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Teaching Pretend Play to Children With Disabilities

A Review of the Literature

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The purpose of this study was to analyze literature regarding interventions for promoting pretend play in children with disabilities. Sixteen studies were found using experimental designs to evaluate pretend play interventions with children with disabilities. The results were analyzed across the targeted pretense behaviors, participants, materials, settings, interventions, levels of prompting, and rigor of the studies. Interventions were moderately effective, although methodological limitations affected experimental rigor, the types of conclusions that could be drawn, and evidence for practice. Implications for future research emerged and are described.

Keywords: *evidence-based practices; intervention strategies; play*

Teaching children to play is important because play (a) is flexible and can be used in multiple settings (Wolery & Bailey, 1989), (b) sets the occasion for having social and communicative interactions with peers (McConnell, 2002), (c) increases the likelihood of learning in natural and inclusive settings (Buysse, Wesley, Keyes, & Bailey, 1996; Lieber, 1993; Morrison, Sainato, Benchaaban, & Endo, 2002), and (d) may offer a foundation for developing leisure skills. Furthermore, play is a context in which intervention strategies for other goals (social, communicative, cognitive) are embedded (Wolery, 1994). Young children learn from their ongoing experiences with the world rather than from less contextually relevant experiences (Pretti-Frontzack & Bricker, 2004); as a result, play affords contextually relevant instructional opportunities for acquiring, maintaining, and generalizing other skills. Additionally, play is an activity that can have reinforcing properties for other skills (Morrison et al., 2002). Play, by definition, involves child choice and initiation; thus, opportunities to engage in preferred play behaviors might function as reinforcers for the behaviors preceding it.

Pretend Play

Play behaviors are often described as paralleling development in language and cognition because of simultaneous advances in complexity (Brown & Murray, 2001; Fein, 1981; Morelock, Brown, & Morrisey, 2003; Nicolich, 1977; Ogura, 1991), including the use of symbols (Ungerer & Sigman, 1981; Wing, Gould, Yeates, & Brierley, 1977). During play, children may engage in nonliteral behaviors (Fein, 1981) or alternate identities for objects, others, and self (Bruner, 1972). Children typically engage in pretend play behaviors at about 18 months of age (Brown & Murray, 2001; Fein, 1981; Morelock et al., 2003; Nicolich, 1977; Ogura, 1991). Pretend play is considered a marker for a child's ability to use symbols to represent objects and events (Piaget, 1962; Vygotsky, 1967) and may be an early area of cognitive competence (Rutherford & Rogers, 2003). For example, using pretense to perform a sequence of related actions appears to be a precursor for more advanced thinking and reasoning (Morelock et al., 2003).

In the prominent play taxonomies, pretend play emerges as a separate category or encompasses several categories (Piaget, 1952; Sherrat & Peter, 2002; Smilansky, 1968). However, the behaviors, the agents of those behaviors, and the materials vary across definitions. No precise behavioral definitions or methods for inferring pretense in children exist across play taxonomies. The definitions of pretense behaviors vary within the early childhood intervention literature. However, consistent characteristics include using a block as a cup, feeding a doll, and drinking from an empty

cup (e.g., Charman & Baron-Cohen, 1997; DiCarlo & Reid, 2004; Lifter, Ellis, Cannon, & Anderson, 2005). Furthermore, all require an inference to interpret the behavior as pretense.

Children with disabilities (in particular children with autism) engage in fewer play behaviors and display less variety in their play (Charman & Baron-Cohen, 1997; Jarrold, Boucher, & Smith, 1996; Sigman & Ungerer, 1984; Ungerer & Sigman, 1981). Pretend play and play with objects frequently represent one or two items on autism screening or diagnostic measures (e.g., the *Modified Checklist for Autism in Toddlers* [Robins, Fein, Barton, & Green, 2001], the *Autism Diagnostic Observations Schedule–Generic* [Lord, Rutter, & Dilavore, 1998]). Several curricula for children with disabilities included pretend play as a functional skill within the cognitive domain (e.g., Bricker & Waddell, 2002). Furthermore, curricular programs for children with autism include pretend play (McGee, Morrier, & Daly, 1999; Rogers & Lewis, 1989; Stahmer & Ingersoll, 2004; Strain & Cordisco, 1994). Pretend play is an important predictor of later social abilities in children with autism and other disabilities (Sigman & Ruskin, 1999). Consequently, pretend play behaviors are an important outcome for children with disabilities.

Pretend play is a functional goal because it provides children with skills to access their environment and engage with peers. Furthermore, the literature has addressed this issue; several intervention studies have demonstrated a functional relation between behavioral interventions and changes in play behaviors (Stahmer, Ingersoll, & Carter, 2003). However, the interventions target a variety of play behaviors (e.g., social interactions, imitation).

The purpose of this study was to review play studies systematically to identify effective strategies for teaching pretend play to preschoolers with disabilities for eventual translation into curricula. Evidence for practice is established when multiple rigorous replications find a relation between specific behaviors and an intervention (Dunst, Trivette, & Cutspec, 2002; Horner et al., 2005). In conducting this review, we noted inconsistencies in the naming, measuring, and operationalizing of pretend play. For example, Sherrat (2002) operationalized and measured three different pretense behaviors separately, whereas DiCarlo and Reid (2004) referred to these behaviors as "pretend play" and measured them in one category. The inconsistencies across studies are shown in Table 1. These inconsistencies make analyses across studies difficult.

A system for categorizing pretense behaviors across interventions reports was necessary to ascertain the evidence for practice in the pretend play literature for children with disabilities. The taxonomy was developed by operationalizing, synthesizing, and categorizing the target behaviors in the pretend play literature. The pretense taxonomy provided a mutually exclusive and exhaustive system for coding pretense behaviors and behaviors related to pretense (i.e., sequences and vocalizations) by precisely and consistently defining the dependent variables across this literature. The dependent variables, participants, measurement contexts, designs, independent variables, and rigor of methodology and analysis were examined to guide future research on pretend play and to generate recommended practices.

Method

The reports of studies of pretend play were identified through two searches; the second search was conducted after the first produced fewer reports than expected. The first search entailed five steps. First, the PsychINFO, Medline, PubMed, and ProQuest databases were searched using the terms *autism* and *pretend play*. Limits were set for peer-reviewed journal articles, those written in English, and those reporting studies involving human participants. Second, the same databases were searched using the terms *autism* and *play*. Third, ancestral searches were conducted using the identified reports. Fourth, recent reviews involving children with autism were examined (i.e., Brown & Murray, 2001; DiSalvo & Oswald, 2002; McConnell, 2002; Paul, 2003; Raab, 2003; Rettig, 1994; Rogers, 2000; Sherrat, 2002; Stahmer, 1995; Stahmer et al., 2003; Terpstra, Higgins, & Pierce, 2002; Weiss & Harris, 2001; Wolery & Garfinkle, 2002). Fifth, studies were selected if they (a) included pretend play in the purpose statements, (b) measured pretense (symbolic play or functional play with pretense) separately, (c) discussed the results in terms of changes or differences in pretense, (d) used experimental designs (single subject or group), and (e) included participants aged 10 years or less. Nineteen studies met these criteria.

