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TITLE: Let's Play: Teaching Play Skills To Young Children With Autism

SOURCE: Education and Training in Developmental Disabilities 40 no3 285-92 S 2005

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ABSTRACT

Watch any young child and you will likely see him or her engaged in some form of play. Play is an integral part of early childhood development in which typically developing children learn social and language skills, as well as appropriate behaviors, problem solving, and a variety of other cognitive skills. By its very definition, autism is a disorder in which play is impaired or lacking, thus, many children with autism do not experience the natural benefits of play, as do their typical peers. Children with autism must be specifically taught to engage in social and play activities, and often require direct instruction to learn to play with others. Instruction in play skills is noted in the literature as important for young children with autism, yet little evidence suggests which of several teaching methods is most effective. This article describes several aspects of play, discusses various means of teaching play skills to children with autism, and makes suggestions for future research. Further, a case study comparing the efficacy of two methods for play skills instruction is presented.

Play is considered the "very fabric of childhood culture" (Quill, 1995, p. 214). Research supports that through play, typical children acquire many skills that are critical to their development. Among these are language skills, social competence, appropriate behaviors, fine and gross motor skills, memory skills, imagination, emotional control, and confidence (Bredenkamp & Copple, 1997; Gitlin-Weiner, Sandgrund, & Schaefer, 2000; Sara-cho & Spodek, 1998). Play is so important in that it has become an integral part of effective early childhood practices (National Association for the Education of Young Children, NAEYC 1991). Well-known developmental theorists including Erikson, Piaget and Vygotsky considered play to be a critical component to early development (Lefrancios, 1994; Smolucha & Smolucha, 1998). Though historically play has not always been viewed as a key component of children's growth and development, today it is becoming increasingly the focus of research and instruction for children of all abilities. For children with autism, the development of play, as well as other key developmental skills, is often limited or lacking (Scheuermann & Webber, 2002). In this article, we provide an overview of the historical and philosophical foundations of children's play, describe typical play development, discuss the play characteristics of children with autism, describe current play instruction practices, and provide a hypothesis for future research focus.

Historical and Theoretical Foundations of Play

The value of play has evolved over time. Prior to the middle ages play was an important aspect of all children's lives. By the Renaissance, the European attitude towards children and their need for play became increasingly negative. Children were expected to work, and their idleness was considered sinful (Hughes, 1999). Though more affluent children were depicted in artwork with toys, the majority of the toys were delicate, fragile, and meant for adults rather than children. By the 1600's the European view of children and the value of play began to change. The French became more tolerant of play, but the English still felt that working was more important. The early European immigrants brought these beliefs to America. The Puritans saw their children as individuals who needed discipline and instruction. Play was discouraged, though was no longer seen as sinful. Children were considered the hope of the Puritan future, and as such were expected to study and train for job opportunities (Hughes). The 1800's carried an air of ambivalence toward play. Play was acceptable if it involved work-oriented tasks. Parents allowed play activities that increased a child's mastery of his or her environment (Hughes). By the 1900's understanding the perspectives and feelings of children became important, and thus began the science of child development.

There are many theories regarding why children are drawn to play activities. Spencer believed that children possess an excess of energy that was once required for survival of the species. In opposition with Spencer's theory, Patrick thought that play was a tool to re-energize children; children are more likely to

play when they are tired. G. Stanley Hall, a psychologist, had an evolutionist's perspective towards play. For example, an infant crawling in play is reflective of the evolutionary period when humans crawled on all fours. Karl Groos, a zoologist, believed that both animals and children engage in play activities to prepare them for their adult roles (Elkind, 2003).

More contemporary views of play emphasize its intellectual, social, and emotional benefits (Hughes, 1999). Sigmund Freud viewed play as an outlet for anxiety. He felt that play allowed children to express feelings and behaviors that were otherwise considered inappropriate. Contrary to Freud's point of view, Erickson believed that play brings about physical and social skills that enhance a child's self-esteem (Hughes). Bruner considered play to be an opportunity for children to problem solve in comfortable and stress-free activities. Jean Piaget felt that play involved the fusion of physical and mental activities previously learned (Hughes). Lev Vygotsky's theory valued the social aspects of play. He believed that during dramatic play, the child conveys his or her readiness to learn new skills from adults (Elkind, 2003).

