THE EFFECTS OF CORRESPONDENCE TRAINING AND ACTIVITY SCHEDULES ON THE PLAY BEHAVIOR OF PRESCHOOLERS WITH AUTISM IN AN INCLUSIVE CLASSROOM

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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* * * * *

The Ohio State University
1999

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1999
ABSTRACT

Play is a critical component in the development and facilitation of preschool children's learning, independent performance, and social inclusion. Typically developing children experience play events that not only support important pre-academic concepts, but also teach symbolic engagement and social negotiation skills (Mann, 1996).

Play emerges in typically developing children without specific intervention. Young children with autism however, frequently do not develop play skills on their own. Preschoolers with autism often develop restricted and repetitive play repertoires. An inadequate play repertoire, confounded by language deficits, eliminates the common tool needed to build equal peer relationships and develop group belonging in inclusive environments. The resulting isolation perpetuates the essence of the child's disability: deficits in socialization and communication.

The purpose of this study was to evaluate a strategy to improve the play skills and independent performance of preschoolers with autism in an inclusive classroom. This study employed the use of correspondence training and activity schedules during playtime. The study investigated the effectiveness of the strategy on the on-task and play correspondence behavior of preschoolers with autism as well as the social validity of the intervention goals, procedures, and outcomes.
This study used a single-subject multiple baseline design across subjects. On-task behavior and experimenter prompts were observed and measured using an interval-recording scheme. Play correspondence was observed and counted. Interobserver agreement and procedural integrity measures were conducted.

Results of the study indicated that all four children's on-task and sequential play correspondence behavior increased during the training and intervention conditions. Furthermore, children's target behavior's generalized to conditions where reinforcement was withheld.
To Daryl and
my two shining stars,
Katie and Kelsy
For your endless love and support
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CHAPTER 1

INTRODUCTION

Play is a critical component in the development and facilitation of preschool children’s learning, independent performance, and social inclusion. Important skills developed through play serve as precursors to success in educational environments. The definition of play is multi-dimensional and is sometimes defined by a culture or context. The literature characterizes the critical dimensions of play as symbolic, imitative, representational, meaningful, and reinforcing (Greenspan & Wieder, 1992; Libby, Powell, Messer, & Jordan, 1997; Mann, 1996).

Learning evolves as infants explore their world and begin to make connections about their environment. Early play, within the first year of the infant’s life, is characterized by repetitive and undifferentiated interaction with objects, such as the infant repetitively batting at an object with their feet (Hughes, Dote-Kwan, & Dolendo, 1998). Play becomes more complex and by 12 months, the infant begins to understand the relationship between cause and effect. The infant’s play becomes more organized, purposeful, and sequential (Hughes, Elicker, & Veen, 1995). As children grow older, representational play becomes increasingly more abstract exposing them
to important concepts in math, literacy, science, and communication. Research supports the importance of play as a valuable tool to enhance learning for young children (Brewer & Kieff, 1996; Perlmutter & Burrell, 1995).

Preschoolers mediate and apply meaning to environmental stimuli through active exploration and interaction during play. Typically developing children experience play events that not only support important pre-academic concepts, but also teach symbolic engagement and social negotiation skills (Mann, 1996; Weber, Behl, & Sunnem, 1994). Children who are unable to participate in play experiences are at risk for future deficits and have greater difficulty adjusting to preschool environments where individual instruction is limited (Buysse, Wesley, & Bailey, 1996; Gallagher, 1997).

Because much of the young child's day consists of different forms of play and peer interaction, a strong play repertoire is necessary to promote child engagement with age-appropriate materials and enhance social interaction with peers (Lowenthal, 1996). Children's competency in selecting and sustaining appropriate play helps determine the extent of independent performance they encounter in typical preschool environments.

Independent performance is valued in education and society and becomes a critical issue when children move into situations where child-to-teacher ratios are high. Some degree of independent performance is essential for expediting the successful inclusion of preschoolers with disabilities (Sainato, Goldstein, & Strain, 1992). The benefits resulting from children's independent performance in early childhood educational settings may be increased instruction time, efficient and
effective learning, increased opportunities for peer interaction, and decreased teacher supervision (Dunlap, Dunlap, Koegel, & Koegel, 1991; Mills, Coie, Jenkins, & Dale, 1998). According to Mann (1996), play is naturally reinforcing, serving to maintain its presence in the child’s repertoire. This does not appear true however, for some children with severe disabilities, such as autism.

Play emerges in typically developing infants and toddlers without specific interventions and strategies, young children with autism however frequently do not benefit from play in the same manner (Bijou & Ghezzi, in press; Libby et al., 1997). In the Diagnostic and Statistical Manual of Mental Disorders, 4th ed., (American Psychiatric Association, 1994), children with autism are characterized by communication and socialization deficits. For children with autism, restricted and repetitive movements often interfere with learning that occurs by appropriately interacting and exploring the environment through play.

Bijou and Ghezzi (in press) state, “stereotypic behavior is behavior which is an extreme variation of the normal exploratory behavior seen in infants and young children soon after they have acquired the necessary manual and motor abilities” (p. 28). The authors suggest that children with autism exhibit repetitive and restricted movements and interaction with the environment to compensate for “inadequate social and verbal abilities” (p. 28). Research in this area suggests that as children’s play skills increase, their communication and social skills improve, while stereotypic behavior decreases (Bijou & Ghezzi, in press; Libby, et al., 1997; Thorp, Stahmer, & Schreibman, 1995). Play is a fundamental component needed for independent performance and socialization in preschool environments.
For preschoolers with autism absent or restricted play skills may prevent opportunities for socialization and inclusion. Play offers experiences for social development as children negotiate, share, and exchange ideas and materials. Group building and individual relationships are established through play. Typically developing children can model appropriate language, social interaction, and play skills for children with disabilities. An inadequate play repertoire, confounded by language deficits, eliminates the common tool needed to build equal peer relationships and develop group belonging in preschool environments (Schwartz, Billingsly, & McBride, 1998). The isolation resulting for children with autism perpetuates the essence of the child’s disability: deficits in socialization and communication.

Buysse, et al. (1996) explored the opinions of general early childhood education teachers serving children with disabilities in inclusive settings. The teachers perceived higher levels of concern when serving children with behavioral and severe disabilities however, positive perceptions were also identified. Overall, this group of educators noted benefits for both the children with and without disabilities. Benefits for the children with disabilities were described as increased learning and higher levels of independence. Benefits for the children without disabilities included increased awareness of individual differences and leadership opportunities (Buysse et al.).

With an emphasis on the benefits of inclusion, parents of preschoolers with autism are seeking effective ways for their children to continue skill acquisition and enhancement, while also exposing their children to typically developing peers.
Without systematic intervention strategies promoting appropriate play and independent performance, children’s placement in these types of settings may encounter many barriers.

Few interventions have addressed the capability of preschoolers with autism to remain engaged in a self-directed selection or sequence of activities. Fewer studies still, have investigated strategies to promote these skills in inclusive preschool settings. Increasing independence during play for preschoolers with autism within the natural environment is an important goal. The ability to select and engage in appropriate play activities, and eventually learn to perform a sequence of play activities, is a step towards facilitating independent play skills of preschoolers with autism (Sainato, et al., 1992; Schwartz, et al., 1998).

**Purpose of the Study**

The purpose of this study was to investigate a strategy to improve the play skills and independent performance of preschoolers with autism during playtime in an inclusive setting. This study employed correspondence training and activity schedules to improve the play behavior of children with autism. Specifically, children’s play behavior was comprised of their on-task engagement and play activity sequencing in an inclusive preschool classroom. It was anticipated that through developing independent play skills the child would be more likely to repeat and expand meaningful play interactions within a preschool classroom.
This study sought to extend previous research exploring the effectiveness of correspondence training and picture schedules on the development of play skills by preschool children with mild disabilities (Frazier, 1997). First, the research involved children with severe disabilities, specifically autism. Second, this research addressed the initial acquisition of play skills. Third, this research was conducted and the intervention implemented in a fully inclusive setting, while Frazier’s occurred in a self-contained classroom with inclusive opportunities. Finally, this research was conducted and the intervention implemented in a classroom without professional staff. Parents of the children participating in the study and volunteers were used to staff and monitor the classroom.

Another extension of the literature included research in the area of correspondence training and activity schedules combining the two strategies. In Odom, Chandler, Ostrosky, McConnell, and Reaney (1992), a correspondence training with visual feedback package was used to reduce teacher prompts. Odom et al. did not use photographs as verbal mediators for a sequence of events, as did this study. Although Kraatz, MacDuff and McClannahan (1993) and Pierce and Schreibman (1994) used photographs and activity schedules, they did not incorporate the use of correspondence training.

The basic premise of early intervention rests on the concept of early detection and remediation. Important developmental gains are most likely to occur in the first five years of a child’s life (Feuerstein, 1997). Therefore, the investigation of strategies and procedures promoting behaviors that enhance children’s opportunities for
learning, independent performance, and socialization in natural environments are essential. Equally as valuable was the investigation of a strategy that was socially valid in terms of its goals, procedures, and outcomes (Wolfe, 1978).

**Research Questions**

1. What are the effects of a play-correspondence-package on the on-task behavior of preschoolers with autism during playtime in an inclusive setting?

2. What are the effects of a play-correspondence-package on play correspondence behavior by preschoolers with autism in an inclusive classroom?

3. To what extent does the child’s on-task behavior generalize to conditions in which the delivery of reinforcement was withheld?

4. To what extent do parents of the children participating in the study rate the intervention goals relevant regarding for their child?

5. To what extent do early childhood special educators rate the intervention trustworthy and usable?

6. To what extent do early childhood educators rate the independent play skills of children with autism as important for inclusion opportunities?
Glossary of Key Terms

The following is a glossary of terminology used in this study.

activity schedules – a set of photographs or visual cues, affixed to a clipboard or notebook, to prompt an individual to engage in a sequence of activities (McClannahan & Krantz, 1999).

correspondence training – a strategy to teach individuals the correspondence between what they say they will do and what they do, focusing on the relationship between the individual’s verbal and nonverbal behavior (Baer, 1990).

engagement – a construct used to describe the amount of time children spend in developmentally and contextually appropriate behavior (McWilliam, 1991).

graduated guidance – a response prompt strategy used by the teacher to present a stimulus, provide the type and amount of assistance necessary to prompt the child’s behavior, and allow the child to respond (Bailey & Wolery, 1992).

natural environment -- a setting with typically occurring events, activities, and consequences (Santos & Lignugaris/Kraft, 1997).

peer model -- a child without disabilities within the same classroom as a child with disabilities.
CHAPTER 2

REVIEW OF LITERATURE

Educational research has focused considerable attention on the appropriate play, independent performance, and socialization skills of children with autism (Koegel, Koegel, & Surratt, 1992; Odom & Watts, 1991; Sainato, Goldstein, & Strain, 1992; Wolfberg & Schular, 1993). This chapter reviews literature on the engagement of young children with disabilities, instruction in the natural environment, correspondence training, and activity schedules. In addition, the literature on generality and social validity will be reviewed.

Engagement

Engagement in the preschool classroom finds its history in research on school-age students' use of time. Research demonstrates a positive relationship between the amount of time students are actively engaged and their achievement (Heward, 1994). The link between developmental progress and on-task engagement of preschoolers supports the previous research with older students. On-task engagement is an important factor of skill development for preschoolers with or without disabilities (Malone & Stoneman, 1995). Studies identify a range of possible variables affecting the engagement of preschoolers with disabilities. Different variables include materials and environmental design, type and amount of teacher behavior, and disability status.
(Lender, Goodman & Linn, 1998; Malone, 1997; Martin, Brady & Williams, 1991; McCabe, Jenkins, Mills, Dale, & Cole, 1999; McCormick, Noonan, & Heck, 1998; McWilliam & Bailey, 1995; Sainato, 1990). Table 2.1 provides a description of studies investigating the influences of different variables on children’s engagement.

Importance

The guidelines for the National Association for the Education of Young Children (NAEYC; Bredekamp, 1987) specifically addressed the importance of childhood programs facilitating the active engagement of young children within the educational environment. McWilliam (1991) suggested that when preschoolers are engaged it promotes learning and reduces behavior problems. He emphasizes the importance of “sustained behavior” and provides this definition for engagement, “engagement is the amount of time a child spends in developmentally and contextually appropriate behavior” (p. 42). Research has examined the difference between the amount of time children with disabilities are engaged and the amount of time children without disabilities are engaged.