The second search entailed four steps. First, the same databases were searched using the terms *handicapped children*, *children with disabilities*, *pretend play*, and *play*. Second, the same databases were searched using term *pretend play* without *autism*. Third, literature reviews focusing on play in children with disabilities were examined (i.e., Brown & Murray, 2001; Doctoroff,

Table 1
Inconsistencies in the Naming and Operationalizing of Pretend Play Across Intervention Studies

Study	Reported Name of Target Behavior	Examples[a]	Pretense Taxonomy Category
DiCarlo and Reid (2004)	Pretend toy play[b]	Child stirs a toy spoon in a bowl/child talks on a toy telephone	FPP
Doctoroff (1997)	Sociodramatic play[c]	Child holds ball to play carnival game	FPP ?AAA
Goldstein and Cisar (1992)	Sociodramatic play[c]	Child buys pretend tickets (slips of paper) for a magic show	FPP ?AAA
Goldstein et al. (1988)	Sociodramatic play[c]	Child prepares pretend hamburger or reads a pretend magazine	FPP ?AAA
Ingersoll et al. (2006)	Pretend play[d]	Child performs a distinct action with miniature objects; directs a pretend action toward self, adult, or inanimate object; uses object as if it were another object; attributes false properties to an object; refers to an absent object as if it were present	FPP ?AAA OS IAO AAA
Kasari et al. (2006)	Pretend self	Brings empty cup to mouth to drink	FPP
	Specific combinations	Stacks nesting cups	—
	Child as agent	Extends cup to dolls mouth	FPP
	Conventional attributes	Places cup on saucer	—
	Single-scheme sequences	Extends cup to doll and interactant	FPP
	Substitutions	Puts bowl on head for hat	OS
	Substitutions without object	Shakes imaginary salt shaker	IAO
	Doll as agent	Moves figure to load blocks onto truck	AAA
	Sociodramatic play	Plays house assigning various roles	AAA
Kim et al. (1989)	Presymbolic theme	Picks up phone and touches to ear then drops	?FPP
	Autosymbolic theme	Picks up broom and touches to floor then drops	?FPP
	Single/combined schemes	Pretends to drink from an empty cup/feeds doll then feeds self	FPP/sequences
	Agent play	Pretends doll is walking	AAA
	Agent play with substitutes	Uses rock as an iron	OS
	Role playing	Helps doctor doll use thermometer on a doll	AAA/FPP
Lifter et al. (1993)	Child as agent[e]	Child extends brush to doll's hair and brushes/child places doll in truck and pushes/child extends a cup to the doll's mouth	FPP
	Doll as agent[e]	Child holds doll upright and uses it to cause a car to move/child puts blocks in doll's hand and loads blocks into truck	FPP
Lifter et al. (2005)[e]	Pretend self[e]	Spoon to self/blanket to self	FPP
	Child as agent[e]	Food to doll/doll to bed/doll in car	FPP
	Specific conventional[e]	Puts food on plate/pours juice in cup/uses tools on car	?

(continued)

Table 1 (continued)

Study	Reported Name of Target Behavior	Examples[a]	Pretense Taxonomy Category
MacDonald et al. (2005)	Pretend play[c]	Doll walks to refrigerator; doll lays down in bed	? sequences
Neville and Bachor (2002)	Symbolic play, Level 4	Child feeds a doll, then combs hair	FPP/AAA?
	Symbolic play, Level 5	Child places food in doll hand, then moves to doll's mouth	OS
Sherrat (2002)	Substitution	Child uses a banana as a telephone	AAA
	Attribution	Child acts as if a dry table were wet	IAO
	Reappearance	Child spills imaginary cup of tea	?FPP
	Functional play	Appropriate use of any object	OS/IAO/AAA
Stahmer (1995)	Symbolic play	Using one object as if another/attributing false properties to an object/referring to absent objects as if they were present	FPP/—
Taylor and Iacono (2003)	Functional play	Using a spoon to feed a doll/placing a tea cup on a saucer	?FPP OS IAO AAA
	Symbolic play	Feeding a toy elephant/eating imaginary ice cream/using a block as a cake/playing firefighters	AAA OS IAO
Thorp et al. (1995)	Sociodramatic play	Child adopts the role of a father or fireman/uses a block as a telephone/opens a nonexistent door	FPP AAA IAO OS
Zercher et al. (2001)	Symbolic play	Child enacts everyday routines/animates figures/enacts roles/uses imaginary or substitute objects in play	

Note: Question marks indicate that the operationalization is ambiguous (e.g., are the objects real, miniature, or imaginary?). Dashes indicate that this might not be a pretense behavior. FPP = functional play with pretense; AAA = assigning absent attributes; OS = object substitution; IAO = imagining absent objects.

a. The examples represent examples provided for the target behaviors.

b. These behaviors were further operationalized as independent or spontaneous if occurring 5 or more seconds after a prompt.

c. These behaviors were further operationalized as targeted if targeted by the script or related if related to the play theme but not targeted by the script.

d. These behaviors were further operationalized as independent or spontaneous if occurring 30 or more seconds after a prompt.

e. These behaviors were further operationalized as independent or spontaneous if the child chose the toy without a teacher prompt.

Table 2
Pretend Play Taxonomy

Play Type and Subcategory	Definition
Functional play with pretense (FPP)	Nonliteral use of actual or miniature objects in the manner in which they were intended without the reality-based outcome
Substitution	
Object substitution (OS)	Use of one object as if it were a different object
Imagining absent objects (IOA)	Performing an action as if an object were present in the object's absence
Assigning absent attributes (AAA)	Assigning dramatic roles or emotions to the self, others, or inanimate objects
Sequences	
FPP	A series of at least two functional play with pretense actions related to same theme or routine
Substitution (OS/IOA/AAA)	A series of at least two substitution actions related to same theme or routine
Verbalizations	
Confirmatory vocalizations	Identifying specific roles children are acting out; assigning attributes to themselves; or planning, mapping, or confirming pretend play behaviors
Scripts	Verbalizations taught by the script (targeted behaviors)

1996; Fein, 1981; Johnson & Ershler, 1981; Mindes, 1982; Paul, 2003). Fourth, studies were selected if they met the same criteria as in the first search. Ten additional reports were identified, producing a total of 29 studies.

These 29 reports were reviewed to create a subset of intervention studies. Three criteria were used: (a) the authors evaluated an intervention, (b) purposeful manipulation of an intervention occurred to promote pretend play behaviors, and (c) the behaviors were measured at least before and after the intervention. This resulted in a subset of 16 such studies.

Results

The results are divided into two sections. The first describes the taxonomy (i.e., target pretense behaviors). The second section describes the participants, materials, designs, independent variables, results, and rigor of the studies.

Pretense Taxonomy

The pretense taxonomy, shown in Table 2, includes four categories and subcategories of pretense behaviors taught and measured in the identified reports. Functional play with pretense is listed first because it represents a category of behaviors often observed prior to symbolic play behaviors in children without disabilities. The first two categories represent the types of pretend play taught in the identified studies. The last two categories (sequences and vocalizations) were measured in several of the studies; thus, they may represent important corollary behaviors when teaching pretend play.

The first category in the pretense taxonomy is *functional play with pretense*. This category includes behaviors such as a child's putting an empty spoon or cup up to his or her own mouth (e.g., Lifter et al., 2005) or stirring a spoon in a bowl (e.g., DiCarlo & Reid, 2004). In these examples, using a spoon or cup does not result in nourishment, and no substances are mixed by the stirring: The reality-based outcomes did not occur. This category was created to account for ambiguity between pretend play and functional play across intervention studies. These behaviors are recognized as a form of play different from symbolic and functional play, yet they are not consistently classified. This distinction is also ambiguous in reports of studies of descriptive play. For instance, several authors have recognized that certain functional play acts rely on pretense or metarepresentation, similar to symbolic play behaviors (Williams, Reddy, & Costall, 2001). Williams et al. (2001) referred to this type of functional play as *elaborated functional play* (e.g., stirring a spoon in a cup, brushing a doll's hair). Rutherford and Rogers (2003) recognized this ambiguity and defined pretend play behaviors as any

functional play behavior which "might have demonstrated pretend play or was likely to involve pretend play" (p. 294). Jarrold et al. (1996) defined them as "behaviors which appeared imaginary, but could not be definitely placed in the [pretend play] category because of ambiguity in the child's actions, or through a lack of vocalization of intention" (p. 279). Thus, interpretations and analyses across studies were difficult without a precise definition of pretend play.