Typical Play Development

Regardless of theory, there are five necessary elements of play: 1) Play is intrinsically motivated; 2) Play activities are freely chosen; 3) Play is pleasurable; 4) Play involves an element of make believe; 5) Play actively engages the participant (Wolfberg, 2003). Children move through several stages and types of play as they progress through early childhood, from sensorimotor play (involving oral exploration of objects or banging and shaking toys) to relational play (lining toys up side-by-side), to symbolic (i.e., pretend) and functional play (Libby, Powell, Messer, & Jordan, 1998; Stahmer, 1995). Very young children may prefer to play alone, or to engage in what is known as parallel play, which involves playing near or next to someone, but not interacting with them. Early forms of play may or may not involve others, though by around age two children are able to engage in social play with others. Also referred to as pretend play, symbolic play begins to emerge between 18 months and two years. Dimensions of symbolic play include "play acts that the child directs toward objects, self, or others and that signify events" (Wolfberg, 1999, p. 49). There are essentially two areas of symbolic play. First, functional symbolic play is the use of toys or objects in the way in which they were intended. For example, moving a train along its track or pushing a toy shopping cart. Secondly, imaginative symbolic play is when children either use objects as if they were other things (example, a doll's hairbrush becomes an airplane), or when play involves make-believe (pretending) and/or has a theme (such as a pretend tea party).

Social play, also referred to as cooperative play, begins to develop in the second year of life, though various dimensions exist in younger children. The social dimensions of play include proximity and involvement with other children (Wolfberg, 1999). Included are isolate play (playing alone), orientation or observational play (watching others play), parallel play (playing alongside one or more peers without interaction), common focus play (engagement in a joint activity with one or more peers), and common goal play (collaboration with one or more peers with an organized purpose) (Wolfberg).

Play is a natural part of a child's early development, leading to increasingly complex social and communication skills. Though most children learn these skills through play with others, children with autism often do not follow the typical pattern of play development. We know that play is an area of weakness for children with autism by the very nature of the disorder: a defining characteristic of autism is lack of pretend or imitative play (American Psychiatric Association 1994). In addition, their development of specific play skills often does not follow that of typical children. Children with autism often display fewer symbolic and less complex play actions (Stahmer, 1995), an inability to engage in typical play alone or with peers (Schleien, Mustonen, Runders, & Fox, 1990; Terpstra, Higgins, & Pierce, 2002), difficulty with symbolic play (Libby et al., 1998), persistence in sensorimotor play beyond developmental level (Libby, et al.), participation in predominantly parallel play as opposed to social play, and use of toys in a repetitive manner, rather than their intended use (Libby et al.) (for example, spinning the wheels of a truck rather than pushing it along on its wheels). Children with autism rarely engage in symbolic play (Hughes, 1998). In fact, compared to children with other cognitive or developmental disabilities (e.g., mental retardation), children with autism are far less likely to engage in functional or imaginative play (Hughes). Further, social-communicative play behaviors such as eye contact, joint attention, sharing, turn-taking, and shared interest are typically deficit in children with autism and they tend to avoid contact with other people, making play with others difficult to establish (Wolfberg, 1999). These difficulties all provide evidence that teaching play skills to children with autism is a necessary and critical goal for their development.

Teaching Play to Children with Autism

Play skills instruction has only recently become a focus of research for children with autism. Several

approaches are available and have been used to teach a wide range of skills to children with autism, including play. Following is a description of these.

