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The Effects of Teaching Play Strategies on Social Interaction for a Child With Autism: A Case Study

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Abstract. In this case study, research was conducted in an integrated preschool setting, which included children with a variety of disabilities as well as children who were considered to be typically developing. "Jay," the subject of this study, was a 3-year-old boy who, at 2 years of age, had been diagnosed as having autism and a "global delay," meaning he had a delay in all areas of development. Participant observation research was used in this study. Play skills were taught in a structured teaching method, which was modeled after Treatment and Education of Autistic and Related Communication Handicapped Children, otherwise known as division TEACCH. Researchers sought answers to questions such as, "If play strategies are taught (such as how to play with age-appropriate toys), what would be the effect on social interaction of the autistic child with typically developing peers?" Observations were conducted during structured teaching, free choice play time, and group activities. At the end of the nine-week period, the data were analyzed by looking at the patterns and categories that emerged. In assessing the results of teaching play strategies in an integrated preschool setting, significant changes were observed in how Jay engaged in social play with adults and peers.

For years, debate has raged over the best methodology to use in educating children with autism. A wide body of research advocates developmentally appropriate practice (DAP) as the best guide for teaching children in early childhood (Bredekamp & Copple, 1997). Considerable research also advocates formalized, structured teaching for children with autism (Lovaas & Smith, 1988; Schopler, 1996). This study will assess the effectiveness of merging elements from both philosophies to address the educational needs of children with autism.

Each child with autism may exhibit a wide variety of characteristics, as described in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) (American Psychological Association, 1994), along a spectrum of severity and involvement. Professionals need to be prepared to use a variety of strategies best suited for each individual child, taking into consideration their personal strengths and challenges. When considering Piaget's theory of children's typical development through play (Shaffer, 1996) and an understanding of the reciprocal interplay between environment and the child (Vygotsky, 1978), combined with the knowledge that children with autism tend to be Gestalt-style learners (Cohen & Volkmar, 1997; Hodgdon, 1999; Janzen, 1996), a more viable method of teaching this population may be to teach play strategies in a visually embedded and integrated environment, using tenets of DAP, rather than using either the structured teaching model or DAP alone.

Review of Relevant Literature

Autism is a *spectrum disorder*. The symptoms and characteristics of autism can present themselves in a wide variety of com-

binations, from mild to severe. Although autism is defined by a certain set of behaviors, children and adults can exhibit *any combination* of the behaviors in *any degree of severity*. Two children, both with the same diagnosis, can act very differently from one another and have varying skills.

Some affected children may exhibit delays in language and greater challenges with social interactions. The child may have difficulty initiating and/or maintaining a conversation. Communication often is described as egocentric, as if the autistic child is "talking at" the listener rather than with him or her.

Children with autism process and respond to information in unique ways. In some cases, aggressive and/or self-injurious behavior may be present. Persons with autism also may exhibit some of the following traits:

- Insistence on sameness; resistance to change
- Difficulty in expressing needs; uses gestures or pointing instead of words
- Repeats words or phrases in place of normal, responsive language
- Laughs, cries, shows distress for reasons not apparent to others
- Prefers to be alone; aloof manner
- Tantrums
- Difficulty in mixing with others
- May not want to cuddle or be cuddled
- Little or no eye contact
- Unresponsive to conventional teaching methods
- Sustained odd play
- Spins objects
- Inappropriate attachments to objects
- Apparent oversensitivity or undersensitivity to pain
- No real fears of danger
- Noticeable physical overactivity or extreme underactivity
- Uneven gross/fine motor skills
- Not responsive to verbal cues; acts as if deaf, although hearing tests in normal range.

For most of us, integration of our senses helps us to understand what we are experiencing. For example, our senses of touch, smell, and taste work together to provide information about the experiences of daily life. For children with autism, sensory integration problems are common. Their senses may be over- or underactive. Some children with autism are particularly sensitive to sound, finding even the most ordinary noises to be painful. Many professionals feel that some of the typical autism behaviors are actually a result of sensory integration difficulties (Autism Society of America, 2003).

Play in Children

Piaget (1962) describes three stages of play. The first stage is practice play, which is the sensorimotor play seen in infants during the first year of life. This involves non-goal-oriented actions with objects, motivated by the infant's pleasure in having actions and objects under his/her own control. Around age 2, children enter a transitional stage wherein play is not quite symbolic, but is more than just practice play. According to Piaget, the transitional stage can be described as follows:

> during the second year of the child's development, we have seen, however, that between the symbol properly so-called and the practice game, there is a third term, the symbol in action without representation. (Piaget, 1962, p. 112)

Later work by Smilansky (1968) refined the transitional period into a stage of constructive play. Smilansky's constructive type of play combined sensorimotor and practice with symbolic representation of ideas. Constructive play occurs when children engage in self-regulated creation or construction of a product or a problem solution (Santrock, 2002).

The second stage is the symbolic or pretend play period, which is perhaps the most interesting and creative form of play. This kind of play is typical from 2 to 6 years of age. Children in this stage use fantasy to change themselves into people or objects other than themselves, or to place themselves into imaginary situations. They

adapt reality to their own needs. Their pretend play includes such behaviors as pretending to feed a doll or pretending to teach their stuffed animals. In the third stage, children begin to play games with rules, such as checkers. This is a mature form of play that is common to older children.