The second category in the taxonomy is *substitution*, which has three subcategories: (a) object substitution, (b) imagining absent objects, and (c) assigning attributes. Object substitution includes using one object as if it were another (Kasari, Freeman, & Parapella, 2006; Lifter et al., 2005), for example, using a block as a car, using a rod as a spoon to feed a doll, or using a block as a cup and taking a sip. Imagining absent objects includes behaviors performed as if an object were present in its absence (Sherrat, 2002; Stahmer, 1995), for example, bringing fingers to the lips as if using a spoon or to an ear as if answering a phone (Stahmer, 1995; Thorp, Stahmer, & Schreibman, 1995). Assigning absent attributes includes roles, states, or emotions and can be focused on the self, others, or inanimate objects. For example, a child may pretend to be a mother with a verbal confirmation, a child may give another child the role of mother, a child may indicate that a doll is a mother, or a child may touch the burner on a toy stove and then pull back his or her hand as though it had been burned. This category was consistently operationalized but not measured in all reports.

The third category is *sequences of pretend play behaviors*. These were measured and defined inconsistently. However, definitions included at least two related types of pretense behaviors. Reports did not consistently identify a time component (e.g., how much time could pass between related behaviors to be considered sequential). The authors of 2 of the 16 reports interpreted sequences as markers of play complexity or persistence.

The fourth category is *vocalization involving pretense*. This category is separated in this taxonomy because (a) some investigators measured vocalizations separately; (b) vocalizations do not require any props or motor movements, as do the other categories; and (c) such vocalizations serve the same function as other pretense behaviors (i.e., they are nonliteral and imply pretense). These vocalizations (a) identify a role a child is acting out (Goldstein & Cisar, 1992); (b) assign attributes to themselves (Taylor & Iacono, 2003; Thorp et al., 1995); or (c) plan, map, or confirm pretend play behaviors (Kasari et al., 2006).

Pretense Dependent Variables

The categories of pretense behaviors measured in the 16 studies are shown in Table 3. In 15 studies, functional play with pretense behaviors was taught. Functional play with pretense behaviors included (a) placing a doll into a small bed, (b) putting an empty cup up to a doll's mouth, and (c) putting a spoon up to a child's own mouth (DiCarlo & Reid, 2004; Ingersoll & Schreibman, 2006; Lifter et al., 2005). Across the studies, functional play with pretense behaviors often was related to feeding (i.e., self, a doll, a figure) or grooming. However, the specific actions were different across studies, such as placing food on a toy elephant's mouth, licking a representational ice cream cone (Taylor & Iacono, 2003), using a spoon to feed a doll, stirring a toy spoon in an empty toy bowl (DiCarlo & Reid, 2004), and bringing a miniature spoon to the mouth or a miniature brush to the hair (Lifter et al., 2005).

Object substitution behaviors were similarly operationalized across studies and typically included using a block or rod as a feeding utensil or vehicle (Stahmer, 1995; Thorp et al., 1995; Zercher, Hunt, Schuler, & Webster 2001). Likewise, assigning absent attributes was operationalized as taking on a nonliteral role (e.g., mother or doctor) or physical characteristic (e.g., the stove is hot, the dog is wet) across studies (Ingersoll & Shreibman, 2006; Taylor & Iacono, 2003). Imagining absent objects was described as, for example, eating imaginary ice cream or pantomiming (Stahmer, 1995; Taylor & Iacono, 2003). Two reports called this "make-believe transformations," which included object substitution, specifically, if a child substituted ambiguous or nonexistent objects for real objects (Stahmer, 1995; Thorp et al., 1995).

Sequences were inconsistently operationalized. All required at least two sequential behaviors of functional play with pretense or substitution (e.g., Kim, Lombardino, Rothman, & Vinson, 1989; Neville & Bachor, 2002). Stahmer (1995) measured a succession of three actions related to the same theme. Thorp et al. (1995) measured sequences of four related play behaviors. In several studies, sequences of pretense behaviors related to routines were measured (Kasari et al., 2006; Lifter, Sulzer-Azaroff, Anderson, & Cowdery, 1993; Neville & Bachor, 2002). Lifter et al. (1993) measured a sequence of more than one related functional play with pretense behavior based on feeding, cooking, grooming, or doctoring. Neville and Bachor (2002) measured a sequence of more than one related object substitution or functional play with pretense behavior based on cooking routines.

Table 3
Pretense Behaviors Measured as Dependent Variables in Each Study

Study	FPP	Substitution	Sequences	Vocalizations
DiCarlo and Reid (2004)	FPP[a]			
Doctoroff (1997)	FPP			S
Golstein and Cisar (1992)	FPP			S
Goldstein et al. (1988)	FPP			S
Ingersoll and Shreibman (2006)	FPP	OS IAO AAA		
Kasari et al. (2006)	FPP	OS IAO AAA	FPP/OS/IAO/AAA	CV
Kim et al. (1989)	FPP	OS IAO AAA	FPP/OS/IAO/AAA	MLU[b]
Lifter et al. (2005)	FPP[a]		FPP	
Lifter et al. (1993)	FPP[a]		FPP	
MacDonald (2005)	FPP	AAA		
Neville and Bachor (2002)	FPP	OS	FPP/OS/IAO/AAA	
Sherrat (2002)		OS[a] IAO[a] AAA[a]		
Stahmer (1995)	FPP	OS IAO AAA	OS/IAO/AAA	
Taylor and Iacono (2003)	FPP	OS IAO AAA		CV[a]
Thorp (1995)	FPP	OS IAO	FPP/OS/IAO/AAA	CV
Zercher et al. (2001)	FPP	OS		

Note: FPP = functional play with pretense; S = scripted utterance; OS = object substitution; IAO = imagining absent objects; AAA = assigning absent attributes; CV = confirmatory verbalization; MLU = mean length of utterances.
a. These behaviors were measured separately.
b. MLU was measured for each participant, but data were not reported.

Vocalizations were measured or included as target behaviors in six studies. Goldstein and Cisar (1992) and Goldstein, Wickstrom, Hoyson, Jamieson, and Odom (1988) embedded vocalizations into scripts as target behaviors and did not measure vocalizations separately. Taylor and Iacono (2003) included confirmatory vocalizations in their measure of pretend play behaviors as a marker of the nonliteral nature of the behavior (e.g., a child uses a different voice or mannerism to play a role). Taylor and Iacono defined vocalizations as recognizable words or signs and measured these behaviors separately from pretense behaviors. Kim et al. (1989) defined and measured the mean length of utterances during each play session, but they did not report the results.

Participants, Training Settings, and Materials

On the basis of the selection criteria for this review, the participants were young children with disabilities (n = 115); diagnoses, ages, and sample sizes are shown in Table 4. The youngest child was 26 months old (DiCarlo & Reid, 2004), and the oldest child was 10 years old (Kim et al., 1989). Few studies (4 of 16) focused on children younger than 4 years, which may be an appropriate age to begin targeting pretense in children with disabilities. The majority of the participants were male. Most studies were conducted in classrooms and implemented by research staff members; these are shown in Table 5. The types of materials used are shown in Table 6.

Measurement Context

Increases in pretense behaviors during and after an intervention are used to determine the efficacy of the intervention and should be measured separately from the intervention sessions. However, only three studies measured pretense in sessions without the intervention or prompts (Kasari et al., 2006; MacDonald, Clark, Garrigan, & Vangala 2005; Sherrat, 2002). This is an important distinction because including prompts in the measurement context may constitute a condition different from baseline or preintervention and influence interpretations of the results.