Milieu Strategies

Milieu teaching is sometimes referred to as naturalistic or incidental teaching, which involves "teaching a child a particular skill in the context of its use" (Pierce & Schreibman, 1997, p. 208). Milieu teaching strategies involve several components: use of novel materials, teachers joining the activities with the children, offering choices, use of incidental teaching strategies (e.g., placing a preferred item out of reach requiring the child to make a communicative request for it), "using comments and questions to facilitate the child's interest and/or play-related talk," generating elaboration of child's talk, and inviting interaction with peers (Kohler et al., 2001, p. 95). In this way, the milieu teaching approach takes advantage of teachable moments and sets up the environment so that those moments are most likely to happen. The milieu teaching approach has been used to successfully teach play skills to preschool (Garfinkle & Schwartz, 2002) as well as school-aged children with autism (Kohler et al., 2001; Stahmer, 1995). Milieu teaching has also been successfully used to teach functional language and social interactions to students with autism and other disabilities (Alpert & Kaiser, 1992; Hemmeter & Kaiser, 1994; Kohler, Anthony, Steighner, & Hoyson, 1998; McGee, Morrier, & Daly, 1999). An important dimension of Milieu teaching is that it occurs within the context of everyday, natural environments, and that interactions with typical peers is also key (Diamond & Carpenter, 2000). Therefore, Milieu teaching appears to be an ideal option for teaching children with disabilities in inclusive educational environments. One method of Milieu teaching involves modeling (Kaczmarek, Hepting, & Dzubak, 1996). Modeling involves the teacher verbally modeling for the student comments or questions regarding actions in or items with which the child is engaged (Kaczmarek et al.).

One model for play instruction is Greenspan's Floor Time Model. This model is a means for expanding a child's social, emotional, and communicative repertoire through engagement in play activities. One of the key dimensions to Floor Time is that the adult follows the child's lead, much the same as milieu teaching. However, the Floor Time Model specifically states that the adult should not "turn the session into a learning or teaching experience" (Greenspan, 2004). Thus, Floor Time is fundamentally different in that specific skill instruction is not a key focus of interaction, as it is in milieu. Further, the Floor Time Model suggests using the practices of the model in daily activities outside of play, such as while dressing and at mealtime. Floor Time is an effective method for improving interaction and problem solving for young children with developmental disabilities, though limited research has been done to suggest that it is particularly effective for children with autism. However, some of the concepts of Floor Time could be used effectively to enhance play skills for children with autism. For example, using affect to engage the child, interacting with the materials with which the child is already playing, and expanding language and ideas (Greenspan).

Another model, Integrated Play Groups (IPG, Wolfberg, 1999), involves guided participation with typical peers as a major feature. Wolfberg describes the groups as including novice players (children with autism) and expert players (competent peers). An adult play guide supports groups. The goal of IPG is to improve reciprocal social and symbolic play in children with autism. IPG has received very little attention in the literature. Its creator, Wolfberg has conducted case studies documenting its effectiveness with children with autism. Replication is recommended, as IPG seems promising as a means for improving play behaviors of children with autism.

Peer-Mediated Instruction

A second approach to instruction for children with autism is peer-mediated instruction. This approach is considered to be an emerging and effective practice (Odom et al., 2003). In this approach, typical peers are trained to engage or instruct persons with autism in specific skills (Odom et al.). A number of skills have been taught to individuals with autism, including communication (Goldstein, Kaczmarek, Pennington, & Shafer, 1992), social interactions (Goldstein et al.; Haring & Breen, 1992; Laushey & Heflin, 2000; McGee, Almeida, Suzler-Azaroff, & Feldman, 1992), social skills (Roeyers, 1995), academic tasks (Kamps et al., 1995), and self-help skills (Greer, Dorow, Williams, McCorkle, & Asnes, 1991). Peer-mediation involves typical peers as role models as well as trainers. Though not used specifically to teach play skills, peer-mediated instruction is considered to hold promise for a variety of skill areas for children with autism.