McWilliam and Bailey (1995) investigated the amount of time 32 typically developing children and 16 children with disabilities were engaged in activities. The study, conducted in an inclusive daycare setting, found that age grouping, adult involvement, and developmental age had no significant impact on the amount of engagement young children demonstrated. An important finding, however was that
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<td>Lender, Goodman &amp; Linn 1998</td>
<td>level of play</td>
<td>disability status</td>
<td>• 14 children with down syndrome</td>
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<td></td>
<td></td>
<td></td>
<td>• 14 children without disabilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• children with down syndrome engaged in higher levels of repetitive play</td>
</tr>
<tr>
<td>Malone 1997</td>
<td>play behavior</td>
<td>type of toy &amp; time</td>
<td>• 22 children with disabilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(sequential)</td>
<td>• minimal increase in the amount of time &amp; complexity of play</td>
</tr>
<tr>
<td>Martin, Brady &amp; Williams 1991</td>
<td>play behavior</td>
<td>type of toys</td>
<td>• 24 preschool children</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(social) setting</td>
<td>• 12 children with disabilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• toy type &amp; setting significantly influence social play behavior</td>
</tr>
<tr>
<td>McCabe, Jenkins, Mills, Dale, &amp; Cole 1999</td>
<td>play &amp; language</td>
<td>group composition,</td>
<td>• 24 preschoolers with disabilities</td>
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<tr>
<td></td>
<td></td>
<td>materials, &amp; disability</td>
<td>• materials &amp; developmental level had significant effect</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• group composition had no effect</td>
</tr>
<tr>
<td>McWilliam &amp; Bailey 1995</td>
<td>engagement</td>
<td>social structure &amp;</td>
<td>• 32 preschoolers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>disability status</td>
<td>• 16 preschoolers with disabilities</td>
</tr>
<tr>
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<td></td>
<td>• children with disabilities were less engaged with adults, peers, &amp; materials</td>
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Table 2.1: Summary of the articles investigating different influences on engagement.
preschoolers with mild to moderate developmental delays spent less time engaged with play materials, adults, and peers based on their disability status. This is a significant consideration in the lives of children with existing deficits in their developmental repertoire. Active engagement of preschoolers with disabilities is crucial in helping these children remediate present deficits and prevent future deficits.

Environmental Variables

The environmental design of the classroom serves to promote or discourage engagement for preschoolers with disabilities (Whaley & Bennett, 1991). Classrooms involved in systematic arrangements offer structure and organization and allow children to locate materials easily (Sainato, 1990). Paths from one play area to another need to have an underlying structure to guide children in and out of play spaces (McCabe et al., 1999). Learning centers are one way to visually define play areas and organize materials into meaningful sets of items that can be used together.

Children are found to be more engaged in classrooms where there are a variety of materials that are developmentally appropriate and accessible (Strain & Hemmeter, 1997). Materials are a medium used to engage children in different types of play. Play dough, sand, and water encourage engagement in functional play, while materials such as blocks and puzzles promote constructive play. Dress-up materials, zoo animals, and dollhouse items are used to elicit higher levels of dramatic play. McCabe et al. (1999) examined the effects of different materials, among other variables, on the play behavior of 24 preschool children with developmental disabilities. They found an increase in time the children were engaged based on the category of play materials.
A study by Martin, Brady, and Williams (1991) investigated social and isolate types of play materials as setting events for social engagement during play. The authors observed 24 preschoolers with disabilities and 12 nondisabled children during free play in either a self-contained classroom or an integrated preschool classroom. They determined that toy type and integratedness of the group increase social engagement of preschoolers with disabilities during free play. Martin et al. suggested the type of play materials accessible to children with disabilities in their classrooms might increase engagement.

Teacher Behavior

Teacher behavior is an important factor concerning the engagement of preschoolers. Studies indicate that on-task engagement increases with teacher strategies such as verbal prompting and modeling (Haring, 1985; Trawick-Smith, 1998) and the use of directives (McCathren, Yoder, & Warren, 1995).

Trawick-Smith (1998) developed a theoretical framework to examine play interventions focusing on adult-child interactions. He found play-training programs that brought children into direct contact with adults had positive relationships with child outcomes. Adult contact was most beneficial when it was delivered with the adult in the role of facilitator. Frequency, duration, and variety of play were related to adult modeling of language, play and social behaviors, with an emphasis on fading adult assistance (Trawick-Smith). Adults however, are not always available and therefore investigating strategies to fade teacher prompts, while maintaining play performance is important.
In Odom et al. (1992), teacher prompts were faded by implementing a correspondence training and visual feedback package. Happy faces were used as visual cues to children without disabilities to remind them to make social initiations with their peers with disabilities. Using this intervention package, the teacher was able to fade verbal prompts while social initiations continued at intervention levels (Odom et al.).

Research indicates that teacher behavior influences children’s engagement. As indicated in the literature, there are other variables influencing children’s engagement and play behavior. Table 2.2 provides a description of articles that reviewed engagement and play intervention literature.

**Skill Promotion**

Critical factors in appropriate play and engagement are the ability of the child to locate preferable toys or materials needed for play, sustained interaction with toys or materials, and transitions from one activity to another. Research indicates that disability status relates to children’s engagement and overall competency during play (Malone & Stoneman, 1995).

**Competency.** In a study by Malone and Stoneman (1995), methodological issues surrounding toy play research were reviewed. The authors examined the sample characteristics, contextual parameters, and type of measurement of the studies. Across the studies they reviewed there was a relationship between cognitive deficit or disability and play behavior. Children with disabilities were generally less engaged in appropriate play (Malone & Stoneman).
<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malone &amp; Stoneman 1995</td>
<td>• reviewed 27 studies focusing on toy play of young children with disabilities</td>
<td>• sample characteristics &amp; contextual parameters influence play</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Need for continued research in this area</td>
</tr>
<tr>
<td>McCathren, Yoder &amp; Warren 1995</td>
<td>• reviewed the research on the role of directives in language interventions</td>
<td>• found a relationship between directives &amp; behavior change for children with disabilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• type &amp; timing of directives influence the effectiveness</td>
</tr>
<tr>
<td>Trawick-Smith 1998</td>
<td>• reviewed studies investigating play training interventions</td>
<td>• found that effective interventions must be responsive &amp; flexible to the individual needs of the child</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• naturalistic studies are needed</td>
</tr>
</tbody>
</table>

Table 2.2: Summary of the articles reviewing research on children’s play and engagement.
In McCabe et al. (1999), researchers investigated the effects of group composition, play materials, and developmental level on the play behavior of preschoolers with disabilities. A group comparison was conducted with 24 preschoolers with disabilities. Twelve children were observed in a segregated classroom and 12 children were observed in an integrated classroom. The results indicated a significant correlation between developmental deficits and children’s play behavior. Children with higher cognitive functioning engaged in more complex forms of play for longer periods of time (McCabe et al.).

In a similar study, Lender et al. (1998) observed the play behavior of 14 children with disabilities and 14 nondisabled children in a playroom at a rehabilitation center. The mean age for the children with disabilities was 54 months and for the nondisabled peers it was 26.2 months. The authors used statistical analysis to compare the play behavior of the two groups focusing on amount, duration, and quality of children’s repetitive play. Results showed that the children with disabilities spent significantly more time engaged in repetitive play than did their nondisabled peers (Lender et al.).

History of reinforcement. Sustained and appropriate engagement during play is dependent on the competency of the child’s play skills. To move from simple to increasingly complex forms of play the child needs to know how the toy functions. This knowledge promotes varied and expanded play schemes with the same toy (Malone & Stoneman, 1995). When children have not had experiences of successfully
interacting with toys and play materials. It is likely they are lacking a history of 
reinforcement necessary to expand play schemes and promote sustained engagement 
during play.

Through direct experience, children without play repertoires may be able to 
establish a history of reinforcement. Two studies, Green et al. (1988) and Pace, 
Ivancic, Edwards, Iwata, and Page (1985) indicated that reinforcing stimuli can be 
identified for individuals with disabilities using systematic methods. As children’s 
behaviors are reinforced through a variety of play activities, it increases the likelihood 
of future selection and engagement in play activities (Stokes, Fowler, & Baer, 1978).

Research suggests that children with disabilities profit from increased levels of 
engagement and competency in typical play schemes. In the absence of reinforcing 
properties of play, teachers must offer direct intervention to improve children’s on-
task engagement. Table 2.3 provides a summary of articles investigating specific 
interventions to increase children’s engagement.

Play Intervention. Trawick-Smith (1998) reviewed play studies and determined 
that there is a general agreement among researchers on the overall effects of 
intervention directed at play behavior (see Table 2.3). The importance of the 
effectiveness of play training is apparent for individuals serving preschoolers with 
disabilities.

Thorp, et al. (1995) found that play training may be an effective and efficient 
way to improve play skills of preschool children with autism. The authors used a 
Pivotal Response Training procedure to train dramatic play skills to three
<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
</table>
| Libby, Powell, Messer, & Jordan 1997 | • 10 children with autism  
• 10 children with down syndrome  
• 10 children without disabilities  
• used single & multi-task procedure to determine effects on children’s imitation & pretend play | • children with autism  
• better at imitation & pretend play  
• imitation than other children |
| Thorp, Stahmer, & Schreibman 1995 | • 3 children with autism  
• used a Pivotal Response Training procedure to determine effects on language, play, & social behavior | • increase language  
• increase play  
• increase social |
| Wolfberg & Schuler 1993      | • 3 children with autism  
• used an integrated play group approach to determine effects on children’s play behavior | • increase engagement  
• increase functional play  
• decrease isolate play  
• generalized to other contexts |

Table 2.3: Summary of articles investigating the effectiveness of interventions on children’s play behavior.
children, ages 5 to 9. The play training procedure was comprised of an adult modeling play, reinforcement of correct play responses, and adult facilitation to remain engaged. The results of a multiple baseline across subjects was used to indicate that all participants exhibited increased amounts of time engaged in play and positive social behavior following the intervention. The behavior changes were maintained over a 3-month period. Generality probes conducted in the home suggested the behavior changes generalized across toys, settings, and individuals (Thorpe et al.).

Another study indicating that play interventions were effective for developing play skills in children with disabilities was a study by Libby et al. (1997). In this study, statistical analysis of the data demonstrated an increase in the imitation of pretend play of preschoolers with autism. A group design was used to compare the symbolic play acts of 10 children with autism, 10 children with Down syndrome, and 10 typically developing children. The children were observed in their homes, special education classrooms, or at daycare. The independent variable consisted of presenting the participants with single and multi-scheme tasks, while the adult modeled a series of pretend play steps for the child to imitate. Results indicated the children with autism performed better at imitating sequenced symbolic play acts than the children with Down syndrome or the typically developing children.

A study conducted by Wolfberg and Schuler (1993) used a multiple-probe design across participants to determine the effects of the Integrated Play Group model on children’s play behavior. The authors identified full immersion in total group play in an inclusive setting as a critical feature of the intervention. Three elementary-age children with autism and three nondisabled peers participated in a 30-minute play
group two times a week. Results demonstrated an increase in functional engagement for all participants. Further, isolate play decreased while collateral social play increased (Wolfberg & Schuler).

Research indicates that children’s play skills do improve with direct intervention. A study by Malone (1997) suggested that children with disabilities make minimal progress without direct intervention to increase play skills. The categorical and sequential play of 22 preschoolers with disabilities was examined by Malone. No intervention was delivered to 22 preschoolers in their homes. The participants were provided with toys that encouraged sequential play. Children were observed on two occasions 13 months apart to determine the effect of time on children’s play behavior. Although there were minimal increases in children’s engagement in sequential play, overall there was a lack of statistically significant differences in the children’s play behavior (Malone). This study supports the rationale that children with disabilities benefit from direct instruction and intervention to address play skill deficits.