Seven of the 16 studies measured pretense behaviors directly in the intervention sessions, but attempted to measure unprompted behaviors. For instance, Lifter et al. (1993) and Lifter et al. (2005) defined unprompted pretense as a pretense behavior with a toy that a child independently touched. DiCarlo and Reid (2004) defined unprompted pretend play as occurring more than 5 seconds after a prompt. Ingersoll and Shreibman (2006) defined spontaneous pretend play behaviors as occurring

Table 4
Diagnoses and Ages of Participants by Study

Study	Total Sample Size	Autism	Developmental Delays	Down's Syndrome	Speech Language Delays	Chronological Age (months)
DiCarlo and Reid (2004)	3		3			26 to 30
Doctoroff (1997)	3		3			60
Goldstein and Cisar (1992)	3	3				36 to 60
Goldstein et al. (1988)	4				4	44 to 80
Ingersoll et al. (2006)	5	5				29 to 45
Kasari et al. (2006)	58	58				36 to 48
Kim et al. (1989)	8		8			65 to 120
Lifter et al. (2005)	3	3				48 to 60
Lifter et al. (1993)	3	3				48
MacDonald et al. (2005)	2	2				48, 84
Neville and Bachor (2002)	5		4	1		47 to 62
Sherrat (2002)	5	5				60 to 72
Stahmer (1995)	7	7				51 to 85
Taylor and Iacono (2003)	1		1			36
Thorp et al. (1995)	3	3				60, 108, 96
Zercher et al. (2001)	2	2				75
Total	115	91	19	1	4	

Note: Ages are reported as mean ages or age range for the children with disabilities.

Table 5
Training Settings and Interventionists Across Studies

Interventionist	Home	Classroom	Separate Room in School	Clinic
Teacher	Lifter et al. (2005)	Lifter et al. (1993) Stahmer (1995)[b] DiCarlo and Reid (2004) Goldstein and Cisar (1992) Goldstein et al. (1988)[a]	Goldstein et al. (1988)[a]	
Experimenter/Clinician		Sherrat (2002) Neville and Bachor (2002) MacDonald et al. (2005) Taylor and Iacono (2003) Zercher et al. (2001)	Kim et al. (1989) Doctoroff (1997)	Ingersoll et al. (2006) Kasari et al. (2006) Thorp et al. (1995)[b]

a. These studies implemented the intervention in two different settings.
b. These studies measured the generalization of pretense across settings (e.g., home) and adults (e.g., mother, father), but the intervention was implemented in the settings indicated above.

more than 30 seconds after a model. Nine studies measured pretense in separate sessions; however, 6 may have included prompts in those separate sessions. For instance, in Stahmer's (1995) and Thorp et al.'s (1995) studies, the adults were instructed to engage the children in pretend play, but the amount of adult prompting was not reported. Future research is needed measuring pretend play in settings with no prompts and no history of prompts.

Designs

Fourteen studies used single-subject experimental designs; these are shown in Table 7. Several studies used multiple baselines across participants, behaviors, settings, or materials. Two reports used withdrawal designs. Pretend play is likely not a reversible skill, so multiple-baseline designs may be well suited for examining changes in pretense. Two studies used group designs.

Table 6
Training Materials Across Reports

Dolls	Housekeeping	Cars	Junk Toys	Toy Sets
DiCarlo and Reid (2004)	DiCarlo and Reid (2004)	Kasari et al. (2006)	Kasari et al. (2006)	Doctoroff (1997)
Kasari et al. (2006)	Ingersoll et al. (2006)	Lifter et al. (2005)	Lifter et al. (1993)	Goldstein and Cisar (1992)
Lifter et al. (2005)	Kasari et al. (2006)	Lifter et al. (1993)	Sherrat (2002)	Goldstein et al. (1988)
Lifter et al. (1993)	Kim et al. (1989)	Sherrat (2002)	Stahmer (1995)	Ingersoll et al. (2006)
Sherrat (2002)	Lifter et al. (2005)	Zercher et al. (2001)	Thorp et al. (1995)	MacDonald (2005)
Stahmer (1995)	Lifter et al. (1993)		Zercher et al. (2001)	Stahmer (1995)
Thorp et al. (1995)	Neville and Bachor (2002)			Taylor and Iacono (2003)
Zercher et al. (2001)	Sherrat (2002)			Thorp et al. (1995)
Ingersoll et al. (2006)	Stahmer (1995)			
	Thorp et al. (1995)			
	Zercher et al. (2001)			

Note: Studies may be listed in more than one column.

Table 7
Evidence of a Functional Relation by Study

Study	Design	Stable Baseline	Overlapping Data	Consistency of Change	Demonstration of Replications
DiCarlo and Reid (2004)	MB across P	✓	2 of 3	2 of 3	✓
Doctoroff (1997)	MB across scripts	✓	1 condition	1 condition	✓
Goldstein et al. (1988)	Withdrawal	✓	1 condition	✓[a]	✓
Goldstein et al. (1992)	MB across scripts	1 of 2 behaviors	1 of 2 behaviors	✓	✓
Ingersoll and Shreibman (2006)	MB across P	✓	—	—	—
Lifter et al. (2005)	MB across B across P	✓	✓	✓	✓
Lifter et al. (1993)	MTx	✓	1 condition	✓	✓
MacDonald et al. (2005)	MB across M	—	✓	✓	
Neville and Bachor (2002)	Withdrawal	1 of 2 behaviors	1 of 2 behaviors	1 of 2 behaviors	✓
Sherrat (2002)	AB	—[b]	—	—	—
Stahmer (1995)	MB across P	✓	✓	—[c]	✓
Taylor and Iacono (2003)	MB across S	1 of 2 behaviors	1 of 2 replications	1 of 2 replications	✓
Thorp et al. (1995)	MB across P	✓	✓	—[c]	✓
Zercher et al. (2001)	MB across P	1 of 2 participants	1 of 2 participants	1 of 2 participants	1

Note: A check mark indicates that evidence was present. A dash indicates that evidence was not present for pretense behaviors. MB = multiple-baseline design; P = participants; B = behaviors; MTx = multitreatment design; M = materials; AB = baseline phase, intervention phase; S = settings.
a. There was a consistent but slight change in target pretense behaviors across three participants.
b. No graphs are provided in this report.
c. No data are provided during intervention conditions, so consistency of change is questionable.

One used a nonrandomized control group design (Kim et al., 1989), and one used a randomized controlled treatment design (Kasari et al., 2006).

Independent Variables

In four studies, adults used scripts with prompting hierarchies to teach pretense. For instance, the adults used most-to-least prompting hierarchies (Doctoroff, 1997; Goldstein & Cisar, 1992) or modeling (Neville & Bachor, 2002) with scripts (pet store, barber shop). In addition, children with typical development were taught to prompt their peers with disabilities using scripts to model and prompt (Goldstein & Cisar, 1992; Goldstein et al., 1988).

In several studies, adults used least-to-most prompting hierarchies with specific toys. DiCarlo and Reid (2004) provided children with a choice of play centers and used the least-to-most prompting hierarchy. Kasari et al. (2006) used a least-to-most prompting hierarchy with a schedule of positive reinforcement. In the studies of Lifter et al. (1993) and Lifter et al. (2005), adults presented specific toys and followed a least-to-most prompting hierarchy. In

eight reports, the authors did not describe the systematic use of prompting hierarchies. One of these studies used video modeling to prompt pretense behaviors (MacDonald et al., 2005). The children watched a video depicting an adult performing pretense behaviors with the specific toys twice and then were directed to play with the toys immediately. In seven studies, adults modeled or prompted pretense behaviors with specific toys, but the authors did not describe the teaching procedure with replicable precision (Kim et al., 1989; Stahmer, 1995). In Kim et al.'s (1989) study, adults modeled sequences of functional play with pretense, substitution, and pretense vocalizations at levels slightly higher than the children's current repertoires. Ingersoll and Shreibman (2006), Stahmer (1995), and Thorp et al. (1995) used a modified version of Pivotal Response Training (PRT; Koegel et al., 1989) with object substitution, imagining absent objects, assigning absent attributes, and sequences of these as the target behaviors instead of language. PRT uses preferred toys, choices, modeling, prompting, shaping, and positive reinforcement. Ingersoll and Shreibman (2006) used contingent imitation, linguistic mapping, and modeling in their modified version of PRT.