Discrete Trial Training

A final type of instructional approach associated with teaching children with autism a variety of skills is known as Discrete Trial Training (DTT). This is a type of instruction that involves highly structured teacher direction in a trial-by-trial format, meaning that the child is instructed on a single skill a number of times during a single session, utilizing a series of prompts and rewards to shape behaviors (Scheuermann & Webber, 2002). In the literature, DTT has not been routinely used with children with autism for the

purposes of teaching play skills, though it has often been successfully used for teaching other skills such as joint attention, and imitation (Green, 1996), which are social-communicative skills developed in early play. In a 1987 study, young children with autism were successfully taught independent as well as cooperative play through the use of DTT (Lovaas, 1987 as cited in Green). Research supports the use of direct instruction by teachers in isolated settings to teach play skills, which is similar to, though less structured than, DTT (Gonzales-Lopez & Kamps, 1997; Jahr, Eldevik, & Eikeseth, 2000). While direct instruction and DTT are considered effective means for teaching a variety of skills to children with autism, including language and motor skills, it is recognized that instruction of social skills (such as play) are best taught in a more natural, integrated setting (Scheuermann & Webber).

Case Study

The participant, a four-year old male, Asian-American child with autism participated in a case study on the efficacy of discrete trial instruction versus naturalistic/milieu instruction. The study was conducted over 45 sessions, utilizing an alternating treatments design. Treatments were counterbalanced daily, rather than each session as is customary, so as to avoid confusion for the participant. Children with autism rarely react well to changes in routine, and therefore, alternating days rather than sessions was presumed to minimize disruptive behavior resulting from significant changes in routine each day. Prior to the study, the participant was not familiar with the tutor for this research project. The tutor met with the participant once prior to beginning the project for observation. Per project protocol, the tutor alternated between discrete trial and naturalistic teaching strategies, instructing for one hour each session. During the discrete trial phases, the tutor conducted five trials for the targeted play skill, observed the child for five minutes, conducted five trials, observed for five minutes, and so forth, throughout the outdoor playtime session. Discrete trial instruction included tutor commands to "do this" followed by an adult model. If the participant did not respond or did not respond correctly, he was physically or verbally prompted to do so, followed by a verbal praise for correctness. Peers did not participate in the discrete trial instructional phase, though they may have been present (e.g., holding the bucket for a peer). During the naturalistic instructional phase, the tutor instructed the participant through naturalistic peer and adult modeling and praise with at least one typical peer present for five minutes, followed by five minutes of observation, conducted throughout the outdoor playtime session. Naturalistic modeling included statements from the peer and the tutor such as "Hey, Tom, pour the water" or "Look what John is doing!" and the like. If the participant did not respond or responded incorrectly, no response was given. Play skills targeted for instruction were determined by the lead author, the participant's mother, and based on play activities of typical peers, prior to study implementation. The study was conducted in the participant's integrated preschool setting. Instruction occurred during outdoor play activities daily for three weeks. Figure 1 depicts the results of the instruction.

Results

Results indicated that the participant achieved greater success in specific play skill instruction through the naturalistic instructional approach than through discrete trial instruction (see Figure 1). Through this approach, he achieved consistently higher percentages of correct independent responses (see Table 1 for a comparison of skills and percentages). The tutor commented that when using discrete trial instruction, the participant required more prompting than with the naturalistic approach. Further, on one occasion, the participant required no verbal prompts whatsoever from the tutor, and simply upon entering the play space, picked up a bucket and began engaging in a play activity with peers. This behavior was further noted by one of the participant's teachers (who was unfamiliar with the purpose of the project), with regard to painting with water. She noted to the tutor that (after instruction in this activity through naturalistic instruction), the participant independently picked up a brush and began engaging in the activity during outside play time, with no adult supervision or instruction (the tutor was not present on this day). The tutor observed that the participant required verbal prompting during naturalistic instruction in order to begin the activity, but then was able to independently perform the tasks. With discrete trial, however, he required prompting on each individual trial, and showed neither initiation, nor independence for the tasks with or without adult prompts during the observation phases of instruction. However, during the observation phases the participant was able to be successful in play and social activities on the same level as his typical peers following naturalistic instruction. It is based on the data and these observations by the tutor that the participant appears to respond better at school to naturalistic instruction from a trained adult, in the natural play setting, with typical peers than he does in a discrete trial instructional approach.