Another way to look at play is by its social aspects. Parten (1932) identifies six stages of play, which are linked to the social nature of play and play activity:

1. Unoccupied—Not active object play, just observing others. No interaction. Lots of body play (gross motor).
2. Solitary (Independent)—Playing separately from others, with no reference to what others are doing.
3. Onlooker—Watching others play. May engage in conversation but not engaged in doing. The focus is on the children at play.
4. Parallel—Playing with similar objects, clearly beside others but not with them.
5. Associative Play—Playing with others without organization of play activity. Initiating or responding to interaction with peers.
6. Cooperative Play—Coordinating one's behavior with that of a peer. Everyone has a role, with the emergence of a sense of belonging to a group. Beginning of "team work."

Effects of Autism on the Ability To Play

Typically developing children are intrinsically motivated and will naturally engage in purposeful play. It is widely accepted that typical children will produce meaningful learning from their play. This is not the case for children with autism. With the wide spectrum of possible domains affected for a child with autism, the range of involvement and the nature of those domains, children with autism tend to have substantially impaired play skills. Unlike typically developing children, an autistic child may spend considerable time engaged in such nonfunctional activities as stereotyped body movements (Volkmar & Cohen, 1988). Children with autism also do not manipulate toys the same way a typically developing child will. To illustrate this point, the following example will compare how a typically developing preschool child will play with toy cars, and then how a child with autism may engage in the same activity.

When a typically developing 3-year-old child has a toy car to play with, s/he may scoot it along the floor or "drive" it through the air without anyone telling him or her how to play with that item. The child may make the sounds of the motor and screeching wheels, and even create dialogues for the pretend driver inside. This child has seen cars, heard the sounds, and been a passenger during the course of daily life situations. From those observed life experiences the child can engage and learn through play.

Children with autism may have had the same exposure to cars, yet they will usually not make the car scoot on the floor or fly it through the air. The autistic child is less likely to make the sounds of a car or create dialogue for the driver. More typically, children with autism may turn the car over on its hood and spin its wheels for an extended period of time. This is known as nonproductive play, or is sometimes called self-stemming or perseverating.

How Children With Autism Learn

Children with autism are visual learners. The most effective mode of presenting materials to this population is through nontransient visual supports (Hodgdon, 1999; Janzen, 1996; Schopler, 1996), such as black-and-white line drawings or the written word. Picture schedules, destination books, social stories, and other nontransient visual cues are critical for helping children with autism to organize and know what to do in a given environment (C. Grey, personal communication, March 8, 2000). It is also believed that children with autism use a Gestalt-type of information processing system (Hodgdon, 1999; Janzen, 1996), taking in all information (in chunks) without the ability to filter out extraneous stimuli. Thus, children with autism do not pick up on social cues in the environment.

These factors all have clear implications

for organizing a teaching environment that attends to the needs of the autistic child. Taking into account the identified factors that can support the learning style of children with autism (such as visual cues, structured environment, a workplace void of extraneous stimuli), let's compare what happens to a typical child and a child with autism in a preschool environment.

When typical children go into a preschool room with conventional centers to choose from, they can make choices as to what to play with and will become engaged in a toy or activity. Children with autism tend to become overwhelmed in a setting where there is free choice and unstructured play (Schopler, 1996). They may become distracted as they are bombarded by stimuli. Hypersensitivity to sight, sound, touch, or smell is a classic characteristic symptom of autism, and may cause confusion and distress (Janzen, 1996; Schopler, 1996). When a child with autism is overstimulated, s/he will often become involved in nonproductive types of play, rocking, or repetitive movements with a toy. Although this behavior helps to soothe the child, it actually replaces engagment in meaningful play with an object (Stock, 1998).

Structured Teaching

In the structured teaching environment advocated by Schopler (1996) and Lovaas and Smith (1988), outside or extraneous stimuli in an autistic learning environment is controlled—or at least drastically reduced—so that the autistic child may be ready to learn. Since persons with autism tend to be visual learners (Quill, 1997), the environment is designed to support and give clear visual cues as to what needs to be done in a given situation. The environment would include not only play areas typically found in a preschool room, but also an individual work area where the student does independent work. This area is void of extraneous decor and only uses visual cues to denote work to be done. By using the strengths of these visual learners, incorporating the knowledge of the Gestalt-style of learning, and using structural support (such as a predictable schedule), the child with autism can independently "read" the visual cues and know what needs to be done in a given activity or in a given day.

The passage of the Handicapped Children's Early Education Act (P.L. 90-538) in 1968 mandated a free and appropriate education for children 3 to 5 years of age who have some identifiable handicapping condition. Since the passage of this law, and subsequent others, educators have worked to define how to serve preschool children with disabilities in the most appropriate way, based on current knowledge of child development and knowledge of best practices curricula.

Research identifies definite benefits to having children with disabilities in an inclusion setting with typical peers (Myles, Simpson, Ormsbee, & Erickson, 1993); more and more studies also support the notion that children with autism, in particular, can benefit from inclusion settings (Grandin, 1998; Tomchek, Gordon, Arnold, Handleman, & Harris, 1992). Due to the nature of autism, the play skills of children with autism are typically significantly impaired, and so integration of typical peers with autistic children alone will not bring about significant change (Sigrnan, 1999). Kohler, Stain, Maretsky, and DeCesare (1990) found that careful planning and appropriate intervention strategies must be employed to facilitate the desired changes.

A wide spectrum of teaching techniques and philosophies exists for teaching children with autism. In fact, options may appear to be diametrically opposed. The Lovaas methodology, on one end of the spectrum, advocates teaching in a highly structured environment in a segregated setting. Skills are taught in isolation and students are drilled for multiple hours a day. On the other end of the spectrum, developmentally appropriate practice (DAP) advocates a child-centered environment whereby the child's autonomy is nurtured by having multiple opportunities to make independent choices throughout the day. A more moderate style of structured teaching is called the Treatment and Education of Au-

tistic and Related Communication Handicapped Children, or TEACCH, model. This model was developed by Eric Schopler and has been adopted all throughout North Carolina.