Levels of Prompting

All 16 studies used some combination of physical, modeling, or verbal prompting of pretense behaviors. The nature of prompts varied across studies. Lifter et al. (2005) used hand-over-hand and model prompts. In the script-training studies, adults used hand-over-hand and verbal prompts. Conversely, Stahmer (1995) and Thorp et al. (1995) used modeling. Likewise, Ingersoll and Shreibman (2006) followed the children's focus with contingent imitation and modeled pretense behaviors. Overall, children with disabilities demonstrated pretend play behaviors after adult prompting in contexts with prompts or a history of prompts.

Interventionist Experience

Only two studies reported interventionists' training. The interventionists in Kasari et al.'s (2006) study were graduate students trained to work with children with autism. Those in Ingersoll and Shreibman's (2006) study were research assistants in psychology. Interventionists are listed in Table 5.

Length of the Intervention

Nine reports did not provide information about the length of treatment. However, the number of sessions (on the basis of the abscissas) ranged from 35 to 130, typically lasting between 40 and 60 sessions. One lasted 2 weeks (Kim et al., 1989); another was reported as lasting 5 to 6 weeks (Kasari et al., 2006). Five were reported as lasting 8 or more weeks (i.e., MacDonald et al., 2005; Sherrat, 2002; Stahmer, 1995; Thorp et al., 1995; Zercher et al., 2001). In 11 studies, the durations of intervention sessions were between 5 and 15 minutes. In 5 studies, the durations of sessions were between 20 and 60 minutes. This suggests that pretend play interventions might require several weeks and at least 5 to 20 minutes per day. However, the lack of replicable procedural descriptions makes the dosage and intensity of each intervention difficult to discern.

Generalization

The generalization of pretense behaviors was measured in four studies. Stahmer (1995) and Thorp et al. (1995) reported generalization across settings, toys, and adults. Goldstein and Cisar (1992) reported the generalization of scripted functional play with pretense and elaborations with regrouped triads. Lifter et al. (1993) reported generalization across toys. Several interventions trained across multiple exemplars by using a variety of toys during the teaching conditions. However, only Lifter et al. (1993, 2005) reported specific programming for generalization. Lifter et al. (2005) trained across multiple exemplars but did not report the generalization of pretense behaviors. Lifter et al. (1993) trained across multiple exemplars and reported the generalization of functional play with pretense using different dolls.

Results

Single-Subject Designs

Visual inspection requires explicitly obvious effects from the graphed data (Kazdin, 1982). Only those interventions producing potent changes in behaviors are seen as producing significant changes in individuals. The results of the 14 single-subject reports were analyzed using visual inspection for (a) a stable baseline, (b) the amount of overlap, (c) the consistency of the intrastudy treatment effects, and (d) the number of replications. A summary of these dimensions is shown in Table 7.

Stable baseline. In this group of studies, baselines were evaluated for four components: (a) at least three data points, (b) the presence of a stable pattern or decreasing trend in behavior immediately before the intervention was introduced, (c) behaviors measured in

an appropriate setting (i.e., in which children might be expected to engage in pretense behaviors), and (d) behaviors measured repeatedly over an adequate period. Without a stable baseline, the threats of maturation and history are not controlled.

Overlapping data. The overlap was considered adequate if fewer than 10% of data overlapped across conditions, on the basis of the pattern of behaviors during baseline. Ten of the 14 reports did not have fewer than 10% of overlapping data across conditions for all participants and behaviors (e.g., DiCarlo & Reid, 2004; Goldstein & Cisar, 1992; Neville & Bachor, 2002; Taylor & Iacono, 2003; Zercher et al., 2001).

Consistency. The increase in level or trend must be replicated to establish experimental control. Across these studies, pretense behaviors were expected to demonstrate a change in the level or trend of pretense behaviors. A functional relation is established if such changes occur with each condition change in the study. Several studies did not establish a consistent change. Either pretense behaviors did not increase with the onset of the treatment or increases in level or trend were not replicated, data were not provided for the intervention condition (Stahmer, 1995; Thorp et al., 1995), or no graphs were provided (Sherrat, 2002). In the latter two cases, the patterns of behaviors during the treatment are not discernable.

Replication. Direct replications increase the confidence in (Tawney & Gast, 1984) and generality (Sidman, 1960) of the findings. Twelve of the 14 studies had at least three replications. However, not all replications exhibited consistent changes in behavior.

Evidence of a functional relation. Six studies demonstrated clear evidence of a functional relation between at least one behavior and the treatment. Three of these demonstrated a functional relation in only one condition of the intervention. For example, Doctoroff (1997) demonstrated a functional relation only during the peer-prompting condition but not the script-training condition. Lifter et al. (1993) demonstrated a functional relation only during the play intervention targeting developmentally appropriate behaviors but not during the play intervention targeting age-appropriate behaviors.

Two studies demonstrated evidence of a clear functional relation with the intervention and pretend play but not all the pretense behaviors measured. For example, Goldstein and Cisar (1992) demonstrated a functional relation for theme-related social behaviors only but not for unrelated social behaviors. MacDonald et al. (2005) demonstrated a clear functional relation between the video modeling and the scripted behaviors immediately after watching the video but not for unscripted pretend play. One report (Lifter et al., 2005) provided evidence of a functional relation for two of three participants across three toys sets for functional play with pretense behaviors.

Three reports suggested a functional relation for some of the behaviors across all participants. Neville and Bachor (2002) suggested a functional relation for individual, not shared, play, yet behaviors did not return to baseline levels with the withdrawal of the intervention. This suggests that pretense behaviors may not be readily reversible. Thorp et al. (1995) and Stahmer (1995) demonstrated and replicated increases in level for substitution behaviors and sequences of substitutions but did not provide data during the intervention, confounding interpretations.

Five reports failed to demonstrate a functional relation. Three of these five studies (a) did not establish a stable baseline (Ingersoll & Shreibman, 2006), (b) displayed more than 10% overlapping data between conditions (Taylor & Iacono, 2003), and (c) only provided one replication (Zercher et al., 2001). One study demonstrated an increase in level in independent functional play with pretense with the responsive teaching condition for two of three participants (DiCarlo &Reid, 2004). One study did not provide any graphs for visual analysis (Sherrat, 2002).

Group Designs

Two of the 16 intervention studies used group experimental designs. Kim et al. (1989) used a nonrandomized control group design to assess a symbolic play intervention. A Mann-Whitney *U* test suggested that the experimental group exhibited significantly more sequences of functional play with pretense and object substitution than the control group. However, the experimental group exhibited high levels of type token ratios and proportion of new schemes at pretest, which decreased at posttest, suggesting a ceiling effect. Methodological issues, including inadequate power due to small sample sizes (i.e., four children per group) and nonrandomization, reduced the rigor of this study. Furthermore, the authors did not report effect sizes. The report lacks several essential quality indicators for experimental research (e.g., inadequate data analysis techniques, sampling procedures, fidelity of implementation, and reliability of outcomes measures; Gersten et al., 2005).