TABLE 1 Comparison of Percentages of Independent Responses Following Instructional Strategy

Discrete Trial Instruction	Naturalistic Instruction	Throw
ball = 0-40%	Throwing ball (w/peer) = 60-100%	Paint

w/ water = 20-60% Paint w/water = 40-80% Pour water for
peers = 0-20% Pour water for peers = 100% Highest percentage
achieved = 60% Highest percentage achieved = 100%

Limitations of the case study. It should be noted that in most cases, the participant was taught a specific skill through discrete trial instruction prior to being taught the same skill via naturalistic instruction. This inadvertently may have contributed to his increased percentages in the naturalistic instructional approach. Even so, based on comments made by the tutor, the participant appeared more engaged, less distracted, and generally seemed to enjoy tasks more through the naturalistic instructional approach. He required less redirection and fewer prompts during naturalistic instruction than through discrete trial. Finally, it appeared that once able to successfully engage in a play activity, he was able to independently make a choice for that activity and carry it out with minimal to no prompting from the tutor.

Need for Future Research

Literature supports teaching play skills to children with autism. In particular, studies have found that after instruction, children with autism displayed fewer inappropriate behaviors (Roeyers, 1995), increased interaction with peers (Gonzales-Lopez & Kamps, 1997; Kohler et al., 2001; McGee et al., 1992; Roeyers), and increased symbolic, functional and social play (Stahmer, 1995). Many of these studies have focused on teacher-directed or peer-mediated approaches or on older children with autism. While teacher-directed or peer-mediated strategies have merit, they often lack the spontaneity and self-motivated exploration that characterizes typical play. Thus, there exists a critical need for identification of appropriate instructional approaches for younger children with autism within the context of natural play environments.

There is also a noticeable gap in the autism literature with regard to effective instruction for specific play skills. Specifically, those studies that are most commonly noted as evidencing best practices tend to be single subject or case study designs. Though useful in establishing approaches that may be suitable for some children with autism, and respected among researchers in the autism field (Odom et al., 2003), there is a critical need for experimental designs that can be replicated and involve larger numbers of subjects to provide clearer, evidence of approach utility for a greater number of individuals with autism.

Multiple skill areas are often deficit in persons with autism and therefore the target of instruction, including language, motor, cognitive, and social skills. Typical instruction has often involved teacher-directed or manipulated strategies or those that involve the training of typical peers to encourage or instruct on particular skills. Though effective, there is a lack of research indicating the extent to which children with autism learn and acquire skills such as language and motor through more natural means as do their typically developing peers, namely through play. Though research supports that children with autism can be taught to play, these skills are also deficit in children with autism. There is a considerable amount of evidence suggesting that they do not play nor do they develop play as typical children do. One question to consider is whether or not young children with autism can in fact acquire language, motor, cognitive, and social skills more naturally and typically, through typical play opportunities with support from teachers and/or peers. We suggest that the future of play skills instruction and its research for children with autism focus not only on the instruction of play itself, but also on the peripheral benefits of play. Specifically, it is hypothesized that if children with autism are able to play appropriately (like their typically developing peers) this should lead to the development of other skills similar to those acquired by typical children naturally through play. Investigations that seek to understand and shed light on the connection between play and the acquisition of other appropriate skills should therefore also be of focus in future research.

Conclusion

Children love to play; it is simply what children do. However, for many children with autism, play is not something they do, either because they lack the skills or because they choose to "do" other things (e.g., engage in self stimulatory behaviors, etc.). This noticeable lack of play not only sets children with autism apart from their typical peers, it may prevent them from experiencing the natural benefits of play such as improvements in a variety of language, social, cognitive, and motor skills. Though play does not appear to come naturally for many children with autism, instruction in play skills has been shown effective in developing and improving play skills. More research is needed to determine which of several instructional approaches leads to greatest gains in play skills as well as whether or not improvements in play skills has similar peripheral effects on language, motor, and cognitive skills for children with autism as they do for typically developing children.