Summary

On-task engagement is linked to learning and achievement. Children with disabilities spend less time engaged in their preschool day than do their typically developing peers (McWilliam & Bailey, 1995). Play behavior for children with disabilities is more repetitive and less complex than the play behavior of children without disabilities (Lender et al., 1998; Malone, 1997). Research studies promoting the development of skills in these areas indicate children with autism benefit from interventions directly instructing play skills (Libby et al., 1997; Malone, 1997; Thorp et al., 1995).
Instruction in the Natural Environment

Naturalistic instruction has a broad philosophical base that often makes it difficult to define in a singular fashion. Researchers conclude that naturalistic instruction promotes maintenance and generality of skills (Santos & Lignugaris/Kraft, 1997; Selmi & Rueda, 1998) and seeks to tap into natural communities of reinforcement (Koegel, et al., 1992; McGee, Almeida, Sulzer-Azaroff & Fieldman, 1992; Zanolli, Daggett & Adams, 1996).

Definition

Rule, Losardo, Dennebeil, Kasier, and Rowland (1998) discussed the characteristics of naturalistic instruction. In general, naturalistic instruction occurs in contexts that encourage application. It is implemented during typical daily routines and activities and focuses on functional skill development. The authors identified three criteria for defining naturalistic instruction. The first is the intention for instruction. Adults must identify times, activities, children, and skills within the daily routine to target for intervention. Second, behaviors must be observable to make instruction occur. Finally, target goals and behavioral topographies must be identified and precisely defined.

The authors, Rule et al. (1998), further recommended adhering to strict contextual guidelines when describing instruction delivered in the natural environment such as describing the environmental design, including space, furniture, and organization of materials. The intensity and duration of instructional activities must also be delineated by the researcher as well as a complete description of how and why the researcher selected the specific materials used in the instruction (Rule et al.).
Instruction in the natural environment was also described by Reifel and Yeatman (1993) in terms of context. They proposed that classroom play should be observed within a contextual frame. They stated, “Play can be understood in terms of a progression of a range of simulations within a continuum, including the influences of materials, social relations, real-world experience, and decisions about what to simulate (p. 347).” Reifel and Yeatman noted play should be described in its “complexity” and with the following considerations: children’s experiences, materials, social relations, children’s movement within play, decisions about the context, and time. Table 2.4 provides a description of articles reviewing research regarding instruction in the natural environment.

Naturalistic Instruction in Inclusive Settings

Typically, the natural environment for preschoolers refers to the child’s home or childcare setting. The natural environment for preschoolers with disabilities could be identified as a variety of places. It might be the child’s home, daycare, community preschool classroom, a self-contained early childhood special education classroom, or an inclusive early childhood classroom. Inclusive classrooms offer children with disabilities opportunities for experiences with children without disabilities. Full membership of a child with disabilities into settings with typically developing peers is the premise behind inclusive classrooms.
<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
</table>
| Rule, Losardo, Dinnebel, Kaiser & Rowland 1998 | • reviewed articles on naturalistic instruction  
• identified issues regarding definition of procedures & outcomes | • emerging research base                                                                 |
|                               |                                                                               | • need to clearly define IV & DV                                       |
|                               |                                                                               | • developed guidelines for definitions                                 |
| Santos & Lignugaris/Kraft 1997 | • reviewed 28 articles to determine which effective practices were integrated into instruction in the natural environment  
• looked at studies characteristics, IV & DV, and discussion of instruction variables | • instruction in natural environment promotes language skills, child-focused skills, & age-appropriate skills |
|                               |                                                                               | • generalization was inconsistent                                     |

Table 2.4: Description of articles reviewing research on instruction in the natural environment.
Schwartz, Billingsly, and McBride (1998) stated, "Inclusion is about belonging and participating in a community of one’s peers. It is about being supported to succeed in an accepting, yet challenging environment" (p. 204). Important outcomes of a child’s participation in an inclusive setting are having membership in the class, developing relationships, and enhancing skills (Schwartz et al.). Inclusion on a philosophical level embraces the concept that all children have a right to be included in with their peers. Realistically, many children with severe disabilities do not have opportunities for inclusion or when given the opportunity, are not equipped to benefit from the experience.

Inclusion. Early childhood special education has been greatly influenced by the passage of Public Law 99-457, The Education of the Handicapped Act Amendment of 1986. This law entitled preschool children with disabilities to a free, appropriate education in the least restrictive environment. The amendment of this law into the Individuals with Disabilities Education Act (IDEA) in 1997 emphasized the responsibility of educators to ensure preschool children with disabilities were exposed to inclusive opportunities. With an emphasis on inclusion, parents of preschoolers with autism are seeking effective ways for their children to continue skill acquisition and enhancement, while also including them in peer group settings. Research indicates that preschoolers with disabilities benefit from placement in settings with typically developing children (Mills, Coie, Jenkins, & Dale, 1998). Further, children without disabilities seem to benefit from placement in classrooms with children with disabilities (Buysse et al., 1996; Guralnick & Hammond, 1999). Barriers however, may
be encountered in inclusive settings for children with disabilities if systematic intervention strategies promoting independent performance in the natural environment are not in place.

The attitudes of general early childhood education teachers serving children with disabilities in inclusive settings were examined by Buysse et al. (1996). Although the authors determined that these teachers perceived higher levels of concern when serving children with behavioral and severe disabilities, positive perceptions were also identified. Overall, this group of educators noted benefits for both the children with and without disabilities. Buysse et al. described benefits for the children with disabilities as increased learning and higher levels of independence.

Inclusive classroom practices must embrace dynamic and interactive participation by children with autism and provide the level of support needed to help them fully engage in their environment. Children with autism must have teachers, families, and community members willing to support their participation in inclusive environments. Learning must be embedded within the routine and activities the child will experience (Schwartz et al., 1998). Where learning does not occur, intervention must be incorporated into the routine and activities (Cripe & Venn, 1997; Schepis et al., 1998; Wolfberg & Schuler, 1993).

**Contacting Natural Communities of Reinforcement**

One consideration in conducting applied research is the question of whether the behavior change will remain in the absence of the intervention conditions. Behavior in any environment reflects the contingencies operating in the environment. If the contingencies do not exist to support the behavior change, it will eventually
disappear (Baer & Wolf, 1967). Baer and Wolf suggested that direct support be identified to maintain the behavior change. One option may be to instruct children in environments that already have available stimulus and reinforcement conditions. In this manner, the researcher identifies the existing reinforcement within the environment and teaches the child how to contact it (Baer & Wolf).

Many studies have investigated the effectiveness of interventions implemented in the natural environment. Naturalistic instruction is sometimes described as a specifically defined intervention procedure such as incidental teaching (McGee et al., 1992), natural language intervention (Koegel et al., 1992), or priming (Zanolli et al., 1996) among many others. Naturalistic instruction is also defined globally in some studies where intervention occurs within the natural environment with the focus on application of skills (Rule et al., 1998).

There are three common attributes found among specifically defined naturalistic interventions (Rule et al., 1998). The first is the instructional context where instruction occurs during routine events by people who are present in the context daily. The second attribute involves the adult-child relationship. Naturalistic instruction capitalizes on following the child’s lead or using his interests, while child behaviors serve as outcomes for the interaction. Addressing functional skills is the final attribute and focuses on instruction within the context in which children will use their skills (Rule et al.).
Koegel et al. (1992) investigated the effects of a naturalistic language intervention on the disruptive behavior of preschool children with autism. Three children participated in the study. A reversal design was used to demonstrate the effectiveness of the intervention. The intervention conditions for the natural language instruction incorporated stimulus items that were functional and varied, natural reinforcement, and trials conducted during natural communication exchanges. Results indicated greater improvements in responding and less disruptive behavior when natural language teaching conditions were implemented (see Table 2.5).

In Schepis et al. (1998), researchers examined the effects of a voice output communication aid on the language of preschool children (see Table 2.5). Four children with autism participated in the intervention delivered by the classroom staff during daily snack and play routines. The authors emphasized naturalistic teaching procedures to take advantage of naturally occurring opportunities to teach communication as well as, routinely available items with reinforcement value. Results suggested participants increased the frequency of their communicative behaviors using a voice output communication aid during naturally occurring classroom routines.

A different strategy was investigated in a study by Zanolli et al. (1996). The authors examined the effects of priming on children's spontaneous initiations in natural settings. Priming is a prompting strategy that embraces three aspects. Priming is conducted prior to the activity, contains only tasks the child can complete, and is rich in potential sources of reinforcement. Two preschool boys with autism attending a regular preschool classroom participated in the study. Priming was used in the natural
<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
</table>
| Koegel, Koegel & Surratt 1992 | • 3 preschoolers with autism  
• reversal design  
• used a natural language intervention to determine the effect on children’s language & disruptive behavior | • increase language  
• decrease disruptive behavior |
| McGee, Almeida, Sultzer-Azaroff & Feldman 1992 | • 3 preschoolers with autism  
• 5 preschoolers to serve as peer tutors  
• multiple baseline across subjects  
• used incidental teaching procedure to determine the effect of peer tutors on the reciprocal interactions of children with autism | • children’s reciprocal interactions increased  
• 1 child generalized target behaviors |
| Schepis, Reid, Behrmann & Sutton | • 4 children with autism  
• occurred during daily play & snack times  
• studied the effects of voice output aid & naturalistic teaching procedure on children’s communicative interactions | • increase frequency of communicative behaviors  
• generalization for 2 children |
| Zanotti, Daggett & Adams 1996 | • 2 preschoolers with autism  
• 6 peers  
• multiple baseline across subjects  
• determine the effects of priming in the natural environment on children’s spontaneous initiations | • spontaneous initiations increased  
• generalization occurred |

Table 2.5: Summary of articles investigating naturalistic instruction interventions.
setting where there existed the potential for diverse sources of available reinforcement. A multiple baseline across activities was used to determine that participants spontaneous initiations increased and maintained in the natural setting (see Table 2.5).

The effects of incidental teaching on reciprocal peer interaction were evaluated by McGee et al. (1992). Three preschoolers with autism and five preschoolers without disabilities participated in the study during regularly scheduled play activities in an integrated preschool (see Table 2.5). The peer tutoring intervention was implemented in the natural environment to promote maintenance and generality. Intervention needed to occur within the same stimulus conditions that would exist to cue and reinforce behavior changes post intervention. Further, peers must be regularly available in order for children with autism to practice and maintain social skills. Results demonstrated reciprocal interactions with peers increased during intervention and were maintained following the withdraw of the intervention (McGee et al.).

Summary

For preschoolers, typical or natural environments are most likely to include some interaction with typically developing children. Parents and proponents of special education legislation view inclusion as essential in the growth and development of young children with disabilities. Research indicates that children with disabilities benefit from placements with typically developing peers. Further, research shows that instruction in the natural context of the child’s environment is not only effective for skill acquisition, but also for maintenance and generalization of newly acquired skills.
Correspondence Training

One effective strategy for promoting desirable behavior changes in children with disabilities is correspondence training. This strategy emphasizes the relationship between an individual's verbal and non-verbal behavior. Existing correspondence literature suggests that there is a connection between what an individual indicates she will do and what she actually does. This is termed the "say-do" sequence (Baer, 1990; Israel, 1978; Osnes, Guevremont, & Stokes, 1986). The objective becomes the explicit matching of word to deed, with the delivery of reinforcement for accurate matches. Table 2.6 provides a summary of articles reviewing correspondence training literature.

Controlling Relations Between Verbal and Nonverbal Behavior

The issue of identifying the controlling relations between the individual’s verbal and nonverbal behavior is examined in the correspondence literature. Martella (1994) questioned whether the relationship between verbal and nonverbal behavior is event-governed or verbally governed. One aspect, is the confusion between verbal self-regulation and the effects of the reinforcement for verbal to nonverbal correspondence.