Table 8
Interobserver Agreement (IOA) by Study

	Level (% of agreement or Kappa) of Obtained Estimates	
Percentage of Sessions in Which IOA Was Measured	≥80% (≥0.60)	<80% (<0.60)
>20%	Doctoroff (1997) Goldstein and Cisar (1992) Goldstein et al. (1988) Kasari et al. (2006) Ingersoll and Shreibman (2006) MacDonald (2005) Neville and Bachor (2002) Stahmer (1995) Taylor and Iacono (2003) Thorp et al. (1995) Zercher et al. (2001)	Lifter et al. (2005)
<20%	DiCarlo and Reid (2004) Kim et al. (1989) Lifter et al. (1993)	Sherrat (2002)

Kasari et al. (2006) used mixed-effect regression models in a randomized control group design to examine differences in play behaviors in groups of children receiving a play intervention and a joint attention intervention, along with a control group. All three groups increased the frequency of functional play without pretense and the number of different pretense behaviors (i.e., there was a significant main effect for time). On the basis of the *Structured Play Assessment* (Ungerer & Sigman, 1981), the group receiving the play intervention improved significantly more than the control group on mastery level of play behaviors. On the basis of the mother-child interaction assessment, the play group had significantly more types of pretense behaviors and a larger improvement in level of play than the joint attention and control groups. This study met several essential and desirable indicators for group experimental research (e.g., adequate effect sizes, reliability, participant selection, multiple outcome measures, data analysis, and validity of the measures; Gersten et al., 2005).

Interobserver Agreement

Fifteen reports provided reliability or interobserver agreement estimates on the measurement of the dependent variables. The studies were evaluated on two standards related to interobserver agreement: (a) a minimum of 20% of the observations across participants and conditions and (b) agreement estimates of at least 80% or a κ value of 0.60 (Horner et al., 2005). The studies were evaluated on these dimensions, and the data are presented in Table 8.

Procedural Fidelity

Only two reports provided adequate estimates of procedural fidelity (i.e., above 90%; Ingersoll & Schreibman, 2006; Kasari et al., 2006). However, in one report, procedural fidelity data were not provided for all treatments (Kasari et al., 2006). Two reports mentioned adapting a specific manual as their intervention protocol (Stahmer, 1995; Thorp et al., 1995). However, compliance with the manual was not reported. This lack of procedural fidelity dramatically reduces the ability to inform practices (Dunst et al., 2002) and the rigor of the pretend play literature (Horner et al., 2005).

Discussion

State of the Literature

Across these studies, specific changes in pretense behaviors were examined rather than overall play levels or global engagement. Although these molar behaviors are important, effective interventions to target specific pretense behaviors hold implications for practice. Overall, the reports suggest that an increase in pretense behaviors are related to adult modeling or prompting in classrooms with materials typically found in early childhood classrooms. However, few reports contained procedural fidelity data, maintenance data, or generalization

data across settings, people, or toys. Some studies programmed for generalization. The rigor of this literature is encumbered by methodological limitations (e.g., lack of procedural fidelity and generalization, inconsistency of intrastudy treatment effects). Some studies were quite weak because of the absence of graphs (Sherrat, 2002), inconsistent intrasubject treatment effects (Zercher et al., 2001), and overlapping data across more than one condition (Taylor & Iacono, 2003). Others had study-specific methodological limitations.

Implications for Research

Molar Versus Molecular

Pretend play behaviors are composed of molar and molecular units; these are terms originally used by Barker and Wright (1955), but they remain pertinent for a range of behaviors today. Thus, two types of research are needed. First, more research is needed with a focus on early intervention and early childhood special education programs. Specifically, how have pretense interventions been incorporated into the preschool curriculum, and how can they be in the future? Rogers and Lewis (1989) and Stahmer and Ingersoll (2004) reported on two different programs with curricula developed specifically for children with autism. Both programs targeted pretense behaviors (i.e., symbolic play and symbolic cognition) and measured them as outcomes. The descriptions of the programs suggest that pretense was taught using prompting, incidental teaching, and direct instruction. However, specific programming for pretense across the curriculum is not discussed.

Second, more research is needed with a focus on practices for increasing the specific pretense behaviors outlined in the taxonomy (see Table 2). For instance, only Sherrat (2002) targeted and measured the three substitution behaviors separately. Replicating this study, with increased rigor, might identify essential components of interventions. Future research should expand on the adult modeling and prompting evident in this literature. Researchers should focus on using new technologies with interventions on pretend play and measuring pretend play. For example, would playing interactive computer games with explicit pretense sequences result in more pretend play with toys? Furthermore, interventions could focus on structuring the environment to elicit pretend play while embedding specific instructional procedures. Pretense behaviors appear to be highly context dependent, particularly with materials. For example, functional play with pretense is more likely when a child has a doll and spoons available to feed the doll. However, substitution is more likely if the child has only a doll and junk toys (e.g., rods) to use in place of a spoon to feed the doll. Most interventions use dolls, and most use dolls in combination with other toys. New interventions might manipulate the use of dolls and preferred toys.

Dosage and Treatment Fidelity

Assessing treatment fidelity is important for establishing experimental control as well as identifying the amount of treatment needed to affect change. Dose and treatment fidelity issues are virtually ignored in intervention research on pretense. Future research could examine the amount of intervention (e.g., amount of time, number of trials per day) necessary to produce changes in pretense. Furthermore, few reports provided procedural fidelity data; without an estimate of the fidelity of implementation of the independent variable, results are difficult to interpret (Horner et al., 2005).

Lack of Generalization

The scarcity of specific programming for generalization in teaching pretense behaviors is a serious limitation in this literature because (a) the goal of teaching pretense behaviors should include using pretense in situations other than the teaching sessions, (b) the generalization of pretend play actions might further substantiate a child's use of pretense, (c) including objectives for generalization increases the likelihood of teaching generalization (Billingsley, 1988), and (d) the "train and hope" method is the least effective generalization strategy (Westling & Fox, 1995). Combinations of generalization strategies are likely to be most effective (e.g., training multiple exemplars, addressing functional behavioral targets, teaching mediation strategies). None of these reports systematically programmed generalization using a combination of strategies. The guidelines proposed by White et al. (1988) are easily applied to pretense behaviors. These include probing (a) in the natural environment (e.g., the home or school), (b) at times when the behaviors naturally occur (e.g., during free play, with specific toys, or in the presence of peers or siblings), (c) with naturally occurring prompts, and (d) with naturally occurring consequences.

Generalization is an important issue for children with autism because performance in highly structured environments is typically more advanced than in less structured or generalized environments (Dawson & Osterling, 1997). This is true for most children, but the discrepancy

is especially prevalent for children with autism. For children with autism who display rigidity or repetitive behaviors, the generalization of skills taught in highly structured environment may be detrimentally affected. Programs developed for children with autism design curricula with this in mind. For instance, the Treatment and Education of Autistic and Related Communication-Handicapped Children program advocates changing only one feature of the environment at a time when programming for generalization (Dawson & Osterling, 1997). They promote the need for predictability, routines, and generalization strategies as key elements in the curricula of programs for children with autism. For example, they recommend using prompt fading and peers to teach children with autism to generalize social behaviors. The same strategies can be applied to increase the types of pretense behaviors in children's repertoires. Furthermore, children with autism appear to be especially dependent on contextual input for generating specific behaviors (Dawson & Osterling, 1997). Interventions for children with autism should include specific programming for spontaneous performance of acquired pretense behaviors in varied, yet highly structured contexts.

Peer Mediation

Studies should examine the use of peers as models or play partners in pretense interventions. Teaching peers to prompt pretense behaviors and interact with children with disabilities during pretend play activities may further increase interactions with peers and materials, reduce reliance on teacher prompting, and allow teachers to focus on other children or activities. The script-training studies used peers as part of the intervention, but behaviors appeared prompt dependent (Goldstein & Cisar, 1992). Peers have been taught to prompt social interactions skills such as initiations and responses in children with disabilities (McConnell, 2002). These behaviors can be embedded directly into pretense behaviors and may increase the likelihood of maintenance or generalization. Lieber and Beckman (1991) found that children with disabilities engaged in less symbolic play when proximal to peers than when alone, suggesting that pretend play interventions need to program peer mediation specifically.

