	.22	-.06	-.01	.19
Interested	.64*	.60*	.41	.27	.16	.18	.66*	.30
Not anxious	-.28	.34	.51	.80	.36	.42	.43	.27
Persistent	.70*	.75**	.55	.51	.30	.40	.76**	.35
Playful	-.26	-.24	-.33	-.03	.07	-.14	.10	.04
Responsive	.05	.27	.41	.34	.69*	.60*	.46	.53
Seeks help	.17	.18	.28	.12	.73**	.60*	.33	-.05
Self-directed	.47	.62*	.03	.08	-.02	-.08	.52	-.05
Successful	.75**	.75**	.64*	.54	.48	.46	.82**	.55

Note.  $N = 26$ .

\* $p \leq .05$ . \*\* $p \leq .01$ .

**Table 5. Caregiver–Child Interaction: Correlations Between Child Quality Composites and Caregiver Quality Composites and Between Child Quality Composites and Pair Qualities**

Quality	Child Quality Composites		
	Successfully Engaged <sup>a</sup>	Playfulness <sup>b</sup>	Responsiveness <sup>c</sup>
<b>Caregiver Quality Composites</b>			
Social–Emotional Support <sup>d</sup>	.51	–.05	.61*
Task Support <sup>e</sup>	.80**	–.14	.30
<b>Pair Qualities</b>			
Mutually Engaged	.73**	–.00	.16
In Sync	.52	.00	.63*

Note.  $N = 26$ .

\* $p \leq .05$ . \*\* $p \leq .01$ .

<sup>a</sup>A composite of the child qualities Persistent, Successful, Interested, Engaged, Frustrated, Not Anxious, and Self-Directed.

<sup>b</sup>A composite of the child qualities Happy and Playful.

<sup>c</sup>A composite of the child qualities Seeks Help and Responsive.

<sup>d</sup>A composite of the caregiver qualities Encouraging, Not Anxious, Playful, Responsive, and Warm.

<sup>e</sup>A composite of the caregiver qualities Assists, Directive, and Structures.

The change in play competence occurred despite the fact that children and caregivers interacting in an orphanage are vulnerable to many challenges not typical of an exclusive parent–child relationship. Caregivers may work unpredictable shifts and have many children’s needs to meet in addition to other duties, such as cleaning. Consequently, they do not have the same opportunities as parents to learn how to read a child’s cues to facilitate attention and engagement. Children institutionalized in orphanages usually do not have consistent care and attention from a single person; therefore, their behaviors and social bids may elicit different reactions depending on who is caring for them at a particular time. In addition, these children typically have developmental delays. Our findings supported Rogoff’s (1990) theory that more skilled members of a culture (e.g., an older child or a high school–age caregiver), not necessarily just educated parents or specialists, can facilitate learning and development for children.

### *Caregiver Warmth and Direction and Developmentally Competent Play*

Caregiver–child interaction is a dynamic process, with both caregiver and child contributing specific qualities. In this investigation, strong patterns emerged. The caregivers were judged to provide social–emotional support with task support. The composite patterns of Social–Emotional Support and Task Support correspond with the literature on caregiver–child and therapist–child interactions during play and playful activities (Coster et al., 1995; Dunkerley et al., 1997; Ray, 2000). The caregiver variable Directive was moderately associated with the caregiver variables Respon-

sive and Warm. In addition, Directive was strongly associated with the child variables Engaged and Successful. This study highlighted that caregiver directiveness, when combined with caregiver social–emotional support, was associated with more successful participation for the child.

The findings regarding Directive correspond to the current conceptualization of directiveness in the literature (Kadlec et al., 2005; Lawson et al., 1992; Pine, 1992). Although once presented as a negative quality, directiveness has been found in some research to be associated with positive traits, such as sensitivity (Crawley & Spiker, 1983; Landry et al., 2000). Kadlec et al. found that parent directiveness strongly and positively correlated with child engagement in daily activities with children born prematurely. However, this correlation was strong and negative with caregivers who interacted with their children born full term (Kadlec et al., 2005). Caregivers may use more direction to support children who have or are at risk for developmental delays and less direction for typically developing children. In this investigation, the quality Directive may have reflected (a) the caregivers’ attempt to engage the children in the study group who had developmental delays, as reflected in their low BSID–II performance, (b) cultural values regarding child rearing in Romania, or (c) the caregiving time constraints endemic to institutional settings.