The TEACCH curriculum model, on which this research is based, incorporates some elements of the Lovaas model of structured teaching, but strives to achieve the competencies and autonomy so integral to DAP. The TEACCH model fosters a child's independence while using structured teaching and visual supports. The researchers modified the TEACCH model by using the method in an integrated preschool setting, and using typically developing peers as part of the teaching strategies, while keeping the focus on play.

Foreshadowed Questions

Studies support the idea that children with autism are visual learners (Hodgdon, 1999; Schopler, 1996) and employ a Gestalt-style of learning. With this in mind, the foreshadowed questions that guided this research were:

- Can teaching play strategies in a developmentally appropriate manner increase the amount of cognitively complex play, as described by Piaget (1962)?
- Once a play skill is learned, will that skill be generalized to other play situations?
- Will the play strategies help the child subject interact socially in play situations with typically developing peers and engage in more socially complex play, as described by Parten (1932)?

Methodology

This study is a qualitative case study (Merriam, 1997) of one child with autism in an integrated setting. The researchers used participant observation to study how teaching play strategies to a child with autism affected his cognitive development, academic progress, and social interactions. To maintain reliability of the observations and reporting, the teacher maintained the responsibility for collecting data and doing the observations. The teacher recorded observations by using video and audio recordings, written direct observations, and document samples.

Video- and audiotape data were transcribed in detail. Work samples from the subject were supplemented with teacher descriptions of the process he used to create the work. During the school year, the transcripts, written observational records, and work samples were examined, using a content analysis methodology to delineate emerging themes for further examination (Bogdan & Biklen, 1997). Final coding was completed after the end of the school year. The themes that were discerned from the data were organized into patterns of development to categorize Jay's interactions with toys and other students in the classroom. These patterns were examined in light of the foreshadowed questions and the effectiveness of the teaching model used in Jay's classroom.

This case study research was conducted in an integrated preschool setting, which included children with a variety of disabilities as well as children who were considered to be typically developing peers. The child participating in the study, "Jay," was a 3-year-old boy who attended this class. At age 2, Jay was diagnosed as having autism. He also was diagnosed as having a "global delay," meaning that Jay had a delay in all areas of development: social-emotional, cognitive, communication, motor, and adaptive skills.

The play skills were taught in a structured teaching method modeled after the TEACCH model, which uses structured teaching with visual to physical prompting when teaching children with autism skills in all areas of development. The TEACCH model is conducted in a specialized environment for children with autism as opposed to inclusion environments, as is normally done in the public school system. Modifications to this model were used in the integrated preschool setting.

Scheduled observations were conducted four times a week, although noteworthy events that did not fall in the designated observation time also were recorded. These scheduled observations began at the beginning of the school year in August and con-

tinued until the end of the school year in June. Baseline observations were conducted from August until the beginning of October. These observations were conducted before the teacher implemented any of the research conditions reported in this document.

Observations were collected using video and audio recordings, as well as documentation in the form of running and anecdotal records recorded by the teacher, and a collection of work done by the subject. The teacher had developed the teaching method during the prior year and worked with experts in observational and qualitative research methods during that time. Overall, more than 150 hours of direct observation were collected. This report will offer representative examples of interactions with Jay that help to demonstrate his development and reaction to the teaching method implemented for him in this classroom.

The observations were done at predetermined times, which varied week to week, to include observations from all settings of the day's activities. Observations were scheduled in 20-minute segments. The teacher was given leeway to record for longer periods when the sessions were going well, or recording could be stopped if Jay became distraught. The well-being of the participating child was always considered paramount and superceded data collection. The resulting data collected included observations during the structured teaching, free choice play time, lunch, small-group activities, and large-group activities. At the end of the nine-week period, the data was analyzed by looking at the patterns and categories that emerged.

In assessing the results of teaching play strategies in an integrated preschool setting, significant changes were observed in how Jay engaged in social play with adults and peers. To illustrate the development of the case subject across the four-month period of time, we will present baseline observational data, that illustrates the subject's skill level in the beginning of the study, as well as observations over the time of the treatment phase to demonstrate the higher level of learning that Jay achieved.

The Setting

This study was conducted in a preschool classroom in a rural public elementary school that serves children preschool to 5th grade. Observations were done in the school environment during regular school hours. The preschool class in which the study was conducted had a total of 12 students. Four of the 12 children were 5 years old and considered typical in their development. The other eight children in the preschool class were identified as having some developmental delay, which was documented through the Multi-Factored Evaluation (MFE) process that includes observational data, structured interview, criterion reference testing, and standardized or norm reference testing. The age range of the children identified with a disability or delay was 3 to 5 years old.

The preschool program was a full-day program, which runs the same hours as the elementary school, Monday through Thursday. Students do not attend school on Fridays, when the teacher works with other professionals who are a part of the intervention team for the students with disabilities. Fridays also are used as a time for the teacher to visit students' homes and consult with the parents, who are considered to be an integral part of their children's education program.

Staffing in the preschool setting was established in accordance with state licensing standards, with a ratio of no less than two adults per eight 3- to 5-year-old children. Staff included: 1) the teacher, with teaching certificates in multi-handicapped (MI-I) education, grades K-12, early childhood education, and early education of the handicapped (EEH); 2) a full-time educational aide, who assists in the classroom and has received training specific to the student with autism; 3) the building principal, who was designated acting director of the center and was available in any emergency situation; 4) a full-time personal attendant for Jay, who worked closely with the teacher during the study to implement lesson plans for Jay and acted as a daily reporter to Jay's parents; and 5) several volunteers who come into

the classroom, including parents, community members, and a high school work study student who comes in three times a week.