Innovative Interventions

By and large, no intervention has conclusively demonstrated high efficacy and efficiency in teaching pretense. Innovation in interventions for pretense behaviors is necessary. Several studies in this literature demonstrated treatment effects, but the magnitudes of the effects were moderate, and there is inadequate evidence of generalization or maintenance. Research should focus on expanding interventions beyond modeling and prompting to teach pretense behaviors.

Limitations of the Literature

Methods and Rigor

Single-subject designs can differentiate treatment effects from growth factors for individuals (Tawney & Gast, 1984). Furthermore, multiple-baselines designs are appropriate because pretend play may not be readily reversible behavior. The rigor of the reviewed studies is compromised because of the lack of procedural fidelity, unstable baselines, intrastudy replication flaws, and inconsistent definitions of pretend play. Most studies had vague descriptions of the training procedures, implementation of the interventions, and intensity or frequency of treatment. Furthermore, only 10 of the 14 single-subject designs established believable functional relations. Instability during baseline and insufficient replications are problems plaguing this literature. Several of the studies demonstrated treatment effects for one or two of the participants or behaviors. Although not sufficient to conclude a functional relation, this information is useful and should be considered in future studies. The proposed taxonomy may increase external validity by providing precision and consistency in dependent variables across studies. With sufficient rigor, this literature could define for whom and under which conditions the pretense interventions are effective using the single-subject methodology. Another limitation is the fact that although most studies included at least one participant under the age of 60 months, few included participants under the age of 36 months.

Implications for Practice

The review resulted in at least five recommendations concerning practice. First, the proposed taxonomy (Table 2) can be used as a base for establishing pretend play goals. Second, pretend play can be prompted in classrooms with teachers or teaching assistants implementing the intervention. Third, classroom materials can be used, but teachers should consider adding "junk" toys to increase opportunities for substitution behaviors. Fourth, pretend play can be promoted with the systematic use of prompting strategies, including most-to-least prompting and the system of least prompts. Finally, teachers should use procedures such as multiple exemplars of behaviors

and materials, multiple trainers, and varied setting to facilitate generalization of pretend play.

Conclusions

Pretend play with toys and without toys is an important intervention target for children with developmental disabilities, including those with autism. We examined the intervention literature for a definition of pretend play and efficacious methods for promoting pretend play behaviors. There are two main findings. First, the studies defined pretend play inconsistently. Second, the research continually demonstrates a relation between pretense behaviors and adult modeling and prompting (e.g., DiCarlo & Reid, 2004; Goldstein et al., 1988; Kasari et al., 2006; Thorp et al., 1995). However, the systematization of modeling and prompting varied across the studies. Future studies may use the pretense taxonomy and manipulate prompting procedures with attention to the fidelity of implementation and methodological rigor. This literature suggests that teachers can systematically prompt functional play with pretense, object substitution, imagining absent objects, and assigning absent attributes using specific toys and modeling or physical prompting. However, more research is needed to inform practice confidently.

References

References marked with an asterisk indicate studies included in the literature review.

Barker, R. G., & Wright, H. F. (1955). *Midwest and its children: The psychological ecology of an American town*. New York: Row, Peterson.

Billingsley, F. F. (1988). Writing objectives for generalization. In N. G. Haring (Ed.), *Generalization for students with severe handicaps: Strategies and solutions* (pp. 123–128). Seattle: University of Washington Press.

Bricker, D., & Waddell, M. S. (2002). *Volume 4: AEPS curriculum for three to six years*. Baltimore, MD: Brookes.

Brown, J. & Murray, D. (2001). Strategies for enhancing play skills for children with autism spectrum disorders. *Education and Training in Mental Retardation and Developmental Disabilities*, *36*, 312–317.

Bruner, J. (1972). The nature and uses of immaturity. *American Psychologist*, *27*, 687–708.

Buysse, V., Wesley, P., Keyes, L., & Bailey, D. (1996). Assessing comfort zone of child care teachers in serving young children with disabilities. *Journal of Early Intervention*, *20*, 189–203.

Charman, T., & Baron-Cohen, S. (1997). Brief report: Prompted pretend play in autism. *Journal of Autism and Developmental Disorders*, *27*, 325–332.

Dawson, G., & Osterling, J. (1997). Early intervention in autism. In M. J. Guralnick (Ed.), *The effectiveness of early intervention* (pp. 307–326). Baltimore, MD: Brookes.

*DiCarlo, C. F., & Reid, D. H. (2004). Increasing pretend toy play of toddlers with disabilities in an inclusive setting. *Journal of Applied Behavior Analysis*, *37*, 197–207.

DiSalvo, C. A., & Oswald, D. P. (2002). Peer-mediated interventions to increase the social interaction of children with autism: Consideration of peer expectancies. *Focus on Autism and Other Developmental Disabilities*, *17*(4), 198–208.

Doctoroff, S. (1996). Parents' support of infants' object play: A review of the literature. *Infant Toddler Intervention*, *6*, 153–166.

*Doctoroff, S. (1997). Sociodramtic script training and peer role prompting: Two tactics to promote sociodramatic play and peer interaction. *Early Child Development and Care*, *136*, 27–43.

Dunst, C. J., Trivette, C. M., & Cutspec, P. A. (2002). Toward an operational definition of evidence based practice. *Centerscope*, *1*(1), 1–10.

Fein, G. G. (1981). Pretend play in childhood: an integrative review. *Child Development*, *52*, 1095–1118.

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C., & Innocenti, M. S. (2005). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children*, *71*(2), 149–164.

*Goldstein, H., & Cisar, C. L. (1992). Prompting interaction during sociodramatic play: teaching scripts to typical preschoolers and classmates with disabilities. *Journal of Applied Behavior Analysis*, *25*, 265–280.

*Goldstein, H., Wickstrom, S., Hoyson, M., Jamieson, B., & Odom, S. (1988). Effects of sociodramatic script training on social and communicative interaction. *Education and Treatment of Children*, *11*, 97–117.

Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence based practices in special education. *Exceptional Children*, *71*, 165–179.

*Ingersoll, B., & Shreibman, L. (2006). Teaching reciprocal imitation skills to young children with autism using a naturalistic behavioral approach: Effects on language pretend play, and joint attention. *Journal of Autism and Developmental Disorders*, *36*, 487–505.

Jarrold, C., Boucher, J., & Smith, P. (1996) Generativity deficits in pretend play in autism. *Journal of Developmental Psychology*, *14*, 275–300.

Johnson, J. E., & Ershler, J. (1981). Developmental trends in preschool play as a function of classroom program and child gender. *Child Development*, *52*, 995–1004.

*Kasari, C., Freeman, S., & Parapella, T. (2006). Joint attention and symbolic play in young children with autism: A randomized controlled intervention study. *Journal of Child Psychology and Psychiatry*, *46*, 611–620.

Kazdin, A. E. (1982). *Single case research designs*. New York: Oxford University Press.

*Kim, Y. T., Lombardino, L. J., Rothman, H., & Vinson, B. (1989). Effects of symbolic play intervention with children who have mental retardation. *Mental Retardation*, *27*, 159–165.

Koegel, R. L., Schreibman, L., Good, A., Cerniglia, L., Murphy, C., & Koegel, L. (1989). *How to teach pivotal behaviors to children with autism: A training manual*. Santa Barbara: University of California.

Lieber, J. (1993). A comparison of social pretend play in young children with and without disabilities. *Early Education and Development*, *4*, 148–161.

Lieber, J., & Beckman, P. J. (1991). The role of toys in individual and dyadic play among young children with handicaps. *Journal of Applied Developmental Psychology*, *12*, 189–203.

*Lifter, K. Ellis, J., Cannon, B., & Anderson, S. R. (2005). Developmental specificity in targeting and teaching play activities to children with pervasive developmental disorders. *Journal of Early Intervention*, *27*, 247–267.