The patterns of correlations of caregiver and child qualities also highlighted the interdependent nature of the caregiver–child relationships. The children’s success was strongly associated with the pairs’ mutual engagement. The pair quality Mutually Engaged correlated with the caregiver qualities Structures, Assists, Directive, and Warm. For the child, it correlated with the child qualities Successful, Persistent, and Engaged.

Playfulness in the child was not related to any caregiver or pair qualities. This finding may indicate that Playfulness as rated by judges may be separate from the task of play with one’s caregiver. Rogoff et al. (1993) emphasized that developmental goals and the way in which they are achieved are culturally specific. Although the patterns of correlations of caregiver qualities and caregiver–child interactions generally correspond with Western literature, the lack of a relationship between Playfulness in the child composites to any other composites may reflect cultural norms or the experience of growing up in an orphanage.

### **Implications for Practice and Research**

Pediatric practitioners need evidence-based interventions to help caregivers facilitate their children’s participation in daily life and to promote optimal development. This investigation did not evaluate the long-term implications of

having children reach beyond their independent skill level during one play session or the qualities of caregiver interaction required for long-term change. However, the large association in this investigation between caregivers' interactions and children's successful engagement and the small association between the children's cognitive status on the BSID-II and their change in play competence from the independent to the interactive play session have potential clinical significance. This study suggests that it may be important to methodically address caregiver-child interactions in addition to child remediation during intervention to improve developmental outcomes.

Unfortunately, children with developmental challenges residing in adverse early environments are not found solely in institutions in far-flung locations around the globe. In the United States, approximately 1 million children, or 12.3 of 1,000, experience child abuse or neglect annually (National Child Abuse & Neglect Data System [NCANDS], 2002). Like children residing in orphanages, most children placed in foster care are developmentally delayed or at risk for developmental delays in cognition, language, social-emotional skills, and behavior and experience an increased incidence of psychopathology and high school dropout (NCANDS, 2002). Children in foster care also may experience several caregivers through multiple placements (Jonson-Reid & Barth, 2000). Occupational and physical therapists are often involved with children in the foster care system given the high prevalence of developmental delays and poor medical status of this population. For example, in Washington State, 13% of children in foster care participated in supportive services such as occupational and physical therapy (Takayama, Bergman, & Connell, 1994).

In this investigation of children living in a deprived social environment, the caregiver composite Social-Emotional Support accounted for more variance than Task Support when caregivers were observed with the children. It is possible that different populations may benefit differentially from a caregiver's emotional availability and social support in contrast to cognitive or organizational structure for task support. As Biringen et al. (2005) advocated, "Children with disabilities should not be viewed as one homogeneous group" (p. 373). For example, researchers examining parent-reported stress and coping in parenting children with specific developmental disabilities (e.g., Down syndrome, Smith-Magenis syndrome) have found differing levels of parental stress related to raising such children (Fidler, Hodapp, & Dykens, 2000). Recent advances in observational technology have only begun to be used in examining children's specific disabilities and their responses to their caregivers' or therapists' support. For example, Siller and Sigman (2002) found that caregivers of children with

autism who demonstrated higher levels of synchronicity with their children during play interactions had children who developed significantly better joint attention and language over a period of 1, 10, and even 16 years. A small but growing body of evidence conducted in related disciplines indicates that caregiver training plus regular engagement in occupations such as play promotes more optimal developmental outcomes in children with developmental disabilities and in institutionalized children (Groark, Muhamedrahimov, Palmov, Nikiforova, & McCall, 2005; Sparling, Dragomir, Ramey, & Florescu, 2005; Webster-Stratton, Reid, & Hammond, 2001).

Occupational therapy practitioners have an ethical responsibility to provide effective, evidence-based interventions for clients, such as the children who participated in this study, who are unable to participate in daily occupations that promote health and well-being (Kronenberg & Pollard, 2005). However, more data are needed to understand how therapists can effectively train or convey information to caregivers. The education process and therapeutic activities to promote caregiver-child interactions and engagement are congruent intervention types from the occupational therapy practice framework (Barnekow & Kraemer, 2005).