If nonverbal response is rule-governed, than verbal self-regulation may not be necessary. Rule-governed behavior involves verbal behavior that is shaped by the consequences of the individual following a specified rule or instruction. Such as when the individual's verbalizations are governed by experimenter instructions or rules. In such instances the instruction rather than the contingencies might control the nonverbal response (Catania, Matthews, & Shimoff, 1982; Martella). Table 2.7 provides a summary of articles describing correspondence training interventions.
<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baer 1990</td>
<td>• reviewed literature on correspondence training</td>
<td>• promotes maintenance &amp; generalization</td>
</tr>
<tr>
<td></td>
<td>• reviewed controversy regarding relationship of controlling variables</td>
<td>• valuable intervention technique</td>
</tr>
<tr>
<td>Stokes, Ones &amp; Guevremont 1987</td>
<td>• addresses the contingency-space analysis of verbal regulation (conceptually the relationship between saying and doing)</td>
<td>• without verbal, correspondence does not exist</td>
</tr>
<tr>
<td></td>
<td>• focused on the clinical &amp; applied importance of saying &amp; doing</td>
<td>• verbal is behavior subject to same contingencies as other behaviors</td>
</tr>
<tr>
<td>Martella 1994</td>
<td>• reviewed controlling relations between say-do in terms of self-instructions</td>
<td>• verbalization &amp; nonverbal behavior may co-vary with instructions</td>
</tr>
<tr>
<td></td>
<td>• reviewed literature on self-instruction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• event-governed or verbally governed?</td>
<td></td>
</tr>
<tr>
<td>Paniagua 1990</td>
<td>• reviewed literature to identify procedures in correspondence training</td>
<td>• correspondence training is an effective procedure</td>
</tr>
<tr>
<td></td>
<td>• reinforcement of verbalizations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• reinforcement of verbal-nonverbal relationships</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• reinforcement of accurate correspondence report</td>
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</tbody>
</table>

Table 2.6: Summary of articles reviewing research on correspondence training literature.
<table>
<thead>
<tr>
<th>Study</th>
<th>Description</th>
<th>Results</th>
</tr>
</thead>
</table>
| Baer, Detrich & Weninger 1988 | • 6 preschoolers with disabilities  
• investigated effects of verbal responses on nonverbal responding | • increased play behavior  
• no evidence of functional role of verbalizations |
| Catania, Matthews & Shimoff 1982 | • 50 college students  
• investigated shaping verbal responding-contingency-governed  
• instructed verbal responding-rule-governed | • shaped verbal responses  
• controlled nonverbal  
• instructed verbal inconsistent control of nonverbal |
| Allen & Israel 1973       | • 16 Head Start children during playtime  
• investigated effectiveness of say-do procedure versus a do-say procedure  
• immediate & delayed reinforcement | • say-do produced higher levels of correspondence  
• increased play behavior |
| Karoly & Dirks 1977       | • 12 preschool children  
• investigated effects of correspondence training on self-control! | • say-do was more effective  
• say-do procedure increased self-control in Scarecrow game |
| Odom, Chandler, Ostrosky, McConnell & Reaney 1992 | • 6 children preschoolers with disabilities  
• 10 nondisabled peers  
• investigated fading teacher prompts to peer-initiation using CTP | • peer initiations increased  
• teacher prompts were faded and behavior maintained |
| Osnes et al. 1986         | • 12 socially withdrawn preschoolers  
• examined correspondence training on peer-directed talk | • increase peer-directed talk  
• behavior maintained |

Table 2.7: Summary of articles investigating correspondence training interventions.
In a study by Catania et al. (1982), 50 college students were taught to press left and right buttons on an experimental apparatus, gaining points to exchange for money. Students verbal guesses about what buttons to push were either shaped by differential reinforcement or instructed. Catania et al. set out to directly investigate the controlling relations between the subject's verbal and nonverbal behavior. The authors concluded that when verbal responses were contingency governed, nonverbal responding was consistent. When verbal responses were rule-governed, nonverbal responding was inconsistent (Catania et al.).

Deacon and Konarski (1987) suggested that correspondence training was a procedure facilitating "the development of a relationship between a person's verbal behavior and subsequent or prior nonverbal behaviors" (p. 391). The relationship is strengthened by the differential reinforcement delivered for corresponding verbal to nonverbal behavior. In this study, two groups of adults with mental retardation were taught to manipulate buttons and levers on an experimental apparatus. One group was exposed to typical correspondence training procedures where subjects received reinforcement for corresponding their nonverbal behavior to prior verbalization. The second group received reinforcement for nonverbal behavior with no prior verbalization. Both groups showed increases in the target behavior. The authors suggested that the concept of rule-governed behavior better explained the results of their study. Specifically, the experimenter's verbal prompts, feedback, and delivery of reinforcement were enough to develop a rule in order for the participants to receive the reinforcement (Deacon & Konarski).
Based on studies by Baer, Detrich, and Weninger (1988), the controlling
relations between the saying and doing behavior of six children during playtime were
investigated. In their studies, children were asked, "What are you going to play
today?" The child's verbalization became the target behavior and reinforcement was
delivered for correspondence. Conditions were systematically altered to compare the
role of children's verbalizations. The results of both studies failed to find evidence of
the functional role of the children's verbalizations (Baer et al.). Baer (1990) asserts
that failure to find evidence of verbal regulation does not prove its nonoccurrence.

**Verbal regulation.** One rationale for the use of correspondence training with
developmentally delayed individuals is its assumed development of verbal self-
regulation and its use of verbal mediators to promote maintenance and generalization
of skills (Baer, 1990). Investigated skills included behavior such as in-seat behaviors,
toy play, peer-directed talk and clean up (Baer, Williams, Osnes & Stokes, 1984;
Osnes et al., 1986).

Stokes, Ones, and Guevremont (1986) contended that in order to establish
correspondence between saying and doing, one must describe the verbal response as
the occasioning-event for a defined response class. Without a verbal response, the
possibility of correspondence is eliminated in the same way an absence of
verbalization cannot be measured in terms of its correspondence to an observed
response. Parsimony is served according to Stokes et al., when there exists an accurate
account of the occurrence or nonoccurrence of correspondence.
Osnes et al. (1986) found correspondence training increased the number of children's interaction to appropriate levels in the context of the preschool setting. They successfully applied correspondence training strategies to increase peer-directed talk by socially withdrawn children who required specific intervention for low rates of social interaction with peers. The children exhibited improved engagement in group activities and an enhanced quality of peer interaction. The children's target behavior was maintained when the procedure was removed (Osnes et al.).

A correspondence training package was used by Odom, et al. (1992) for fading teacher prompts. Six preschool children with disabilities and 10 kindergarten children without disabilities participated in the study. The kindergarten children were prompted by the classroom teacher to make direct social initiations to the children with disabilities. Correspondence training used with a visual feedback system was implemented to reduce teacher prompts to the kindergarten children. Results indicated kindergarten children's social initiations increased during the intervention, continued at similar levels after intervention, and maintained for a short time following the study (Odom et al.). This study supported similar findings of an earlier study by Odom and Watts (1991).

Correspondence training has been shown to be an effective strategy for increasing appropriate behaviors as well as a procedure for fading teacher prompts. Another topic examined in earlier correspondence literature was reinforcement schedules.
Reinforcement Schedules

Correspondence training literature indicates that reinforcement delivered for correspondence between verbal and nonverbal behavior serves to increase target behaviors, while reinforcement for verbal behavior alone appears less effective (Baer, 1990). Earlier research investigated the differences between a say-do correspondence and a do-say correspondence (Israel & O'Leary, 1973; Karoly & Dirks, 1977).

Karoly and Dirks (1977) evaluated the effects of correspondence training on self-directed activities by twelve preschool children. They examined children's performance of an immediate unpleasant task, but resulting in a long-term, rewarding outcome. The participants comprised two groups. One group experienced a training procedure delivering reinforcement for “say-do” correspondence. The other group received reinforcement for “do-say” correspondence. They found the relationship between verbal cues and self-controlling actions can be reliably established in young children. In the study, the children were able to make an intention statement prior to a play period, followed by emitting a high level of a self-controlling behavior during play. In this manner the “say-do”, strategy encouraged high levels of correspondence with self-control behavior. Although the “do-say” group also increased correspondence, it did not serve to increase self-control behaviors (Karoly & Dirks).

Israel and O'Leary (1973) investigated the effectiveness of producing correspondence through reinforcing a “say-do” versus a “do-say” sequence with 16 Head Start preschool children. They investigated the effects of the delivery of immediate or delayed reinforcement for correspondence behaviors. They found that
the “say-do” procedure was superior in producing correspondence with both reinforcement delivery schedules. Their interpretation was that the children in the “say-do” condition learned to use their verbal behavior to control their nonverbal behavior. Reinforcement of a correspondence relationship appeared to lead to a heightened correspondence between verbal and nonverbal behavior, thereby increasing the occurrence of the nonverbal behavior. If a child can learn to connect his verbal and motor behaviors and to use his verbal behavior to guide his nonverbal behavior, self-control has developed (Israel & O’Leary).

Three phases in correspondence training are commonly identified in existing literature. They include baseline, reinforcement of verbal saying, and reinforcement of verbal-to-nonverbal correspondence (Paniaqua, 1990). Paniaqua noted that predictive verbal statements during baseline may, or may not be evoked. During the verbal saying phase, reinforcement is delivered without regard to corresponding nonverbal behavior. The immediate delivery of reinforcement for children’s verbalizations serves to elicit verbal behavior predicting nonverbal behavior. In the final phase, reinforcement is delivered only when correspondence occurs between verbal and nonverbal behavior (Paniaqua). In some studies, this correspondence suggests the development of self-control (Israel & O’Leary, 1973; Baer, 1990).

**Self-control Procedures**

Early correspondence training research by Risley and Hart (1968) indicated that a correspondence between what the child said and did, began to develop when the child’s behavior was reinforced for desired verbal behavior accurately reflecting
previous play behavior. Correspondence training procedures began to be viewed as a practical strategy for teaching self-control and promoting maintenance and generalization (Baer, 1990; Karoly & Dirks, 1977).

The use of self-control procedures has been found to increase individual’s independent and on-task engagement, as well as maintain behavior changes and promote generality (Baer, 1990; Sainato, Strain, Lefebvre & Rapp, 1990). Possibly, the individual’s statement of intention in a correspondence training procedure serves as a discriminative stimulus. The discriminative stimulus serves to elicit a proposed response and the individual learns to produce a cue for which controlling functions have developed (Baer, 1990; Kanfer & Karoly, 1972; Martella, 1994). In this manner correspondence training enhances the individual’s discriminative function of verbal regulation and serves as an antecedent cue to the response (Baer, 1990).

Self-control strategies can be effective when the child is not able to contact the natural communities of reinforcement in the environment, or when reinforcement is delayed or too weak. Promoting self-control decreases the need for direct and constant adult prompts (Flores, Schloss, & Alper, 1995). For these reasons, it is important to teach preschoolers with disabilities to develop self-control. According to Skinner (1953), the governing of situational variables maintaining a particular behavior is the basic nature of control, whether the variables are external or private.

Four preschool children with autism participated in a study by Sainato et al. (1990). The study was conducted daily in an inclusive classroom using a sequential withdrawal-of-treatment design. The intervention required the children to assess their
own behavior, match their assessments with the teachers assessments, and receive contingent reinforcement. Results demonstrated children’s appropriate on-task behavior increased and the increased level of behavior was maintained after withdrawal of teacher prompts following the implementation of the self-assessment intervention package (Sainato et al.).

Another study by Haas-Warner (1992) used a multiple baseline across subjects to investigate the effects of self-monitoring on preschoolers on-task behavior. The results indicated that four preschoolers with disruptive behaviors learned to use a self-monitoring intervention that consisted of verbal self-instructions, assessment of occurrence of target behavior, and accurate recording of the occurrence of the behavior. On-task behavior increased, while disruptive behavior decreased (Haas-Warner).

Self-control is an important aspect of independent performance. Effective strategies for helping preschoolers with disabilities develop self-control, such as correspondence training, are valuable for facilitating least restrictive placements.

Summary

Although the exact nature and directionality of the controlling relations between an individual’s verbal and nonverbal behavior has not been completely identified, research reveals that correspondence training is an effective strategy promoting positive behavior changes for individuals with disabilities. Furthermore, it is a procedure shown effective for changing the behavior of preschool children with disabilities (Baer et al., 1988; Odom et al., 1992; Weninger & Baer, 1990) and increasing self-control (Israel & O’Leary, 1973; Karoly & Dirks, 1977).
Activity Schedules

Another procedure useful in promoting independent performance and positive behavior changes is the use of activity schedules or picture schedules. Activity schedules are a set of photographs or words that can be organized in a manner to prompt an individual to engage in a sequence of activities (McClannahan & Krantz, 1999). Activity schedules promote independent performance and provide a medium for nonverbal children to indicate preferred activities (Flores et al., 1995; Pierce & Schreibman, 1994). Table 2.8 provides a summary of articles describing photographic cues and activity schedules.