*Lifter, K., Sulzer-Azaroff, B., Anderson, S., & Cowdery, G. E. (1993). Teaching play activities to preschool children with disabilities: The importance of developmental considerations. *Journal of Early Intervention*, *17*, 139–159.

Lord, C., Rutter, M., & Dilavore, P. (1998). *Autism Diagnostic Observations Schedule–Generic*. Chicago: University of Chicago Press.

*MacDonald, R., Clark, M., Garrigan, E., & Vangala, M. (2005). Using video modeling to teach pretend play to children with autism. *Behavioral Interventions*, *20*, 225–238.

McConnell, S. R. (2002). Interventions to facilitate social interaction for young children with autism: Review of available research and recommendations for educational intervention and future research. *Journal of Autism and Developmental Disorders*, *32*, 351–372.

McGee, G. G., Morrier, M. J., & Daly, T. (1999). An incidental teaching approach to early intervention for toddlers with autism. *Journal of the Association for the Severely Handicapped*, *24*(3), 133–146.

Mindes, G. (1982). Social and cognitive aspects of play in young handicapped children. *Topics in Early Childhood Special Education*, *2*, 39–52.

Morelock, M. J., Brown, M., & Morrisey, A. M. (2003). Pretend play and maternal scaffolding: Comparisons of toddlers with advanced development, typical development, and hearing impairment. *Roper Review*, *26*, 41–51.

Morrison, R. S., Sainato, D. M., Benchaaban, D., & Endo, S. (2002). Increasing play skills of children with autism using activity schedules and correspondence training. *Journal of Early Intervention*, *25*, 58–72.

*Neville, M., & Bachor D. G. (2002) A script based symbolic play intervention for children with developmental delay. *Developmental Disabilities Bulletin*, *30*, 140–172.

Nicolich, L. (1977). Beyond sensori-motor intelligence: Assessment of symbolic maturity through analysis of pretend play. *Merrill Palmer Quarterly*, *27*, 89–99.

Ogura, T. (1991). Longitudinal study of the relationship between early language development and play development. *Journal of Child Language*, *18*, 273–294.

Paul, R. (2003). Promoting social-communication in high functioning individuals with autistic social disorders. *Child and Adolescent Psychiatric Clinics*, *12*, 87–106.

Piaget, J. (1952). *The origins of intelligence in children* (M. Cook, Trans.). New York: International Universities Press.

Piaget, J. (1962). *Play, dreams, and imitation in childhood*. New York: Norton.

Pretti-Frontzack, K., & Bricker, D. (2004). *An activity-based approach to early intervention* (3rd ed.). Baltimore, MD: Brookes.

Raab, M. (2003). Relationship between types of toys and young children's social behavior. *Bridges: Practice Based Research Syntheses*, *1*(5), 1–13.

Rettig, M. A. (1994). Play behaviors of young children with autism: Characteristics and interventions. *Focus on Autistic Behavior*, *9*(5), 2–6.

Robins, D. L., Fein, D., Barton, M. L., & Green, J. A. (2001). The Modified Checklist for Autism in Toddlers: An initial study investigating the early detection of autism and pervasive developmental disorders. *Journal of Autism and Developmental Disorders*, *31*, 131–144.

Rogers, S. J. (2000). Interventions that facilitate socialization in children with autism. *Journal of Autism and Developmental Disorders*, *30*, 399–409.

Rogers, S. J., & Lewis, H. (1989). An effective day treatment model for young children with pervasive developmental disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, *28*, 207–214.

Rutherford, M. D., & Rogers, S. J. (2003). Cognitive underpinnings of pretend play in autism. *Journal of Autism and Developmental Disorders*, *33*, 289–302.

*Sherrat, D. (2002). Developing pretend play in children with autism. *Autism*, *6*, 169–179.

Sherrat, D., & Peter, M. (2002). *Developing play and drama in children with autistic spectrum disorders*. London: David Fulton.

Sidman, M. (1960). *Tactics of scientific research*. New York: Basic Books.

Sigman, M., & Ruskin, E. (1999). *Change and continuity in the social competence of children with autism, Down syndrome, and developmental delays*. London: Blackwell.

Sigman, M., & Ungerer, J. A. (1984). Cognitive and language skills in autistic, mentally retarded, and normal children. *Developmental Psychology*, *20*, 293–302.

Smilansky, S. (1968). *The effects of socio-dramatic play on disadvantaged preschool children*. New York: John Wiley.

*Stahmer, A. (1995). Teaching symbolic play skills to children with autism using pivotal response training. *Journal of Autism and Developmental Disorders*, *25*, 127–141.

Stahmer, A., & Ingersoll, B. (2004). Inclusive programming for toddlers with autistic spectrum disorders: Outcomes from the Children's Toddler School. *Journal of Positive Behavioral Interventions*, *67*, 67–82.

Stahmer, A., Ingersoll, B., & Carter, C. (2003). Behavioral approached to promoting play. *Autism*, *7*, 401–413.

Strain, P., & Cordisco, K. (1994). The LEAP preschool. In S.L. Harris & J. S. Handleman (Eds.), *Preschool education programs for children with autism* (pp. 115–126). Austin, TX: PRO-ED.

Tawney, J. W., & Gast, D. L. (1984). *Single subject research in special education*. Columbus, OH: Merrill.

*Taylor, R., & Iacono, T. (2003). AAC and scripting activities to facilitate communication and play. *Advances in Speech-Language Pathology*, *5*, 79–93.

Terpstra, J. E., Higgins, K., & Pierce, T. (2002). Can I play? Classroom based intervention for teaching play skills to children with autism. *Focus on Autism and Other Developmental Disabilities*, *17*, 119–128.

*Thorp, D., Stahmer, A., & Schreibman, L. (1995). Effects of socio-dramatic play training on children with autism. *Journal of Autism and Developmental Disorders*, *25*, 265–282.

Ungerer, J., & Sigman, M. (1981). Symbolic play and language comprehension in autistic children. *Journal of the American Academy of Child Psychiatry*, *20*, 318–337.

Vygotsky, L. (1967). Play and its role in the mental development of the child. *Soviet Psychology*, *5*, 6–18.

Weiss, M. J., & Harris, S. L. (2001). Teaching social skills to people with autism. *Behavior Modification*, *25*, 785–802.

Westling, D. L., & Fox, L. (1995). *Teaching students with severe disabilities*. Columbus, OH: Merrill.

White, O. R., Liberty, K. A., Haring, N. G., Billingsley, F. F., Boer, M., Burrage, A., et al. (1988). Review and analysis of strategies for generalization. In N. G. Haring (Ed.), *Generalization for students with severe handicaps: Strategies and solutions* (pp. 13–52). Seattle: University of Washington Press.

Williams, E., Reddy, V., & Costall, A. (2001). Taking a closer look at functional play in children with autism. *Journal of Autism and Developmental Disorders*, *31*(1), 67–77.

Wing, L., Gould, J., Yeates, S. R., & Brierley, L. M. (1977). Symbolic play in severely mentally retarded and autistic children. *Journal of Child Psychology and Psychiatry*, *18*, 167–178.

Wolery, M. (1994). Implementing instruction for young children with special needs in early childhood classrooms. In M. Wolery & J. S. Wilburs (Eds.), *Including children with special needs in early childhood programs* (pp. 381–386). Washington, DC: National Association for the Education of Young Children.

Wolery, M., & Bailey, D. B. (1989). Assessing play skills. In D. B. Bailey & M. Wolery (Eds.), *Assessing preschoolers and infants with handicaps* (pp. 428–446). Columbus, OH: Merrill.

Wolery, M., & Garfinkle, A. N. (2002). Measures in intervention research with young children who have autism. *Journal of Autism and Developmental Disorders*, *32*, 463–477.

*Zercher, C., Hunt, P., Schuler, A., & Webster, J. (2001). Increasing joint attention, play and language through peer supported play. *Autism*, *5*, 374–398.

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