The Subject

Jay was a 3-year-old male who had received a diagnosis of autism by a team of professionals when he was 2 years old. The diagnostic team consisted of a medical doctor, occupational therapist, physical therapist, psychologist, speech-language pathologist, and early intervention specialists. Jay exhibits many of the classic characteristics of a child with autism, such as lack of social relationships, significantly impaired communication skills, limited eye contact, and lack of imagination or child-appropriate play. He has been described as having a "global delay," indicating that he has a delay in all areas of development, namely social-emotional, cognitive, communication, motor, and adaptive behavior. The most significant delays are in the areas of communication, adaptive behavior, and social emotional development.

Jay was an ideal candidate for this study because he had many identified strengths in his life. He has two supportive and involved parents who are educated in the implications of their son's disability and are excellent advocates for their child. The parents provided necessary therapies for Jay's specialized needs, including: sensory integration needs, oral motor needs, speech therapy, and occupational and physical therapy. The parents were very involved in making decisions regarding his educational setting and individual education plan.

Results

Baseline Data

The results of this study show the development of Jay's ability to engage with other peers and with play materials. Jay's baseline data indicated that his play behavior and interactions with peers were not typical for his age. Play for a typical 3-year-old includes social interaction; imaginative and social/dramatic play; and engagement, interaction, and exploration with toys and materials (Piaget, 1962).

Jay's baseline play observations indicate that he was operating in the practice play stage in his interaction and exploration of materials. He did not indicate any inclination to participate in constructive play. At his age, he should have been engaging in symbolic play with objects; however, he did not exhibit those behaviors either. Jay was only engaged in unoccupied and solitary play. While it is not unusual for children of his age to engage in these play behaviors, it is unusual for a child of Jay's age to engage only in these behaviors. Three-year-olds would be expected to engage in onlooker and parallel play, if not associative play.

Jay exhibited noticeable difficulty in social play and social interactions. During circle time, the class would choose the activities. Jay had three distinct problems with this arrangement: 1) he could not make a play choice, 2) he was unable to enter a play area to engage in play with other children, and 3) once he did make a play choice, he did not know what to do with the toy.

In one play scenario, Jay was given the opportunity to choose where he wanted to play. Jay stood near but clearly outside of an area where several of the other students were playing. He did not make a move towards the other children or look in their direction. He stood almost still for approximately 10 minutes, seemingly staring at nothing. Occasionally, Jay looked toward the group of children playing, but then would look away after about five seconds. He still remained basically motionless. Jay did not approach or attempt to communicate in any identifiable or traditional way. Approximately 12 minutes into the observation, Jay turned and walked into the art area, picked up a writing toy in the shape of a top (called a doodler), then returned to the same spot he had stood in before, slightly rolling the doodler between his fingers. He did not look at, use, or explore the object further.

Observation #1:
September 13
Approximately 5 or 6 minutes passed, then a loud noise came from where the other chil-

dren were playing, and Jay turned and looked towards the other children. At this time, Jay walked into the play area where the other children were. He picked up a plastic dinosaur, which another child had just put down, and walked back to the same spot where he had been standing before. Jay held the toy doodler in one hand and the plastic dinosaur in the other. He then went back to seemingly staring at nothing. He stayed in the same spot, holding the toys for approximately another 8 minutes, until the observation time was up.

During this first observation (#1), Jay's behavior exhibited three areas of deficit in only a short time. First, he did not choose a toy. The choices could have been overwhelming for him, and so at the beginning of the observation, he stood motionless, unable to pick any toy. When Jay did choose a toy, a doodler, he did not know what to do with the object. He rolled the toy between his fingers but he did not attempt to explore the object or engage with it further. The third problem Jay faced was the inability to enter a play area with a group of children who were already engaged in play. Not only was he unable to initiate contact with other children, he also stood so far out of the play area that none of the other children made any attempt to initiate contact with him. Jay did not make eye contact with any of the children or adults in the room during the full observation time. No communicative attempts, through gestures or words, could be identified.

Observation #2 demonstrates another example of typical baseline behavior before teaching play strategies that again occurred at free choice play time. It demonstrates Jay's good-natured and pleasant demeanor, but also illustrates his lack of engagement.

Observation #2:
September 18
The other students had made a plan of where they were going to play and had verbally told the teacher. The other students were then dismissed to start their free choice play time. Jay was asked, "Show me where you want to play" (for Jay, "showing" or "leading an adult," was an acceptable way of communicating what he wanted, as he was not able to respond verbally and had a limited ability to use sign language). Jay ran off to the housekeeping area of the room and stood there and giggled. Then, he ran to the block area of the room and stood there and giggled for about 1 or 2 minutes. He ran back to the housekeeping area, stood again for a few minutes, and giggled and ran back to the block area again. This behavior continued for the remaining 15-minute observational period.

In observation #2, Jay is laughing and very amused, but the laughter does not involve anyone else. He is entertaining himself, but again not engaging in any kind of productive play with an object or with a person. He is not communicating with another person or demonstrating an ability to function in the classroom. Running back and forth was the extent of this game for Jay. If this game included another child or an adult, it would have been considered to have a social component. However, Jay spent the entire observation time running back and forth between the two centers by himself, laughing and giggling, but not engaging with anyone or anything. This is an example of sensory-motor functional play, the most basic of Piaget's (1962) types of play.