Many interventions rely solely on verbal instructions (Lazarus, 1998) which are sometimes inadequate for children with severe language deficits. Verbal instructions can also become a source of faulty stimulus control resulting in the need for an adult to be present at all times to deliver the instruction, further increasing dependence on adult presence (Schwartz, Garfinkle, & Bauer, 1998). Activity schedules can be used to prompt children to initiate and complete activities replacing the need for constant adult prompts and supervision (McClannahan & Krantz, 1998). Activity schedules provide a tool for transferring stimulus control from the teacher to a contrived stimulus representing natural elements in the environment, whereby reducing teacher involvement.
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<thead>
<tr>
<th>Study</th>
<th>Description</th>
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<tr>
<td>MacDuff, Krantz &amp; McClannahan 1993</td>
<td>• 4 children with autism</td>
<td>• increased on-task</td>
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<td>• effects of graduated guidance &amp; activity</td>
<td>• increased on-schedule</td>
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<td>Krantz, MacDuff &amp; McClannahan 1993</td>
<td>• 3 children with autism</td>
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<td>• effects of picture prompts on participation in</td>
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<td>Pierce &amp; Schreibman 1994</td>
<td>• 3 children with autism</td>
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<td>• generalization across tasks</td>
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Table 2.8: Summary of articles describing picture cues and activity schedule interventions.
Visual Cues

Many children with disabilities face significant deficits in their language skills suggesting that verbal instruction alone might not be understood (Lazarus, 1998). Clayton and Watson (1995) suggested using pictures to prompt and support the child’s language for functional purposes allowing the child to effectively communicate in social situations. Verbal alternatives are critical for reducing problem behavior and the need for teacher prompts (Groden & LeVasseur, 1995; Hodgdon, 1995). The use of pictures in the classroom can provide routine reminders, prompts for behavior, and visual support for effective instruction (Lazarus, 1998).

Children with autism often perform better at spatial, perceptual, and matching tests, while being most impaired at verbal tests requiring language comprehension and expression (Greenspan & Wieder 1992; Clayton & Watson, 1995). The difficulty interpreting and producing vocal statements restricts the child’s ability to follow directions and make choices. Visual prompts, such as photographs or icons, can be used to support the receptive language of pre-reading children exhibiting weak auditory processing skills. Other research has demonstrated that the use of visual cues facilitated the acquisition of complex skills by individuals with disabilities (Pierce & Schreibman, 1994; Wacker, Berg, Berrie, & Swatta, 1985).

Picture prompts were used by Pierce and Schreibman (1994) to teach three children with autism to perform daily living tasks. The school-age participants were provided picture cues on tasks such as dressing. Participants were taught to turn to the correct picture prompt in a notebook and proceed with the pictured task. Using a
multiple baseline across behaviors, the results showed an increase in on-task behavior using picture prompts and a decrease in inappropriate behavior for all three subjects. Generalization across tasks and setting without additional training was reported (Pierce & Schreibman).

Krantz, MacDuff, and McClannahan (1993) taught the parents of three boys with autism to use picture prompts. Parents used a notebook containing pictures of family activities to increase their children's participation in family activities. Participants were taught to locate picture prompts in the notebook. Researchers observed increases in engagement for all three subjects with target behavior maintaining for up to 10 months. Parents reported participant's transitioning behaviors decreased.

Picture prompts have been used effectively to increase on-task engagement of daily living skills and participation in family activities. Existing research further describes the use of picture prompts for developing sequential behavior in children with autism.

**Sequential Behavior**

Photographic activity schedules have been used to help children develop play skills, make play choices, access more play areas in the classroom, and ultimately increase their independent performance during free play (Groden & LeVasseur, 1995; Valk & Schwartz, 1997). Systematically implemented photographic schedules have been shown to support and enable children to predict and respond to routine events in
their environment (MacDuff et al., 1993; Robertson, Gravel, Valcante, & Maurer, 1992). Whaley (1991) found that picture schedules encouraged independent engagement by helping individuals with disabilities plan and organize interactions with their environment.

Individuals with autism and developmental delays often experience difficulty acquiring lengthy response chains and generalization of learned skills. Research investigating the use of activity schedules with these individuals found them effective in facilitating the acquisition of a sequence of complex functional skills (MacDuff et al., 1993; Gilde, Pederson, & Arntzen, 1996). The use of activity schedules does not interfere with normal classroom procedures, is cost effective, and encourages the development of self-control (Groden & LeVasseur, 1995).

Fivush (1984) found that preschool and kindergarten classrooms share many similar features. She discovered that children's photographic representations of preschool routines helped guide their understanding of future kindergarten classrooms or other inclusive settings. Visual supports used in combination with personalized programs allowed learners to experience repeated application of successful adaptive behavior with immediate reinforcement each time the program was executed. Photographic schedules allow children to predict and anticipate recurring sequences of events while also providing the framework for understanding sequences of novel events (Fivush).

Valk and Schwartz (1997) investigated the use of photographic play schedules in an integrated preschool classroom to increase participation in a variety of play activities during the regularly scheduled free play period. The 4 children with severe
disabilities were taught during intervention to design their own play schedule, consisting of three play choices, and then play in the indicated areas during the free play time period. Teacher prompts and progressive time-delay were used. Observational data were collected on the number of teacher prompts needed to maintain the children’s play schedule behavior. The experimenters found the use of the photographic play schedules allowed the children to become more independent during free play, expanded their play to all areas of the classroom, and increased the play skills of three of the four participants. A direct result of the participants increased independence during free play was the exposure they had to all of the students in the room and the increase in their social competency (Valk & Schwartz).

Four children with autism participated in a study by MacDuff, Krantz, and McClannahan (1993). Graduated guidance and photographic activity schedules were used to increase the on-task and on-schedule behavior of the three participants. A multiple baseline across subjects was used to determine increased rates of not only on-task behavior, but also increased on-schedule behavior. Participants were able to sequence three events lasting up to an hour by the end of the study (MacDuff et al.).

Frazier (1997) investigated the use of correspondence training paired with the use of photographic play schedules in an inclusive preschool classroom with three preschoolers with disabilities. The children were observed to ascertain if their on-task and sequencing play behaviors were affected by the introduction of correspondence training using picture schedules. The results of the study indicated high levels of
on-task and sequencing behaviors for all participants. Social validity information supported consumer satisfaction by the classroom teacher and participants (Frazier).

Summary

The ability to use photographic schedules is connected to the child’s ability to understand realistic representations of life in the context of pictures. Children as young as three years old can report recent events in correct temporal sequence. These findings suggest children’s ability to sequence events in relationship to time is an important type of memory classification enhancing the child’s ability to predict, organize, and recall information in the environment (Feuerstein, 1997; Fivush, 1984). Picture cues and activity schedules have been used successfully as discriminative stimuli reducing the need for constant adult supervision (Krantz & McClannahan, 1993).

Generality

Effective and valuable behavior changes are those that exist over time and occur across settings and people (Cooper, et al., 1987). Generalization of behavior is defined as trained behavior occurring in untrained settings or with different people (Chandler, Lubeck, & Fowler, 1992). Although generalization had been viewed as a passive phenomenon, it is now considered an active process that must be taught directly (Stokes & Baer, 1977). Research has shown that children with disabilities do not often generalize skills without direct intervention at generalization (Cooper et al.).
There are a number of strategies used to promote generalized behavior in individuals with disabilities. Some of these strategies include aiming for natural communities of reinforcement, programming common stimuli, and teaching self-management techniques. By using one or more of these strategies during training, there is an increase in the probability that the skill being taught will generalize.

**Promoting Generalized Outcomes**

This study integrated the use of instruction in the natural environment with other aspects to promote generalized outcomes.

**Contacting Natural Reinforcement.** Instruction delivered in the natural environment incorporates many components that encourage generalization. It focuses on application of learned skills in the context in which the child needs to perform them (Rule et al., 1998). McGee et al. (1992) stated, “When generalization occurs, it is probably derived from teaching multiple examples of behavior within ongoing stimulus conditions, which are the same conditions under which responses later will be cued and reinforced” (p. 118). Teaching play skills in an environment where available reinforcement will remain following the withdrawal of the intervention is important. During the instruction, children learn to identify and contact naturally occurring reinforcement that will remain available after the researcher leaves.

Providing instruction in the natural environment, specifically an inclusive preschool setting, increases the chance the child will learn to contact natural communities of reinforcement for play behavior. Principles supporting instruction in the natural environment suggest instruction occur within daily routines and activities and emphasizes the child’s interaction with the environment and natural consequences.
(Santos & Kraft, 1997). Angelo and Goldstein (1990) contended instruction in the natural environment promotes generalization of skills across settings and people.

The use of naturalistic instruction is consistent with the philosophy of inclusion in that it promotes the placement of the child in the less restrictive environment. Naturalistic instruction also fits nicely with developmentally appropriate practice philosophy and emphasizes functional skills in the context of the child’s environment (Rule et al., 1998). It can be applied in ways benefiting the child already placed in an inclusive setting, while examining the opportunity to identify natural communities of reinforcement that will remain in place to support the child’s behavior changes (Chandler et al., 1992). This is a vital component when the goal is to help the child develop independent performance.

Stokes et al. (1978) described the following to help children learn to contact natural communities of reinforcement. “In this technique, subjects are exposed to natural environments that are strategic, in that they already function to maintain behaviors similar to the experimentally modified behavior” (p. 285). The authors demonstrated that preschool children with disabilities could be taught to actively recruit a natural community of reinforcement. Children were trained to appropriately recruit teacher attention resulting in quality, diversity, rate, and distribution of children’s repertoire of appropriate skills (Stokes et al.).

**Programming common stimuli.** The use of developmentally appropriate toys and play materials that are commonly found in preschool classrooms is an important aspect of interventions implemented in inclusive classrooms. In this manner programming common stimuli occurs, whereby increasing the likelihood that when the
child learned to appropriately interact with materials in one environment, the child would be able to interact with similar materials in another environment.

**Self-directed activities.** Correspondence training and activity schedules have both been shown to promote self-control and independent performance. Many correspondence training studies found that skills could be maintained and generalized (Baer et al., 1987; Odom et al., 1992; Wacker et al., 1985) Correspondence training becomes a powerful tool when generalized correspondence is evident. Generalized correspondence exists when the individual’s verbal behavior serves to consistently govern her nonverbal behavior in untrained situations without reinforcement. It increases the likelihood the individual’s verbal statement of intent will serve to evoke nonverbal behavior in untrained situations enhancing self-directedness (Baer, 1990).

**Summary**

Embedding strategies to promote the independent performance of children within a framework to enhance generalization suggests newly acquired skills will be maintained and generalized. It is important to view the researchers role in terms of the intervention procedures and the child’s performance in the absence of the researcher. It is socially valid for the researcher not only to be concerned about behavior changes occurring within the study, but also for lasting behavior changes.

**Social Validity**

Applied behavior analysis is a science committed to the improvement of human life. This is particularly true in the area of education, primarily the education of children with disabilities. Behavior analysts in the field of early childhood education
have offered effective and efficient strategies to critical problems confronting educators of young children with disabilities. The quest for social validation must follow.

**Importance**

Wolf (1978) first introduced the concept of social validity in applied research as a way to assess consumer satisfaction. He stated, “if we aspire to social importance, than we must develop systems that allow our consumers to provide feedback about how our applications relate to their values, to their reinforcers” (p. 475). Social validity is a tool that can be used to assess whether applied research goals are socially significant, whether the intervention procedures are appropriate, and whether the outcome of the intervention was important to relevant consumers (Wolf).

Carnine (1997) identified the major goals of applied research as solving problems and improving practice through the acquisition of knowledge. Educational research should be an essential tool for practitioners yet there exists a “research-to-practice” gap. Attempting to narrow this gap Carnine suggested evaluating the trustworthiness, usability, and acceptability of our procedure or program. Trustworthiness refers to the level of confidence practitioners have in research findings. It does not question the personal integrity of the researcher, but rather focuses on the findings of the research. The likelihood the research practices will actually be implemented outside of the research setting is referred to as usability. Accessibility addresses the extent the findings are available to those who want to use
them. This involves not only dissemination of findings, but also the ease in which the practitioner can interpret and implement the findings in their everyday setting (Carnine).