## Limitations

A larger sample of children with less variability could provide more statistical power to help further understand the effects of caregiver interaction on play performance. The secondary analysis examining the relationship of the children's length of time in the institution illustrates the effects of variability (e.g., age and length of time institutionalized) in this investigation's modest-sized sample. The analysis indicated that longer periods of institutionalization were associated with less improvement in play performance from the independent to interactive play sessions ( $r = -.51$ ,  $p \leq .01$ ). Little relationship, however, was found between performance on the BSID-II and change in play performance from the independent to interactive sessions. Further investigation is needed to understand (a) how interactions may differ between shorter-institutionalized versus longer-institutionalized children and their caregivers and (b) how developmental delays in general, especially those occurring in adverse early environments, may relate to caregiver interactions.

Another study limitation is that the reliability for the caregiver qualities Assists and Structures bordered on acceptable when standing alone; however, when combined with Directive through the decision making guided by the principal components analysis, the category Task Support did have acceptable effective reliability from the judges.

Although previous evidence points to the reliability of thin-slice methodology to gauge human interactions (Ambady & Rosenthal, 1992), it is possible that emotions such as warmth are more reliably judged than task-related behaviors such as Assists and Structures.

## Conclusion

Children residing in an orphanage demonstrated more developmentally competent play participation when interacting with their caregivers than when playing alone, even though the interactions occurred in an environment susceptible to many challenges not typical of an exclusive caregiver-child relationship. Success for a child was associated with having a caregiver who provided more structure and assistance and who was directive, mutually engaged, and encouraging ( $r = .82, .75, .75, \text{ and } .64$ , respectively).

Occupational therapists support engagement in occupation in a variety of contexts and populations. Fortunately, conditions are significantly improving in Romania, where this study was conducted. Romania is now promoting foster care, group homes, and increased in-country adoptions (UNICEF, 2005). In addition, occupational therapists and other health and developmental specialists continue to provide humanitarian relief to this country through training and direct intervention. Unfortunately, conditions in many countries around the world, including the United States, where many children experience abuse and neglect, result in adverse early environments for children (Altman, 2002). Adverse early environments typically do not meet children's physical, emotional, and developmental stimulation needs. ▲

## Acknowledgments

We thank the children and caregivers who participated. This research was supported by grants from the American Occupational Therapy Foundation, the Dudley Allen Sargent Research Fund at Boston University, and Orphan Reach. The Maternal and Child Health Bureau (Grant No. MCH 901), Health Resources and Service Administration, U.S. Department of Health and Human Services, provided additional support. This study was completed in partial fulfillment of the first author's doctoral study requirements at Boston University, Sargent College of Health and Rehabilitation Sciences.

## References

Ainsworth, M. D. S. (1965). Further research into the adverse effects of maternal deprivation. In J. Bowlby (Ed.), *Childcare*

*and the growth of love* (2nd ed., pp. 191–251). Baltimore: Penguin.

Altman, L. K. (2002, July 11). By 2010 AIDS may leave 20 million orphans. *New York Times*, p. A10.

Ambady, N., & Rosenthal, R. (1992). Thin slices of expressive behavior as predictors of interpersonal consequences: A meta-analysis. *Psychological Bulletin*, *111*, 256–274.

American Psychological Association. (2001). Ethical standards for the reporting and publishing of scientific information. In *Publication Manual of the American Psychological Association* (5th ed., pp. 387–396). Washington, DC: Author.

Ames, E., Chisholm, K., Fisher, L., Morison, S. J., Thompson, S., Mainemer, H., et al. (1997). *The development of Romanian orphanage children adopted to Canada*. Burnaby, British Columbia: Simon Fraser University.

Anderson, R. (1997). The anthropological study of play. In B. E. Chandler (Ed.), *The essence of play: A child's occupation* (pp. 51–64). Bethesda, MD: American Occupational Therapy Association.