In observation #1 and #2, the observed activity was completely child directed and without any adult intervention. In baseline observation #3, the researcher attempted to redirect Jay into meaningful play with a typically developing peer in the class. On many occasions prior to this observation, Jay enjoyed playing games that he initiated, such as throwing or dumping toys on the floor (classified as sensory-motor play). He was easily redirected from throwing toys on the floor to throwing toys into a plastic container when the teacher entered the play and offered to hold the plastic container. With the help of the teacher, Jay was able to engage in primitive constructive play, which he seemed incapable of doing on his own. Jay and the teacher had played in

this fashion many times and made quality connections during this play. In the following observation, sensing that Jay was secure playing this game, the teacher attempted to incorporate one of the typically developing peers into the play.

Observation #3:
September 20
Jay had several play food items in his hands. He started to throw the food around the housekeeping area. In previous situations such as this one, the teacher offered a plastic container for Jay to throw the food into. Jay responded by throwing the food into the plastic container. After playing this game repeatedly, the teacher wanted to change the activity to putting the food into her cupped hands. Instead of offering Jay the plastic container, the teacher offered her cupped hands and said "in." Jay complied with her request; he laughed and enjoyed the interaction as the activity was repeated seven or eight more times. After playing in this fashion for approximately 10 minutes, the teacher wanted to bring a typically developing peer into the play scenario. The teacher directed a female classmate to cup her hands in the same fashion as the teacher had been doing, and to stand still while Jay was directed to put the food into the female students' hands. The peer did as she was asked; she stood quietly, with a big smile on her face, and said "in," which had been the verbal cue word for this activity. Jay looked at the girl's outstretched hands and threw the food on the floor as he ran in the opposite direction. The same scenario was attempted four or five more times over the course of the observation and Jay had the same reaction each time. When the teacher attempted to put her hand over Jay's to get Jay to put the food into the little girl's hands, Jay became agitated and screamed.

Observation #3 demonstrates the extreme difficulty Jay experienced with social interaction and social situations. Throwing or dumping toys, play food, or blocks around the room was play activity to Jay; redirecting him had been easy as long as an adult did the intervention. Jay was able to comply with the redirection when asked to throw the food into a container or to put the food into the teacher's hand. When the redirection incorporated another child, however, Jay fled.

Jay's reaction demonstrated that social interaction with his peers was extremely difficult for him, even in a controlled and safe environment. Jay could put toys in a basket with an adult holding it, put tokens in a tube of water at his workstation, and put pennies in a jar at home, but he could not put anything in another child's hand.

Teaching the Play Strategies

During the implementation of the play strategies approach, Jay's behavior and interaction during the actual treatment phase was observed and recorded. Two separate play scenarios, with multiple observations of each scenario, illustrate the progression of teaching play strategies. The two play strategies illustrated are lunchtime imitation games and a play scenario involving rolling trucks to a play partner.

As a part of the daily routine, Jay and the teacher ate lunch together in the preschool room. This was done for several reasons. First, the noise level in the cafeteria was too loud and caused Jay to become distraught. Second, oral motor issues (such as extreme sensitivity to tastes and texture) made getting Jay to eat at all an effort. Providing an environment that was conducive to him eating was more important than any possible benefits that Jay may have gained by eating with typical peers. Third, the period directly after lunch was often scheduled for physical therapy and sensory integration therapy, and one-on-one time was the most effective way to implement these therapies. During these lunchtime sessions, Jay and the teacher typically worked on such adaptive skills as using eating utensils, communicating and learning the social components of communication.

At first, as the teacher and Jay ate together, there was only basic "need driven" communication. This included making signs (for more raisins or cookies) or gesturing (Jay would take the teacher's hand

and place it on the food, indicating he wanted to eat that particular food). When playing strategies were being taught, Jay became more communicative and social.

If Jay ate anything it was cause for positive reinforcement. An adult usually verbally praised or clapped when he ate well or tried a new food. This became a game for Jay. He would clap when he ate a bit of food and the teacher then would clap the same number of times and at the same rate.

Across the course of the treatment period, Jay became more social in his actions when the researcher engaged him in such simple imitation games. As the researcher imitated Jay when he clapped, careful to match the rate and times, Jay realized he could control the game. The interactions between the researcher and Jay became more complex over the course of a few weeks and the social play became more fun.

Observation #4:
February 1
Jay was very careful to look at his fingers and hold them in different positions (open fingers or closed fingers), then clap. First, he clapped fast and waited for me to respond. He was excited and extremely amused when I matched the rate at which he was clapping. Then, he clapped slowly, and again I matched the rate he had set. This interaction went on for about 12 minutes.

February 22
Jay continued with our traditional imitation game of follow the leader with clapping hands. Again, Jay led fast and slow, loud and soft. Then he changed the game again and slapped his legs. We both roared with laughter as I followed his new moves. It was great to see this variation of the game! I've seen Jay progress in this game, much like a typical child would expand or have variations on a theme!

March 14
At lunch, we played the usual imitation game. This game has come a long way! Today, Jay led in a series of movements from clapping hands (fast, slow, loud, soft) to clapping using the wrist, patting the head, to slapping legs. Jay also included patting his tummy and putting his hands behind his back.

During the time of teaching play strategies, the imitation game started to change. Jay would watch the researcher closely when it came time to imitate as he began to make the game more complex. First, he started by varying the rate, clapping his hands from fast to slow, then back to fast. Then, he started varying the volume at which he was clapping, between soft and loud, and then the placement of where he held his hands. One time his hands were to the side of his body, another time his hands were held high.