References

Alpert, C. L., & Kaiser, A. P. (1992). Training parents as milieu language teachers. *Journal of Early Intervention, 16*, 31-52.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorder*, 4[supth] ed. Washington, DC: American Psychiatric Association.

Bredenkamp, S., & Copple, C. (Eds.). (1997). *Developmentally appropriate practice in early childhood programs*. Washington, DC: National Association for the Education of Young Children.

Diamond, K. C., & Carpenter, C. (2000). The influence of inclusive preschool programs on children's sensitivity to the needs of others. *Journal of Early Intervention*, 23, 81-91.

Elkind, D. (2003). The lasting value of true play. *Young Children*, 70(3), 46-50.

Garfinkle, A. N., & Schwartz, I. S. (2002). Peer imitation: Increasing social interactions in children with autism and other developmental disabilities in inclusive preschool classrooms. *Topics in Early Childhood Special Education*, 22, 26-38.

Gitlin-Weiner, K., Sandgrund, A., & Schaefer, C. (2000). *Play diagnosis and assessment* (2[supnd] ed.). New York: John Wiley & Sons, Inc.

Goldstein, H., Kaczmarek L., Pennington, R., & Shafer, K. (1992). Peer-mediated intervention: Attending to, commenting on, and acknowledging the behavior of preschoolers with autism. *Journal of Applied Behavior Analysis*, 25, 259-305.

Gonzales-Lopez, A. & Kamps, D. M. (1997). Social skills training to increase social interactions between children with autism and their typical peers. *Focus on Autism and Other Developmental Disabilities*, 12, 2-14.

Green, G. (1996). Early behavioral intervention for autism: What does the research tell us? In C. Maurice (Ed.), *Behavioral intervention for young children with autism: A manual for parents and professionals* (pp. 294-4). Austin, TX: Pro-Ed., Inc.

Greenspan, S. I. (2004). Greenspan's Floor Time Model. Retrieved October 7 2004, from <http://www.coping.org/earlyin/flortm.htm#Goals>

Greer, R. D., Dorow, L., Williams, G., McCorkle, N., & Asnes, R. (1991). Peer-mediated procedures to induce swallowing and food acceptance in young children. *Journal of Applied Behavior Analysis*, 24, 783-790.

Haring, T., & Breen, C. (1992). A peer-mediated social network intervention to enhance the social integration of persons with moderate and severe disabilities. *Journal of Applied Behavior Analysis*, 25, 319-333.

Hemmeter, M. L., & Kaiser, A. P. (1994). Enhanced milieu teaching: Effects of parent-implemented language intervention. *Journal of Early Intervention*, 18, 269-289.

Hughes, F. P. (1998). Play in special populations. In B. Spodek & O. Saracho (Eds.), *Multiple perspectives on play- in early childhood education* (pp. 171-193). Albany, NY: SUNY Press.

Hughes, F. P. (1999). *Children, play, and development*. Boston: Allyn and Bacon.

Jahr, E., Eldevik, S., & Eikeseth, S. (2000). Teaching children with autism to initiate and sustain cooperative play. *Research in Developmental Disabilities*, 21, 151-169.

Kaczmarek, L., Hepting, N., & Dzubak, M. (1996). Examining the generalization of milieu language objectives in situations requiring listener preparatory behaviors. *Topics in Early Childhood Special Education*, 16, 139-167.

Kamps, D., Ellis, C., Mancina, C., Wyble, J., Greene, L., & Harvey, D. (1995). Case studies using functional analysis for young children with behavior risks. *Education and Treatment of Children*, 18, 243-260.

Kohler, F. W., Anthony, L. J., Steighner, S. A., & Hoyson, M. (1998). Teaching social interaction skills in the integrated preschool: An examination of naturalistic tactics. *Topics in Early Childhood Special Education*, 21, 93-103.