Barnekow, K. A., & Kraemer, G. W. (2005). The psychobiological theory of attachment: A viable frame of reference for early intervention providers. *Physical and Occupational Therapy in Pediatrics*, *25*, 3–15.

Bayley, N. (1993). *Bayley Scales of Infant Development second edition: Manual* (2nd ed.). San Antonio, TX: Psychological Corporation.

Belsky, J., Goode, M. K., & Most, R. K. (1980). Maternal stimulation and infant exploratory competence: Cross-sectional, correlational, and experimental analyses. *Child Development*, *51*, 1163–1178.

Belsky, J., & Most, R. K. (1981). From exploration to play: A cross-sectional study of infant free play behavior. *Developmental Psychology*, *17*, 630–639.

Biringen, Z., Fidler, D. J., Barrett, K. C., & Kubicek, L. (2005). Applying the Emotional Availability Scales to children with disabilities. *Infant Mental Health Journal*, *26*, 369–391.

Bornstein, M. H., Haynes, O. M., O'Reilly, A. W., & Painter, K. M. (1996). Independent and collaborative pretense play in early childhood: Sources of individual variation in the development of representational competence. *Child Development*, *67*, 2910–2929.

Bornstein, M. H., Haynes, O. M., Pascual, L., Painter, K. M., & Galperin, C. (1999). Play in two societies: Pervasiveness of process, specificity of structure. *Child Development*, *70*, 317–331.

Bornstein, M. H., & Tamis-LeMonda, C. S. (1997). Maternal responsiveness and infant mental abilities: Specific predictive relations. *Infant Behavior and Development*, *20*, 283–296.

Bowlby, J. (1953). *Childcare and the growth of love*. Baltimore: Penguin.

Caruso, D. A. (1993). Dimensions of quality in infants' exploratory behavior: Relationships to problem-solving ability. *Infant Behavior and Development*, *16*, 441–454.

Coster, W., Tickle-Degnen, L., & Armenta, L. (1995). Therapist-child interaction during sensory integration treatment: Development and testing of a research tool. *Occupational Therapy Journal of Research*, *15*, 17–35.

Crawley, S. B., & Spiker, D. (1983). Mother-child interactions involving two-year-olds with Down syndrome: A look at individual differences. *Child Development*, *54*, 1312–1323.