Carnine (1997) provided a thorough list of suggestions and guidelines for improving each of these areas. The main points of action for improving trustworthiness of research included improving the research process and creating a critical mass. The points of action for improving usability of research were to increase relevance, practicality, transportability, and interest. Finally, suggestions for organizing research findings for consumers included asking questions regarding whether or not the information clearly describes the approach and its outcomes, an accountability system, management responsibilities, requirements for teachers, costs, and effects for different populations (Carnine).

Schwartz and Baer (1991) described the purpose of social validity in applied settings, as an important tool to subjectively assess the acceptability or unacceptability of interventions or programs by relevant audiences whereby evaluating the viability and survival of an intervention. Social validity assessment is comprised of two components. The first is the collection of accurate and representative information from relevant consumers. The second is the use of the information collected to effect changes in the procedures or program. These behaviors threaten both the internal and external validity of a body of research calling into question the results offered by the researcher. This further accentuates the importance of determining social validity.
Schwartz and Baer contended that we would not know the importance of social validity assessments until we learn to implement them accurately and reliably.

Procedures developed to implement social validity must be applicable to a wide range of research questions and a diverse spectrum of relevant consumers.

Relevant Consumers

Social validity measures identify the behaviors of the consumers who disapprove of the intervention and who are likely to act on their disapproval by withdrawing from the intervention, complaining, or failing to implement the procedures properly. Researchers must first correctly identify all relevant consumers, both direct and indirect. Second, they must determine what questions to ask relevant consumers. The third factor addresses how to collect information that is valid and reliable. Schwartz and Baer (1991) challenged the field to increase reports of both favorable and unfavorable social validity results, expand participation of consumers, and strive for accuracy in social validity measurement.

Social validity assessments evaluate the perceptions of consumers regarding an intervention and its outcomes, not program effectiveness according to Schwartz (1996). The purpose therefore, is to evoke feedback from all relevant consumers. Consumer feedback is necessary in providing a vehicle for dialogue required in the development and maintenance of inclusive early childhood programs. Relevant consumers within this context might include children with special needs and their
families, typically developing children and their families, early childhood teachers, early childhood special educators, administrators, policy makers, and members of the general public interested in the program (Schwartz).

Summary

The reauthorization of the Individuals with Disabilities Act (1997), mandating the involvement of parents in early intervention services for young children with disabilities, has fueled the topic of social validity. Social validity information is vital for identification of best practice for young children with disabilities. The application of applied science to the notion of social validity could promote useful, yet scientifically reliable social validity measures. When social validity research questions are considered less valuable or more expendable than other research questions, we tend to ignore the need to use the same rigorous scientific standards we use for other research questions. Applied researchers must take steps to elevate social validity measures to the same rigorous scientific standards applied to other research questions, by developing sound social validity research questions.

Conclusion

Engagement and independent play skills are essential skills for preschool children with disabilities in order to promote learning, independent performance, and social interaction (Brewer & Kieff, 1997; McWilliam, 1991). Research suggests that preschoolers with autism can increase these skills with effective intervention strategies (Libby et al., 1997; McWilliam & Bailey, 1995).
The use of correspondence training has a history of being effective as a strategy for building skills and developing self-control in preschool children by reinforcing the connection between verbal and nonverbal behavior (Karoly & Dirks, 1977; Odom & Watts, 1991). Research indicates photographic activity schedules are effective tools to facilitate engagement and promote independent performance (Frazier, 1997; Hall, Krantz, & McClannahan, 1993). Combining correspondence training and activity schedules to promote independent play skills warrants further investigation.

This study will extend the literature by examining the effects of correspondence training and activity schedules on preschoolers with autism in an inclusive setting. In addition, this study will investigate the effects this intervention has on the generalization of children's target behaviors. Social validity will be obtained from parents of the participants, early childhood special education teachers and early childhood education teachers.
CHAPTER 3

METHOD

This section describes the research methodology, data collection and analysis used to answer the research questions. A description of the children, setting, materials, dependent variables, measurement, procedural integrity, research design, procedures and social validity measures are included.

Participants

Four children with autism, from 3 to 5-years-old, participated in this study. Participants were selected based on their lack of engagement and appropriate play behavior in play situations and an existing documented diagnosis of autism as defined by the 1994 American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders (4th ed.). Participants exhibited restrictive play skills such as repetitively manipulating a toy for long periods of time or engaging in high levels of stereotypic behavior such as mouthing, finger flicking, bouncing, or spinning during playtime. These behaviors were assessed prior to the onset of the child’s participation in the study by an independent professional using the Childhood Autism Rating Scale (Schopler, 1988). The experimenter assessed each child’s performance in the
cognitive, social and language domains using the Battelle Developmental Inventory (Newborg, Stock, Wnek, Guidubaldi, & Svinicki, 1984). Table 3.1 provides demographic data on target children. Further information regarding each child’s play behavior was gathered by parental report and experimenter observation. Three participants attending special education classrooms were observed in their classroom settings to determine their appropriateness for the study. Classroom observations were followed by an interview with the child’s early childhood special education teacher. Children were not selected if they exhibited self-injurious behavior or were participating in an intensive discrete trial training program.

The experimenter met with the parents of each child chosen for participation in the intervention. Parents were provided with a letter describing the intent of the study and providing background information about the experimenter. Prior to the collection of data the experimenter obtained signed consent forms from the parents. Consent forms were secured for the purposes of (a) the child’s participation in a research study; (b) permission for the child to be photographed and videotaped; (c) permission for the experimenter to assess the child in the cognitive, language, and social domains; and (d) research site permission (see Appendix A). A description of the individual children follows:

**Ned.** Ned was a 58-month old male who was diagnosed with autism when he was 31-months old. He attended a center-based early childhood special education self-contained classroom for two years prior to his involvement in this study. Ned scored a 39 on the Childhood Autism Rating Scale (Schopler, 1988) indicating severe autism.
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<tr>
<td></td>
<td>Ned</td>
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<tr>
<td>Age in months</td>
<td>58</td>
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<tr>
<td>Gender</td>
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<tr>
<td>CARS&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
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<td>Expressive Language&lt;sup&gt;b,c&lt;/sup&gt;</td>
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<tr>
<td>Social&lt;sup&gt;b,c&lt;/sup&gt;</td>
<td>31</td>
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</table>

<sup>a</sup> *Childhood Autism Rating Scale* (Schopler, 1988), with scores of 36 and above indicating severely autistic

<sup>b</sup> *Bettelje Developmental Inventory* (Newborg et al., 1984)

<sup>c</sup> Age-equivalency scores reported in months

Table 3.1: Demographic data for participants.
Ned received the following age equivalent scores on the Battelle Developmental Inventory (Newborg et al., 1984): cognition, 32 months; receptive language, 36 months; expressive language, 28 months; and personal-social, 31 months.

**Kelly.** Kelly was a 63-month old female. She was diagnosed with autism when she was 50-months old. Kelly attended a center-based early childhood self-contained classroom for two years prior to her involvement with this study. Kelly scored a 40 on the Childhood Autism Rating Scale (Schopler, 1988). This score indicated severe autism. Kelly received the following age equivalent scores on the Battelle Developmental Inventory (Newborg et al., 1984): cognition, 36 months; receptive language, 20 months; expressive language, 27 months; and personal-social, 22 months.

**Michael.** Michael was a 42-month old male with a twin sister. He was diagnosed with autism when he was 36-months old. Michael has not attended early childhood special education classes. He scored a 42 on the Childhood Autism Rating Scale (Schopler, 1988) indicating severe autism. Michael received the following age equivalent scores on the Battelle Developmental Inventory (Newborg et al., 1984): cognition, 26 months; receptive language, 20 months; expressive language, 24 months; and personal-social, 12 months.

**Janet.** Janet was a 70-month old female who was diagnosed with autism when she was 55-months old. She attended an inclusive early childhood special education classroom for two years prior to her involvement in this study. Janet scored a 50.5 on the Childhood Autism Rating Scale (Schopler, 1988). This score indicated severe
autism. Janet received the following age equivalent scores on the Battelle Developmental Inventory (Newborg et al., 1984): cognition, 40 months; receptive language, 20 months; expressive language, 28 months; and personal-social, 20 months.

In addition to the target children, eight typically developing peer models were recruited from church where the research was conducted and the surrounding neighborhood. Five male and three female peer models participated in the playgroup. The peer models ranged in age from 36 months to 52 months. One peer model, a 3-year-old, was a sister of one of the participants. The experimenter obtained permission from the parents of the peer models for (a) their child's participation in a playgroup serving as a part of a research study, (b) permission for their child to be photographed and videotaped, and (c) research site permission (see Appendix B).

Experimenter

The experimenter is a doctoral candidate in Special Education and Applied Behavior Analysis at The Ohio State University. She was an early childhood special education teacher for 14 years prior to her enrollment in the doctoral program. Her past experience involves comprehensive work with children with autism, child development, and inclusive early childhood education practice. The experimenter's current certifications include: Ohio Department of Education, Early Education of the Handicapped; Ohio Department of Education, Educational Supervision; Ohio Department of Health, Early Intervention.
Setting

The study was conducted at a large suburban church in Columbus, Ohio. The experimenter established a playgroup comprised of twelve children, four of whom were participating in the study, and eight typically developing peer models.

Three parents of children participating in the study volunteered to assist in the classroom one day per week. A licensed social worker and a special education assistant teacher volunteered in the classroom once per week. The parents and volunteers were asked to assist with activities and the general classroom routine. Prior to the onset of the study, they received general instructions on managing the classroom environment and peer model interaction. They were instructed not to interact with the children participating in the study during playtime (see Appendix C).

The playgroup was held Tuesday through Friday from 9:45 until 11:45. Parents transported their children to and from the research site. The daily schedule consisted of playtime, circle, gym, snack, and story time. Research was conducted each day during the regularly scheduled play period. Toys and play materials remained the same throughout the study. No new items were introduced after the onset of data collection. Lost or broken items were replaced. A complete list of toys and materials located in the classroom is located in Appendix D.

The classroom contained four defined play areas. These areas were referred to as the (a) Block Area, (b) Kitchen Area, (c) Dollhouse Area, (d) Art Table. The Block Area was located on a 1.2 m by 1.8 m carpet depicting a city roadway and contained a variety of medium and large sized construction blocks, trucks, cars, and trains. The
Kitchen Area was located around a .6 m by 1.2 m brown carpet and contained child size kitchen furniture, plastic food, dishes, dress-up clothes, and dolls. The Dollhouse Area was located on a 1.2 m by 1.8 m dark green carpet and consisted of small manipulative items such as a Lego table, dollhouse and accessories, and marble works. The Art Table was placed upon a Little Mermaid 1.2 m by 1.8 m carpet. Materials such as paints, markers, glue, and play dough were available on a bookcase in the area (see Figure 3.1).

**Materials and Equipment**

A variety of materials and equipment were used to implement this study. These included consent forms, data collection sheets, four carpets, toys and play materials, photographs, photographic activity schedules, stamps and inkpads, video camera, tripod, and videotapes.

**Consent Forms**

Signed consent forms were obtained from the parents of each child participating in the study. Consent forms were secured for the purposes of (a) the child's participation in a research study; (b) permission for the child to be photographed and videotaped; (c) permission for the experimenter to assess the child in the cognitive, language, and social domains; and (d) research site permission (see Appendix A).

The experimenter obtained consent forms from the parents of the peer models for (a) their child's participation in a playgroup serving as part of a research study, (b) permission for their child to be photographed and videotaped, and (c) research site permission (see Appendix B).
Figure 3.1: Illustration of classroom.
Data Collection Forms

Preprinted data collection forms were used to record and code (a) children’s on and off-task behavior and experimenter prompts, and (b) number of play correspondence behaviors (see Appendix E). Other forms included interobserver agreement forms (see Appendix E), procedural integrity checklists (see Appendix F), and social validity forms (see Appendix G).

Carpets

Four carpets were used to help define each play area in the classroom. Three carpets were 1.2 m by 1.8 m in size, while the fourth was .6 m by 1.2 m in size. Each carpet had a distinguishing color or pattern.

Toys and Play Materials

Four play areas in the classroom provided access to age appropriate toys and play materials. Toys and play materials were selected based on the following criterion: developmental and age appropriateness, items commonly found in typical peer group settings, items providing access to more than one child at a time, and items promoting interactive play skills. Play materials with multiple pieces were stored in plastic shoeboxes in child accessible areas.