Within the next week, Jay changed the rules of the game again. He would clap using the insides of his wrist, rather than open-handed clapping. The researcher in turn imitated him. The next day, the imitation game was to have one hand open while the other hand clapped with one finger (the index finger). Two days later, Jay patted his hands on his head. After a week of trying different ways of playing this imitation game, Jay started combining different actions. This use of imitation suggests that Jay was engaging in symbolic types of play (Piaget, 1962).

Once Jay realized that he was able to communicate what he wanted the adult to do, and the adult would imitate the actions, the engagement became more complex and interesting for both parties. Jay made longer and more frequent eye contact during these games. The best illustration of how this child was engaging socially in such a completely different manner, however, occurred during one of the lunch sessions after five weeks of teaching play strategies.

One of the few requirements placed on Jay during lunchtime was that he had to sit at the table and eat. Walking around the room and eating was not allowed. Some battles about this rule occurred throughout the first half of the year; nevertheless, this rule was one of the few that were not flexible. When Jay would start to leave the lunch table, the researcher would ask, "Are

you done?" and sign "done." If Jay signed "done," then lunch was over. If he indicated that he still wanted to eat (usually by reaching for some food or drink), the researcher would sign and say, "You must sit when you eat" while signing "sit and eat." Some days, Jay complied, and some days he needed to be physically led back to his chair.

Observation #5:
April 12
Partway through lunch one day, Jay began to wonder off with a cookie in his hand. The researcher asked, "Are you done?" (signing "done"). Jay indicated he was not done by taking another bite of his cookie. The researcher said, "You must sit when you eat," signing "sit" and "eat." Jay smiled, looked right at the researcher and sat on the floor (out of arm's reach). He proudly ate his cookie while giggling and smiling at the researcher.

In Observation #5, Jay clearly knew what he was doing and was exhibiting a higher level of social engagement—he played a prank on the researcher!

One of the play strategies used with Jay was teaching him the appropriate way to play with toys; in this case, rolling a wooden truck back and forth with a play partner. As was mentioned earlier, a typical way that Jay played with cars and trucks was to turn over the vehicle and spin the wheels. This behavior was observed multiple times in the classroom, and Jay's mother reported the same behavior at home.

To teach the play strategy, the researcher and Jay's personal attendant sat on the floor with Jay. The researcher and the personal attendant faced each other, about three to four feet apart. Jay sat in the lap of his attendant, also facing the researcher.

The researcher and attendant modeled play with the car. The researcher signed and said "go," and the attendant pushed the car to her. Then the attendant signed and said "Go" and the researcher pushed the car in response to the cue. After modeling this approximately five times, the attendant used hand-over-hand instruction to teach Jay how to play with this toy. This was an important step in that the attendant was letting Jay know that the typical play he was used to—turning over the truck and spinning its wheels—was not allowed.

During the modeling of the play sequence, the adults showed a lot of enthusiasm and used positive praise. It is also important to note that a particular command, sign, verbal cue, or praise was given at a rate that was commensurate with what Jay could comprehend and respond to. It was very important that only one cue was given at a time and that the researcher would wait and allow Jay time to process the cue and respond accordingly. It also was critical that the car was only rolled from one person to the other when the play partner signaled the intent by signing "go," even if that meant taking Jay's hands and physically helping him to make the sign "go."

In early observations, the pause between a cue and a response was at times quite long. When more than 45 seconds or so passed, the cue was given again. Then the researcher waited again for Jay to respond. In some instances, Jay needed physical assistance to sign "go." The following is a series of observations conducted as this play strategy is being taught to Jay, one observation per week, for three consecutive weeks.

Observation #6:
February 8
Jay sat on the floor with the toy truck in his hands. The researcher signed and said, "Go," then waited with an enthusiastic expression on her face. Jay looked at the researcher, looked at the window, looked around the room, and did not respond. After waiting for 1 minute, the attendant signaled "Go" again and, using hand-over-hand instruction, helped Jay push the truck to the researcher. The researcher moved the truck back and forth, trying to engage Jay's attention. Jay would look at the truck but did not sign independently. After waiting almost 1 minute, the attendant used hand-over-hand instruction to sign "Go," and the researcher rolled the truck to Jay. The same process continued for three trials. On the fourth time, when the researcher was waiting for a sig-

nal from Jay, Jay did signal independently. The sign was performed slowly and about 45 seconds after the second cue was given. The game continued for approximately 10 more minutes. Jay signaled independently more then 50 percent of the time after being given one or two cues to sign "Go." The wait time between the cue and Jay's response, in subsequent turn-taking with the truck play sequence, was within a minute.

February 15
The researcher showed Jay the picture of the truck and signed "play." Jay held the truck, sat with the researcher, and the assistant joined the play. The assistant signed "Go," and Jay rolled the truck to the assistant, then smiled and clapped with a wait time of only about 15 to 20 seconds. Jay signed "Go" to direct the assistant to return the truck to him. The assistant rolled the truck to him and Jay laughed and clapped when he received the truck. The play continued for approximately 15 minutes with very little prompting needed for Jay to signal the continuing of play by signing "go." This was a highly motivating activity for Jay, and it moved quickly during the first week from the necessity of using hand-over-hand instruction to visual and verbal prompting.

In the second week, the amount of cuing Jay needed to sign "Go" was decreasing at a noticeable rate. Interestingly enough, in the first week of teaching this play sequence, hand-over-hand instruction was needed in only one structured teaching session. Also noteworthy is the fact that after Jay was taught to roll the truck across the floor to a play partner, he never picked up the truck to spin the wheels again.