- Daunhauer, L. A., Bolton, A., & Cermak, S. A. (2005). Time-use patterns of young children institutionalized in Eastern Europe. *Occupational Therapy Journal of Research: Occupation, Participation, and Health*, 25, 33–40.
- Doctoroff, S. (1996). Parents' support of infants' object play: A review of the literature. *Infant-Toddler Intervention*, 6, 153–166.
- Dunkerley, E., Tickle-Degnen, L., & Coster, W. J. (1997). Therapist-child interaction in the middle minutes of sensory integration treatment. *American Journal of Occupational Therapy*, 51, 799–805.
- Fenson, L., Kagan, J., Kearsely, R. B., & Zelazo, P. R. (1976). The developmental progression of manipulative play in the first two years. *Child Development*, 47, 232–236.
- Fenson, L., & Ramsay, D. S. (1981). Effects of modeling action sequences on the play of twelve-, fifteen-, and nineteen-month-old children. *Child Development*, 52, 1028–1036.
- Fidler, D. J., Hodapp, R. M., & Dykens, E. M. (2000). Stress in families of young children with Down syndrome, Williams syndrome, and Smith-Magenis syndrome. *Early Education and Development*, 11, 395–406.
- Fiese, B. H. (1990). Playful relationships: A contextual analysis of mother-toddler interactions and symbolic play. *Child Development*, 61, 1648–1656.
- Fisher, E. P. (1992). The impact of play on development: A meta-analysis. *Play and Culture*, 5, 159–181.
- Groark, C. J., Muhamedrahimov, R. J., Palmov, O., Nikiforova, N., & McCall, R. B. (2005). Improvements in early care in Russian orphanages and their relationship to observed behaviors. *Infant Mental Health Journal*, 26, 96–109.
- Gunnar, M. R., Bruce, M., & Grotevant, H. D. (2000). International adoption of institutionally reared children: Research and policy. *Development and Psychopathology*, 12, 677–693.
- Hanzlik, J. R. (1990). Nonverbal interaction patterns of mothers and their infants with cerebral palsy. *Education and Training in Mental Retardation*, 25, 333–343.
- Hanzlik, J. R., & Stevenson, M. B. (1986). Interaction of mothers with their infants who are mentally retarded, retarded with cerebral palsy, or nonretarded. *American Journal of Mental Deficiency*, 90, 513–520.
- Henderson, B. (1984). Social support and exploration. *Child Development*, 55, 1246–1251.
- Henderson, B., & Moore, S. G. (1980). Children's responses to objects differing in novelty in relation to level of curiosity and adult behavior. *Child Development*, 51, 457–465.
- Hill, P. M., & McCune-Nicolich, L. (1981). Pretend play and patterns of cognition in Down's syndrome children. *Child Development*, 52, 611–617.
- Huang, S. F., & Oi, M. (2001). Maternal question-asking behavior to Taiwanese children with Down syndrome and with no disability. *Psychological Reports*, 88, 501–504.
- Jonson-Reid, M., & Barth, R. P. (2000). From placement to prison: The path to adolescent incarceration from child welfare supervised foster or group care. *Children and Youth Services Review*, 22, 493–516.
- Kadlec, M. B., Coster, W., & Tickle-Degnen, L. (2005). Qualities of caregiver-child interaction during daily activities of children born very low birth weight with and without white matter disorder. *American Journal of Occupational Therapy*, 59, 57–66.
- Kindermann, T. A. (1993). Fostering independence in mother-child interactions: Longitudinal changes in contingency patterns as children grow competent in developmental tasks. *International Journal of Behavioral Development*, 16, 513–535.
- Knox, S., & Mailloux, Z. (1997). Play as treatment and treatment through play. In B. E. Chandler (Ed.), *The essence of play: A child's occupation* (pp. 175–206). Bethesda, MD: American Occupational Therapy Association.
- Kronenberg, F., & Pollard, N. (2005). Introduction: A beginning. In F. Kronenberg, S. S. Algado, & N. Pollard (Eds.), *Occupational therapy without borders: Learning from the spirit of survivors* (pp. 1–13). Philadelphia: Elsevier.
- Landry, S. H., & Chapieski, M. L. (1989). Joint attention and infant toy exploration: Effects of Down syndrome and prematurity. *Child Development*, 60, 103–118.
- Landry, S. H., Smith, K. F., Swank, P. R., & Miller-Loncar, C. C. (2000). Early maternal and child influences on children's later independent cognitive and social functioning. *Child Development*, 71, 358–375.
- Lawson, K. R., Parrinello, R., & Ruff, H. A. (1992). Maternal behavior and infant attention. *Infant Behavior and Development*, 15, 209–229.
- Maclean, K. (2003). The impact of institutionalization on child development. *Development and Psychiatry*, 15, 853–884.
- McCune, L. (1995). A normative study of representational play at the transition to language. *Developmental Psychology*, 31, 198–206.
- National Child Abuse & Neglect Data System. (2002). *14th National Conference on Child Abuse and Neglect: Significant Effects of Maltreatment (Birth to Age 6) on Developmental Outcomes in Adolescence*. Retrieved September 29, 2004, from <http://nccanch.acf.hhs.gov/profess/conferences/cbconference/fourteenth/presentations/>
- Nicolich, L. M. (1977). Beyond sensorimotor intelligence: Assessment of symbolic maturity through analysis of pretend play. *Merrill-Palmer Quarterly*, 23, 90–99.
- O'Connor, T. G., Rutter, M., Beckett, C., Keaveney, L., Kreppner, J. M., & English-Romanian Adoptees Study Team. (2000). The effects of global severe privation on cognitive competence: Extension and longitudinal follow-up. *Child Development*, 71, 376–390.
- Piaget, J. (1951). *Play, dreams, and imitation in childhood*. London: Routledge & Kegan Paul.
- Pine, J. M. (1992). Maternal style at the early one-world stage: Re-evaluating the stereotype of the directive mother. *First Language*, 12, 169–186.
- Portney, L. G., & Watkins, M. P. (2000). *Foundations of clinical research: Applications to practice* (2nd ed.). Upper Saddle River, NJ: Prentice Hall Health.
- Power, T. G. (2000). *Play and exploration in children and animals*. Mahwah, NJ: Erlbaum.
- Ray, S. A. (2000). *Describing mother-toddler interactions in homeless families*. Unpublished doctoral dissertation, Boston University, Boston.
- Rogoff, B. (1990). *Apprenticeship in thinking*. New York: Oxford University Press.
- Rogoff, B., Mistry, J., Goncu, A., & Mosier, C. (1993). Guided participation in cultural activity by toddlers and caregivers.