Kohler, F. W., Anthony, L. J., Steighner, S. A., & Hovson, M. (2001). Teaching social interaction skills in the integrated preschool: An examination of naturalistic tactics. *Topics in Early Childhood Special Education*, 21 (2), 93-103, 113.

Laushey, C. J., & Heflin, L. J. (2000). Enhancing social skills of kindergarten children with autism through the training of multiple peers as tutors. *Journal of Autism and Developmental Disorders*, 30, 183-193.

Lefrancois, C.R., (1994). *Of Children: An introduction to child and adolescent development*. Belmont, CA.: Wadsworth Publishing Company.

Libby, S., Powell, S., Messer, D., & Jordan, R. (1998). Spontaneous play in children with autism: A reappraisal. *Journal of Autism and Developmental Disorders*, 28, 487-497.

McGee, G. G., Almeida, M. C., Suzler-Azaroff, B., & Feldman, R. S. (1992). Promoting reciprocal

interactions via peer incidental teaching. *Journal of Applied Behavior Analysis*, 25, 117-126.

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 Persons with Severe Handicaps*, 24, 133-146.

National Association for the Education of Young Children. (1991). Guidelines for appropriate curriculum content and assessment in programs serving children ages 3 through 8. *Young Children*, 46, 21-38.

Odom, S. L., Brown, W. H., Frey, T., Karasu, N., Smith-Canter, L. L., & Strain, P. S. (2003). Evidence based practices for young children with autism: Contributions for single-subject design research. *Focus on Autism & Other Developmental Disabilities*, 18, 166-176.

Pierce, K., & Schreibman, L. (1997). Increasing complex social behaviors in children with autism: Effects of peer-implemented pivotal response training. *Journal of Applied Behavior Analysis*, 28, 285-295.

Quill, K. A. (1995). *Teaching children with autism: Strategies to enhance communication and socialization*. New York: Delmar Publishers, Inc.

Roeyers, H. (1995). A peer-mediated proximity intervention to facilitate the social interactions of children with a pervasive developmental disorder. *British Journal of Special Education*, 22, 161-164.

Saracho, O. N., & Spodek, B. (1998). Preschool children's cognitive play: A factor analysis. *International Journal of Early Childhood Education*, 3, 67-76.

Scheuermann, B., & Webber, J. (2002). *Autism: Teaching does make a difference*. Belmont, CA: Wadsworth.

Schleien, S. J., Mustonen, T., Runders, J. E., & Fox, A. (1990). Effects of social play activities on the play behavior of children with autism. *Journal of Leisure Research*, 22, 317-328.

Smolucha, L., & Smolucha, F. (1998). The social origin of mind. In O. N. Saracho & B. Spodek (Eds.), *Multiple perspectives on play in early childhood education*, (pp. 34-58). Albany: State University of New York Press.

Stahmer, A. C. (1995). Teaching symbolic play skills to children with autism using pivotal response training. *Journal of Autism and Developmental Disorders*, 25, 123-141.

Terpstra, J. K., Higgins, K., & Pierce, T. (2002). Can I play? Classroom-based interventions for teaching play skills to children with autism. *Focus on Autism and Other Developmental Disabilities*, 17, 119-126, 128.

Woltberg, P. J. (2003). *Peer play and the autism spectrum: The art of guiding children's socialization and imagination*. Shawnee Mission, KS: Autism Asperger Publishing Company.

Wolfberg, P. J. (1999). *Play and imagination in children with autism*. New York: Teachers College Press, Columbia University.

ADDED MATERIAL

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Portions of this manuscript were supported through a grant from Project LASER, Linking Academic Scholars to Educational Resources, from the University of South Florida. Correspondence concerning this article should be addressed to E. Amanda Boutot, DePaul University, College of Education, 2320 N. Kenmore, Chicago, IL 60614.

Figure 1. Number of correct responses during discrete trial ([Graphic Character Omitted]) vs. Naturalistic (Delta) instructional sessions.