This activity was done at least three out of four days each week as a modeled play strategy. Jay enjoyed the activity and became more and more engaged in it. More eye contact was noted between Jay and researcher during these sessions, as was more laughter and smiling. Incorporating a peer into the play was the natural next step. The process of playing with the truck was the same as described in the beginning of this play sequence, except that a typical peer sat on the floor on the researcher's lap as Jay sat with his attendant. The typical peer was instructed to sign and say "Go" to get Jay to roll the truck to him, and to wait until Jay signed "Go" before rolling the truck back. The peer was able to do this easily and the game began. Jay was very interested in playing with the truck with the other student, and they were able to roll the truck to each other with only verbal prompts to Jay as a reminder to sign "Go." There was some wait time to get Jay to signal to continue play, anywhere from 15 to 30 seconds, but again, he was clearly signaling to continue the play himself.

The most exciting observation happened when Jay initiated the play sequence himself during free choice play time. Jay made an independent choice in a very appropriate manner, including choosing a play partner.

February 28
During free choice time, as all the children had made their plans and went to the centers where they had chosen to play, the researcher and assistant stood together to quickly discuss the next series of structured activities. During the few minutes as the two adults talked, Jay went to the shelves, got the car he liked to play with, took the researcher's hand and pulled it down, indicating he wanted her to sit on the floor. He then took the assistant's hand, moved her in front of the researcher, and pulled her hand down to get herinto position to play with the car. He then sat in the assistant's lap and began to play in a very appropriate fashion. Another preschool student came by and sat in the lap of the researcher to join in the game. The interaction between Jay and the boy who joined in was an enjoyable experience filled with lots of laughing and smiling. As soon as the two children were clearly comfortable with the play, the adults (although still physically there) faded their involvement in the play. The two boys continued appropriate play for about 20 minutes, passing the truck back and forth, signing "Go" when they wanted the truck back and clapping and laughing when the truck was rolled to them.

This observation signaled success on many levels. First, Jay made a play choice on his own that included the appropriate use of that toy. Then, he appropriately indicated he wanted play partners. During the play, the authors noted a marked increase in eye contact between the play partners; Jay continued the play, even when someone entered the play whom he had not invited.

The signal from Jay (the sign "Go") to continue play was coming at a faster, more normal rate, one that appeared to be more conversational than a learned cue. Jay's signing was done with very infrequent prompting from his play partner. As soon as the play partner had the truck, Jay knew he wanted to continue the play and immediately signed "Go," with no inappropriately long wait time.

Impaired social skills are a consistent characteristic cited in all cases of children with autism (American Psychiatric Association, 1994). In this illustration, although the play was certainly on Jay's terms, he clearly demonstrated social intent when he chose his play partners. Furthermore, before Jay had been taught play strategies, he would not have tolerated another child entering the play, and would have left the area. After learning play skills, Jay not only was tolerating other children, he was engaging in play with them and having fun.

Generalizing Play Skills

In this final section of vignettes, the observations demonstrate Jay's immense improvement in social skills and ability to generalize play skills. In results observation #7, Jay is able to make a play choice, choose a play partner, and enter a new social situation successfully.

Observation #7:
March 24
One of the typically developing peers brought in a Shania Twain tape and asked if we could sing with it. During circle time we played and danced to "Man! I Feel Like a Woman!," all except Jay. Jay stood outside the play and laughed as he watched. The other children hopped and screamed with laughter each time they sang the refrain. After circle time, the children were dismissed to find a play area of their choosing. Two girls chose to continue to sing and dance to the same song by Twain.

Jay watched the girls for a while then was able to enter the play, take one girl's hand, and dance with her. After approximately four minutes, the song was finished and the girls pretended to fall down on the floor; Jay imitated that same action and lay on the floor, laughing with them. When the next song came on, one girl held Jay's hand, Jay took the other child's hand, and the three of them danced for the next several songs.

The interaction in observation #7 illustrates Jay's social growth. He was initiating meaningful and productive play. The skills Jay demonstrated went beyond emerging skills; he was exhibiting skills more like those of a typical 3-year-old.

An example of Jay's overall progress came about during the ninth week of teaching Jay play strategies. The class had been dismissed from circle time and had indicated that they wanted to do an activity that was set up at the art table.

Observation #8:
December 10
The class had been dismissed to choose where they wanted to play. We had read The Very Hungry Caterpillar *and an activity was set up for them to make the caterpillar from the story. All the materials to make the caterpillars were available on the table. Usually, this would be a time for Jay to do a structured teaching activity, but Jay sat down with the rest of the children at the table.*

Jay watched the children at the table for three or four minutes. He then selected items to make the caterpillar and began to make the craft himself. He chose a felt strip and pom-poms, then glued them in a line, just as the other children had done. Jay then gathered two wiggly eyes and held them up to the attendant, indicating that he wanted help to finish his project.

In observation #8, Jay demonstrated his social progress by wanting to do the same activity the other children were doing. Second, he overcame his aversion to excess stimulus so he could be a part of the group. More important, Jay generalized the skills he had been working on during the nine weeks of learning play strategies. He looked for visual cues (which were the materials on the table), watched for what he needed to do, then engaged in and completed the task.

These data indicate that teaching play strategies to Jay helped him broaden his social play behavior, as described by Parten (1932), and his cognitive level of play, as described by Piaget (1962). The observations indicate that after the play strategy sessions, Jay was capable of engaging in constructive play, which was rare before the treatment, and in symbolic play, which was not evident before the treatment. There is also evidence of his ability to engage in parallel and even associative social play. These data suggest that teaching play strategies can have an impact on an autistic child's social interactions in play.