Art Table. The following items were located in the Art area: .91 m by 1.8 m table and six child size chairs, a .91 m by 1.2 m bookcase, construction and writing paper, Tempera paints, paint utensils, watercolor paints, Dot Paint, play dough, play
dough tools, markers, crayons, chalk, rubber stamps and inkpads, glitter glue, glue sticks, pencils, stencils, and miscellaneous art materials such as feathers, yarn, and dry macaroni.

**Block Area.** The following items were located in the Block Area: Two .91 m by 1.2 m bookshelves, Mega Blocks, Waffle Blocks, cardboard blocks, wooden blocks, wooden train track and trains, construction garage and construction vehicles, matchbox cars, semi-truck, dump truck, police car, and a school bus.

**Dollhouse Area.** The following items were located in the Dollhouse Area: Little Tykes dollhouse and accessories, marble works, magnets and tools, zoo animals, dinosaurs, Lego table and Lego’s.

**Kitchen Area.** The following items were located in the Kitchen Area: a child size table and two chairs, play stove, sink, and refrigerator, doll crib and high chair, two dolls, three hand puppets, Arthur stuffed animal, baby bottles, play food, play dishes, lunchbox, cash register, play money, dress-up clothes and hats, doctor lab coat and play doctor kit.

**Photographs**

Color photographs were taken of the four play areas in the classroom. One set of photographs was developed and enlarged to 12.7 cm by 17.78 cm. Each of these photographs was posted on a yellow container that was placed on a shelf or table in the corresponding play area. This container allowed the child to store his or her activity schedule in the play area where he or she was playing. Four sets of 5.08 cm by 7.62 cm color photographs were used to make an activity schedule for each of the
children participating in the study. These photographs were used to teach the children which photographs corresponded with a specific play area, how to select a play area, and to review their play behavior at the conclusion of playtime.

**Photographic Activity Schedule**

Each child was given a 12.7 cm by 20.32 cm clipboard with his or her name on it. Attached to the front side of the clipboard were pieces of Velcro spaced 2.54 cm apart. The children placed their play selections on the first row of Velcro (see Figure 3.2). On the back of the clipboard, an attached envelope held photographs of all the play areas. Velcro was attached to the back of each picture allowing the children to place their selections on the front of the clipboard.

![Diagram of the clipboard with Velcro and Envelope for Play Selections](image)

**Figure 3.2:** Illustration of the clipboard and photographic activity schedule.
Ink Stamps and Inkpads

Three 2.54 cm by 5.08 cm rubber stamps were used to reinforce the children’s target behaviors. The first stamp was a frog and when pressed down the child heard “rib-it.” The second stamp was a cat and when pressed down the child heard “me-ow.” The third stamp was a birthday cake and when pressed down the child heard the “Happy Birthday” song.

Video Camera, Tripod, and Videotapes

All experimental and generality sessions were recorded on mini Digital Video Cassette tapes and later transferred to a 6-hour VHS format. A Sony DV Handycam Vision video camera was used to record all sessions. The camera was positioned on a tripod mounted on a countertop to enable views of all play areas.

10-s Interval Tape

A 10-s interval tape was created using Microsoft Windows Wave Recorder. The first cycle of intervals was recorded on a CyberMax Pentium-2 computer. Using a loop setting within Microsoft Windows the output was then recorded on a Phillips Magnavox AZ1010 cassette recorder. Forty-five minutes of 10-s intervals were recorded on the tape. The 10-s intervals were designated with a voice saying “Child 1, … Child 2, … Child 3, etc. The 10-s interval tape was played directly into the auditory system of the video camera by placing it within range of the video camera microphone.
Definition and Measurement of Dependent Variables

This study focused on increasing the independent play skills of preschoolers with autism. Two dependent variables were measured: the percentage of intervals the child exhibited on-task behavior and the total number of occurrences of correspondence between children's play selections and their actual play behavior.

Definition of Dependent Variables

Child behaviors included on-task and play correspondence behavior.

On-task (O)

The following statements were described and coded as on-task behaviors.

1. The child was engaged in focused visual attention, specifically the child's eyes were directed at the toy or play materials, at another child engaged in the same activity, or at the experimenter and...

2. The child was engaged in purposeful interaction or manipulation of the materials involved in the play activity.

3. The child was engaged in nonverbal or verbal interaction with another student or the experimenter during a play activity.

4. The child was waiting for another child to take a turn with a shared toy or play materials.

5. The child was waiting for needed play materials to continue play.

6. The child was retrieving, visually attending to, or replacing their photographic activity schedule.
The following statements describe play behaviors that were coded off-task (Ø):

1. The child was not engaged according to the definitions listed above.
2. The child engaged in self-stimulatory behavior such as mouthing, finger flicking, bouncing, or spinning.
3. The child manipulated toys or play materials in a prolonged repetitive pattern.
4. The child was engaged in disruptive behaviors such as crying, whining, pulling posted items from the wall, or throwing toys.
5. The child exhibited aggressive behaviors with peers or adults such as hitting or pushing.
6. The child was sitting on his or her mother’s lap.

The following statements describe child behaviors that were coded as unscored intervals and were subtracted from the total number of intervals for the session.

1. The child was at the sink washing his or her hands.
2. The child was using the bathroom.
3. The child was placed in time out by an adult due to disruptive behavior.

Play Correspondence

The following rules were established for recording correspondence of play selection to play behavior.

1. The child was presented with photographs of play areas located within the classroom.
2. The child was asked to make three play selections by saying or pointing to the photographs of play areas.

3. The child placed the indicated photographs on the front of the photographic activity schedule.

4. The experimenter recorded play selections.

5. The child was observed to see if he or she was on-task in the first activity area indicated on his or her photographic activity schedule.

6. The child was observed to see if he or she follows the same play behavior sequence as indicated by his or her photographic activity schedule.

7. The child received credit for correspondence when his or her play behavior matched his or her play selections as indicated on his or her photographic activity schedule.

8. If the child matched one play selection with actual play behavior, he/she received one point.

9. If the child matched two play selections in the correct sequence with actual play behavior, the child received two points.

10. If the child matched three play selections in the correct sequence with actual play behavior, the child received three points.

11. In the absence of play selection behavior, no correspondence credit will be coded for that day.
Measurement

The children were videotaped during a 45-minute playtime using a video camera mounted on a tripod. The tripod was secured on a countertop. The observation period began after the first target child made his or her play selections and entered the play area. Children’s on-task behavior, as well as experimenter prompts, was observed using a partial-interval recording scheme. The observation period ended at the conclusion of the 45-minute 10-s interval tape. All sessions, across all conditions were videotaped. Coding forms were designed to capture the relevant dimensions of the observations (see Appendix E).

On-task Behavior

A 10-s interval tape was used with the videotape to code and record on-task behavior for each child. Observations of the children were conducted in a rotating fashion with one child being observed for a 10-s interval and not observed for the next three 10-s intervals while the other three children were being observed. The child’s behavior was coded by drawing a line through an O (representing on-task) or an Ø (representing off-task). The percentage of intervals the child was on-task was calculated by determining the total number of intervals the child was on-task and dividing this number by the total number of intervals in a session.

Play Correspondence

The children were presented with photographs of the four play areas in the classroom and asked to show the experimenter three play areas where they wanted to play. The play selections were numbered 1, 2, and 3. As the children made their play selections, the experimenter recorded the selections in the correct sequence on the play
observation form. The total number of play correspondence behaviors was coded on a daily coding form on which the observers recorded where they observed the children playing in respect to the children’s initial play selections. Event recording was used to identify the number of one to one occurrences of play correspondence. Each target child had an opportunity to receive three play correspondence points for each session. Play correspondence was counted when correspondence was observed between the child’s play selections and his or her actual play behavior during playtime.

**Procedures to Assess Believability of Data**

Interobserver agreement (IOA) data were collected and analyzed between the experimenter and a second observer. The percentage of IOA was calculated for dependent variables using scored-interval and weighted IOA formulas. Accuracy measures were used to calculate the number of children’s play correspondence behaviors.

**Interobserver Agreement**

All experimental and generality sessions were videotaped. IOA data were collected for children’s on-task and play correspondence behavior and experimenter prompts. See Appendix E for IOA summary forms.

**Observers**. The children were videotaped for all experimental and generality sessions during playtime. The experimenter served as the primary observer and recorded children’s on-task behavior and play correspondence during experimental and generality sessions. The experimenter also observed the videotapes and recorded experimenter prompts.
The second observer was a first year doctoral student in Special Education and Applied Behavior Analysis at The Ohio State University who had experience working with individuals with autism. The second observer collected IOA data for dependent variables and experimenter prompts. The second observer also collected data to measure procedural integrity and helped monitor the video camera to capture all aspects of the experiment.

A third observer was a second year doctoral student in Special Education and Applied Behavior Analysis at The Ohio State University. The third observer collected data to measure procedural integrity and helped monitor the video camera to capture all aspects of the experiment.

**Training.** Prior to the beginning of the study, the experimenter provided the second observer with written and verbal definitions of the dependent variables. The observers jointly viewed and discussed videotapes of non-participating children during playtime. The experimenter and second observer identified and coded dependent variables of non-participant children and experimenter behavior using the 10-s interval tape. The data were coded on a data collection sheet similar to ones used in the study (see Appendix D). The experimenter and second observer trained by viewing six sessions of non-participating children during playtime until there was a 95% level of agreement on dependent variables and experimenter prompts between the observers on three consecutive sessions.

**General Procedures for Recording IOA.** IOA was collected using both, the scored-interval and weighted IOA methods. Following each session the experimenter independently viewed and coded the videotape. Dependent variables and experimenter
prompts were identified and coded on the data collection sheets. For IOA sessions the experimenter and second observer jointly viewed the videotape immediately following the session and independently coded and recorded the dependent variables and experimenter prompts. The observers proceeded to compare their findings and marked agreements and disagreements. IOA data sheets were used to summarize IOA data and calculate the percentage of IOA (see Appendix E).

**Scored-Interval Agreement.** IOA on the occurrence of on-task and experimenter prompts was ascertained using the scored-interval (S-I) method (Cooper, Heron, Heward, 1987). The percentage of agreement was calculated for each child for on-task and experimenter prompts by dividing the number of agreements between observers by the number of agreements plus disagreements. The number obtained was multiplied by 100 resulting in the percentage of IOA. IOA was obtained for 20% of experimental sessions and 85% of generality sessions. Criterion for accuracy agreement was set at 95% per session.

The following formula was used to calculate the percentage of scored-interval IOA for on-task behavior and experimenter prompts (Cooper et al., 1987):

\[
\frac{\# \text{ of agreements}}{\# \text{ of agreements} + \text{disagreements}} \times 100 = \% \text{ agreement}
\]
**Weighted Agreement.** IOA for on-task behavior was also analyzed using a weighted interobserver agreement formula. In this formula, the occurrence agreement was weighted by the average percentage of intervals of nonoccurrence. Further, the nonoccurrence agreement was weighted by the average percentage of intervals of occurrence (Harris & Lahey, 1978). Harris and Lahey (1978) recommend the following formula to calculate weighted IOA:

\[
\text{Weighted Agreement} = 100 \times \\
(\text{occurrence agreement score}) \times (\text{mean proportion of unscored interval}) + \\
(\text{nonoccurrence agreement score}) \times (\text{mean proportion of scored intervals})
\]

Weighted IOA was obtained for 20% of experimental sessions and 85% of generality probe sessions. Criterion for weighted IOA was set at 95% per session.

**IOA of Event Recording**

In order to establish IOA for event recording, the experimenter calculated the number of play correspondence behaviors recorded by the experimenter with those recorded by the second observer. The following formula was used to determine IOA for play correspondence behaviors (Cooper et al., 1987):

\[
\text{smaller total \# of occurrences} \times 100 = \% \text{agreement} \\
\text{larger total \# of occurrences}
\]
Procedural Integrity

Two primary measures of procedural integrity occurred. First, a checklist of experimental procedures was developed for each all conditions. Second, the percentage of experimenter prompts directed to the target children was identified and recorded. IOA was calculated for 20% of experimental and generality sessions.