- Monographs of the Society for Research in Child Development*, 58(8, Serial No. 236).
- Rosenthal, R. (1987). *Judgment studies: Design, analysis, and meta-analysis*. Cambridge, England: Cambridge University Press.
- Rutter, M., & English-Romanian Adoptees Study Team. (1998). Developmental catch-up and deficit following adoption after severe global early privation. *Journal of Child Psychology and Psychiatry*, 39, 465-476.
- Shrout, P. E., & Fleiss, J. L. (1979). Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin*, 86, 420-428.
- Siller, M., & Sigman, M. (2002). The behaviors of parents of children with autism predict the subsequent development of their children's communication. *Journal of Autism and Developmental Disorders*, 32, 77-89.
- Slade, A. (1987). A longitudinal study of maternal involvement and symbolic play during the toddler period. *Child Development*, 58, 367-375.
- Sorce, J. F., & Emde, R. N. (1981). Mother's presence is not enough: Effect of emotional availability on infant exploration. *Developmental Psychology*, 17, 737-745.
- Sparling, J., Dragomir, C., Ramey, S. L., & Florescu, L. (2005). An educational intervention improves developmental progress of young children in a Romanian orphanage. *Infant Mental Health Journal*, 26, 127-142.
- Takayama, J. I., Bergman, A. B., & Connell, F. A. (1994). Children in foster care in the state of Washington: Health care utilization and expenditures. *JAMA*, 271, 1850-1855.
- Tamis-LeMonda, C. S., & Bornstein, M. H. (1991). Individual variation, correspondence, stability, and change in mother and toddler play. *Infant Behavior and Development*, 14, 143-162.
- Tickle-Degnen, L., & Coster, W. (1995). Therapeutic interaction and the management of challenge during the beginning minutes of sensory integration treatment. *Occupational Therapy Journal of Research*, 15, 123-141.
- Tomasello, M., Kruger, A. C., & Ratner, H. H. (1993). Cultural learning. *Behavioral and Brain Sciences*, 16, 495-552.
- UNICEF. (2005). *Romania: Child and family welfare policies*. Retrieved October 10, 2005, from [www.unicef.org/romania/protection\\_1611.html](http://www.unicef.org/romania/protection_1611.html)
- Vibbert, M., & Bornstein, M. H. (1989). Specific associations between domains of mother-child interaction and toddler referential language and pretense play. *Infant Behavior and Development*, 12, 168-184.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Webster-Stratton, C., Reid, M. J., & Hammond, M. (2001). Preventing conduct problems, promoting social competence: A parent and teacher training partnership in Head Start. *Journal of Clinical Child Psychology*, 30, 283-302.
- Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem-solving. *Journal of Child Psychology and Psychiatry*, 17, 89-100.

## Confused by the current and upcoming changes to IDEA?

### The New IDEA An Occupational Therapy Toolkit (CD-ROM)

By Leslie Jackson, MEd, OT



This compilation, in a convenient electronic format, helps you sort out the IDEA, including explanations of the law, discussions of the regulations, and implications for occupational therapy practice, education, and research. Also offers official AOTA documents, Evidence Briefs, fact sheets, reimbursement FAQs, supplemental resources, government reports, and other must-have information.

Order #4810-J

\$49 AOTA Members

\$69 Nonmembers

**AOTA  
PRESS**  
The American  
Occupational Therapy  
Association, Inc.

Call **877-404-AOTA** • Shop online **www.aota.org** (Books & Products)