Results and Conclusions

Children have a natural desire to learn about the world around them. Typically, children can learn about the physical characteristics of the world through playing with objects and moving through their environment. To learn social skills, however, children need social experiences and social interaction. Typically developing children engage in social experiences and interactions while playing with other children; such play is usually centered around a toy or activity. The ability to engage appropriately with toys was a key component missing from Jay's ability to play in the integrated preschool setting. Without the ability to play in a typical way, Jay was missing out on social experiences with other children. Teaching Jay play strategies gave him the opportunity to play around, and even with, other children. Playing around a toy with other children enabled him to have more social contact and experiences, and provided a common ground from which to base social experiences and eventually interact socially with other children.

The play strategies taught to Jay allowed him to develop higher levels of play and social play behavior, as described by Parten (1932) and Piaget (1962). Jay's autism had locked him into lower levels of play behaviors. He would spin toys or only engage in what Piaget called practice play, which is the repetitive use of an object in a similar manner. He was unable to enter play situations or function in a parallel or associative play situation. By using a more structured approach to teaching play strategies, in which the teacher used structured activities and structured play situations, Jay was able to break out of these limitations. While the structured play was not what would be considered "developmentally appropriate" for a normal child, it was individually appropriate for Jay. These structured activities allowed Jay to develop more complex play and social behaviors. This, in turn, allowed Jay to participate in more open-ended play.

The most surprising result, however, was Jay's generalization of those skills to new situations. He was able to use the strategies learned in structured teaching sessions and apply them to new, less structured play situations. If generalizing skills from a controlled or contrived situation to a naturally occurring environment did not occur, then teaching play strategies would have a limited use. However, this study demonstrates that teaching play strategies could allow children with autism to generalize skills taught in the structured setting and use them to enter into real play situations where natural learning takes place. This exemplifies the interplay of "structured" and "developmentally appropriate" activities.

The findings of this case study show that the effects of teaching play strategies to this child with autism were 1) a significant increase in the amount of complex types of play that Jay had with various toys, 2) a significant increase in Jay's opportunities to play with typically developing peers in a

meaningful and more interactive way, 3) an increase in Jay's social interactions with typically developing peers, and 4) Jay's ability to generalize social skills to new and unique play settings in an integrated preschool environment.

Recommendations

As professionals, we need to recognize the following factors in the classroom that made the research in this case study successful: 1) intervention strategies were approached from a perspective that recognized the child's strengths, 2) Jay's particular needs were met by using multiple curriculum approaches in flexible and accommodating ways, and 3) the integrated preschool setting fostered an atmosphere of community learners with mutual respect and kindness toward each other.

Approaching intervention strategies by looking at the child's strengths sounds self-explanatory, but is often harder to do than is expected. When identifying a child for special education services, we have to look at what the child cannot do, and determine what areas of deficit exist. But then we must also examine what the child *can* do and what his or her strengths are, and then make plans using the child's interests and abilities.

Flexibility in using the best aspects of two excellent methodological approaches resulted in an effective program for the individual child involved in the research. Using the structured teaching methods advocated by the TEACCH model, while still retaining a developmentally appropriate, child-centered approach, in an integrated setting, provided Jay a comfortable learning environment.

Fostering a community of learners where all children are respected and accepted was another component of the successful research environment. Each child was shown patience, kindness, and respect by the adults and, in turn, these qualities were fostered among peers.

Other factors that helped to make this research such a successful experience for Jay were: 1) strong family support, 2) collaboration between parents and professionals, and 3) early detection and early intervention services. While these factors are not necessarily within the direct control of professionals, we can promote these family-oriented components.

Strong family support is a factor that cannot be emphasized enough. Jay has extraordinary parents who were supportive and knowledgeable about their child's individual needs. They acted as integral members of the intervention team as well as great advocates for their child. We need to be open and available to work with the family as a whole rather than just the child with the disability, because it is the entire family that is affected by autism, not just the individual child. While every family we work with may not have the same level of support that the family in this case study enjoys, we need to remember that parents try to do the best they can for their children. We need to recognize the ways in which each family tries to support their children with special needs and build on that foundation.

The collaborative efforts between parents and professionals made a significant contribution to Jay's progress. Frequent communication between school and home, with periodic home visits, helped to maintain an attitude of mutual problem solving and collaboration. We, as professionals, should help to empower our parents and families to be an integral part of the educational process. They know their child better than anyone, and as professionals, we need to recognize and respect this fact. Our role is to be a part of a team in the educational process, not to take over the process.

Early detection and early intervention are critical factors to the success of any child who has a disability. Jay had been diagnosed as having autism when he was 2 years old and had received early intervention services. These services had a very positive impact and helped to ready him for the preschool experience. While this factor often is not in educators' direct control, educators can be involved in their communities and participate in public awareness activities centered on early intervention services.

Future Research

Jay's progress, as documented here would indicate that this method of teaching children with autism should be further explored. Follow-up studies in integrated preschool settings would add to the research on the best methods to teach children with autism as well as, possibly, children with other low incidence disabilities.

Follow-up studies are currently being contemplated in three different settings. First, a follow-up study may be possible with the same student teaching more play strategies. Second, a study that involves teaching play strategies conducted with another child with autism, who has similar characteristics to Jay, may be possible. Third, the researcher is investigating the possibility of conducting another case study with a male student who has a dual diagnosis of Down syndrome and autism.

Questions to be addressed in further research could be: 1) Can children with autism have the same kind of success if they did not have early intervention services? 2) What effect would teaching play strategies have on a child with autism in a home-based setting? 3) Could teaching play strategies be beneficial to other children considered to be part of low incidence populations? 4) Are transient or nontransient cues more effective in teaching play strategies?

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