Implementation of the Intervention

Checklists of experimental procedures were developed and provided to the second and third observers for each session. The observers completed the checklists while observing experimenter behavior across all conditions to ensure that the experimenter accurately and consistently implemented the intervention. The observers marked each procedural step with regard to experimenter behavior as either observed (O) or not observed (NO). The experimenter and observers reviewed the checklists at the conclusion of the observation period to discuss any needed changes in experimenter behavior. Procedural integrity checklists for each condition are located in Appendix F. IOA between the second and third observers for procedural integrity was conducted for experimental and generality sessions.

Experimenter Prompts

The experimenter prompts were measured as an independent variable. Prompts were observed and recorded by the experimenter and second observer while viewing videotaped sessions using a partial-interval recording scheme. Experimenter prompts
included the categories of verbal and physical guidance, modeling, praise, and negatives. The following statements describe behaviors that were coded as experimenter prompts.

**Verbal and Physical Guidance (V).** The following statements described experimenter prompts defined and coded as “verbal and physical guidance.”

1. Verbal commands or physical guidance, instructions, or feedback given to the child to cue the child to make a play selection.

2. Verbal commands or physical guidance, instructions, or feedback given to the child to cue the child to initiate a play activity.

3. Verbal commands or physical guidance, instructions, or feedback given to the child to cue the child to correctly perform a step in a task or comply with directions.

4. Verbal commands or physical guidance, instructions, or feedback given to the child to redirect child behavior.

5. Verbal commands or physical guidance, instructions, or feedback given to the child to prompt engagement with materials.

6. General verbal prompts (prompts directed at the group) were recorded according to the individual child being observed at the time the prompt was given.

7. Verbal and physical prompts were recorded as they occurred. They need not to have occurred for the majority of an interval to be recorded.

8. Corrective feedback such as “You need to keep the play dough on the table.”
Modeling (M). The following statements describe experimenter prompts that were defined and coded as modeling.

1. Experimenter demonstrated for the child where play materials were located.
2. Experimenter demonstrated for the child how to appropriately interact with play materials.
3. Experimenter demonstrated for the child how to put pieces of play items together.
4. Experimenter demonstrated for the child how to put play materials away.

Praise (S). The following statements described experimenter prompts that were defined and coded as “praise” statements.

1. Positive verbal comments to the child by the experimenter such as “good,” “great,” or “nice job.”
2. Physical praise such as a hug or high five.
3. Praise statements occurring in the same interval as a prompt, modeling, or negative were not be coded as a praise statement.

Negative (N). The following statements describe experimenter prompts define and coded as “negative” statements.

1. A verbal reprimand by an adult intended to stop disruptive or self-stimulatory behavior such as “Stop throwing the toys” or “Stop bouncing.”
2. Removal of the child from an activity.
3. Placement of the child in time away.
4. Corrective feedback was not coded as a negative.
Experimental Design

A single subject, multiple baseline design across subjects (Baer, Wolf, & Risley 1968) was used to assess the effects of correspondence training using photographic activity schedules on children's on-task and play correspondence behavior during playtime.

The multiple-baseline design was used based on its appropriateness to analyze the effects of the independent variables without withdrawing treatment. Baer, Wolf, and Risley (1968) proposed the multiple baseline design for situations in which a reverse of baseline levels of behavior is not possible or is undesirable. Using a multiple baseline design across subjects, the effects of the independent variable were predicted, verified, and replicated by the repeated opportunities provided by using several subjects. Predictions were based on the response of Child 1 when exposed to the intervention after stable responding occurred during baseline. Verification occurs when child 1 moves into the intervention condition and yet there is no change in the baseline responding of the other participants. This pattern continues as each child moves from one condition to the next. Replication occurs when participant's target behaviors respond in the same manner as the other participant's when exposed to the same experimental conditions. Experimental control is demonstrated when there is a behavior change for the participants receiving the intervention but no change in responding for the participants who have not received the intervention (Cooper, Heron, & Heward, 1987).

On-task and play correspondence behaviors were measured during baseline for all children. The same variables were then measured during the subsequent
experimental conditions of activity-schedule-training, say reinforcement, play-
correspondence-package, and generality. Experimental control was established in this
study, when children’s behaviors, defined as dependent variables, demonstrated stable
responding during baseline. Stable responding was defined by Johnston and
Pennypacker (1993) as a “…pattern of responding that exhibits little variation in its
measured dimensional quantities over a period of time.” (p. 199). Consistent or stable
responding offers a measure of experimental control that guides the experimenter’s
decisions about changes in the experimental conditions (Johnston and Pennypacker,
1993).

In this study, stable responding was used to determine experimental control
when data fell on or near a specific level, with little variation, for a minimum of three
data points. The levels of children’s on-task behavior and the number of one to one
play correspondences they exhibited during baseline were compared to the same
behavior following the systematic implementation of activity-schedule-training,
say reinforcement, and play-correspondence-package. Specifically, there was an
increase of child behaviors during intervention over the established baseline levels of
the same behaviors, while baseline conditions remained the same for the other
children.

Data Analysis

Experimental control in a multiple baseline design is observed by visual
inspection of the data. Visual inspection was used to evaluate the experimental effects
and determine the clinical significance of the intervention (Cooper, Heron, & Heward,
1987). Daily data provided a basis for decisions about the progress of the experiment
and changes in experimental conditions. Within each condition, data were analyzed to
determine the number of data points, variability within phases, changes in level
between phases of performance, and change of trends within and between phases.

On-task and play correspondence behaviors were the basis of the experimental
analysis and were graphed daily. Data were collected across all experimental
conditions ensuring procedural integrity and allowing for ongoing training and
recalibration. This was done to control for gains made due to changes in experimenter
prompts, which were also graphed daily. Types of experimenter prompts were also
identified.

Procedure

The five experimental conditions were as follows: Baseline, Activity-schedule-
training, Say reinforcement, Play-correspondence-package, and Generality.

General Procedures

The children were brought to the classroom by their parents. After the children
and the parent or volunteer assisting for the day arrived, the experimenter instructed
the class that it was playtime. The experimenter arranged the materials for the activity
schedules while the parent or volunteer monitored the children. The table was located
on one side of the classroom, but outside of the play areas. While the other children
were playing, the experimenter brought the target children individually to sit at the
table. The clipboard, used for constructing the activity schedule, was within the child’s
reach on the table.
The experimenter presented the child with 5.08 cm by 7.62 cm photographs of the four play areas in the classroom by placing the photographs on the table directly in front of the child. A larger set of the four play area photographs was posted in the corresponding play areas. This provided the child with a visual connection between the photographs on his or her activity schedule and the actual play areas the photographs represented within the classroom.

**Baseline**

The experimenter brought the target child to the table and asked the child, “Where do you want to play?” If the child selected a picture the experimenter prompted the child to put the photograph on the clipboard and asked the child, “Where do you want to play next?” The same procedure was followed for the child’s third selection. If the child secured the photographs on the clipboard, the experimenter prompted the child to “Follow your play schedule.” The child was then observed to see if he or she played in the play areas indicated on his or her activity schedule.

If the child did not make a play selection within 15 seconds, the experimenter prompted the child to “Go play with your toys.” The experimenter gave general prompts to play only when the child was off-task or engaged in stereotypic behavior for approximately two consecutive intervals. The experimenter gave immediate specific prompts if the child was engaged in disruptive behavior. Baseline continued until data points fell at or near a specific level indicating stable responding for a minimum of three consecutive data points.
Activity-schedule-training

The same general procedures were followed at the beginning of each session throughout this condition. In this condition the experimenter implemented a training protocol in order to teach the children to use the activity schedules. The experimenter asked the child, “Where do you want to play?” If the child selected a picture the experimenter prompted the child to put the photograph on the clipboard and asked the child, “Where do you want to play next?” The same procedure was followed for the child’s third selection. If the child secured the photographs on the clipboard the experimenter verbally reviewed the child’s play selections and prompted the child to “Follow your play schedule.” The child was observed to see if he or she played in the play areas indicated on his or her activity schedule.

If the child did not proceed to the first play area indicated on his or her activity schedule, the experimenter prompted the child to look at his or her activity schedule, and play in the area indicated by the corresponding photograph. The experimenter prompted the child to place his or her activity schedule in a yellow container marked with a corresponding photograph.
The experimenter used graduated guidance as needed to prompt the child to locate and interact with play materials in the indicated play area. Graduated guidance is defined by Bailey and Wolery (1992) as:

The teacher begins each trial with the type and amount of prompting necessary, and as the child begins to perform the task, the prompts are removed immediately. If the child stops or begins to perform incorrectly, the type and amount of prompts needed are immediately applied and withdrawn as appropriate. Reinforcement is provided if the child completes even a minimal amount of the task correctly; reinforcement is not provided if the child resists at the end of the task (p.171).

In addition to graduated guidance, the experimenter also used modeling to demonstrate appropriate interaction with play materials.

If the child did not make a play selection, the experimenter prompted the child. This procedure was repeated until the child had three photographs on his or her activity schedule. The experimenter prompted the child to “Follow your play schedule” and observed the child to see if he or she proceeded to the areas indicated on the activity schedule. The experimenter then prompted the child to place his or her activity schedule in a container marked with a photograph corresponding photograph.

The experimenter used graduated guidance as needed to prompt the child to interact with play materials in the indicated play area. The experimenter demonstrated appropriate interaction with play materials, as well as prompting the child regarding the location of materials. The child was prompted to remain in each of the three play areas indicated on his or her activity schedule for a minimum of five minutes.

The second and third observers timed the children in each play area. After five minutes if the child was observed to be off-task, the experimenter prompted the child to look at his or her activity schedule and proceed to the next indicated play area.
Following the completion of five minutes in the third play area the experimenter waited until the child was observed to be off-task and said to the child, “You are all done with your play schedule, take it to the brown table.” The experimenter gave the child one stamp and said, “Good job following your play schedule.”

Activity-schedule-training continued on subsequent days until the child selected and followed a sequence of play selections as indicated on his or her activity schedule for two consecutive sessions. Criterion was met when the child remained in at least two different play areas as indicated on his or her activity schedule, for a total of 5 minutes per play area, without experimenter prompts to remain in the play area.

Say reinforcement

In this condition, the experimenter followed the general procedures previously described. The experimenter asked the child, “Where do you want to play?” If the child selected a picture the experimenter prompted the child to put the photograph on the clipboard and asked the child, “Where do you want to play next?” The same procedure was followed for the child’s third selection. If the child secured the photographs on the clipboard the experimenter verbally reviewed the child’s selections and said, “Good job telling me where you are going to play.” The experimenter immediately gave the child a stamp on his or hand and said, “Now follow your play schedule.” The child was then observed to see if he or she played in the play areas indicated on his or her activity schedule.

This condition was included to provide information regarding the child’s performance when reinforcement was provided immediately after he or she said what he or she was going to do. The experimenter provided prompts for the child to follow
his or her activity schedule. The child remained in the say reinforcement condition until his or her mean percentage of on-task behavior was 25% less than his or her mean percentage of on-task behavior in the activity-schedule-training condition.

**Play-correspondence-package**

Following the general procedures, the experimenter asked the child, “Where do you want to play?” If the child selected a picture, the experimenter prompted the child to put the photograph on the clipboard and asked the child, “Where do you want to play next?” The same procedure was followed for the child’s third selection. If the child secured the photographs on the clipboard the experimenter verbally reviewed the child’s play selections and prompted the child to “Follow your play schedule.” If the child did not proceed to the indicated play area on his or her activity schedule the experimenter prompted the child, “Look at you play schedule.”

The child was then observed to see if he or she played in the play areas indicated on his or her activity schedule. If the child was playing in a non-indicated play area but was observed to be on-task, the experimenter gave the child no prompts. The child did not however, receive play correspondence credit. If the child was playing in a non-indicated play area and was observed to be off-task, the experimenter prompted the child by saying, “You need to follow your schedule.” The experimenter provided specific prompts to the child to, “Remember to follow your play schedule” when the child was engaged in disruptive or stereotypic behavior.

At the conclusion of playtime, the experimenter directed the child to the table where the child initially made his or her play selections. Verbal feedback after play was used to review the correspondence between where the child said he or she was
going to play and where he or she actually played (focusing on a say-do sequence). The experimenter reviewed the child’s play selections by asking him or her, “You chose Art Table, did you play at the Art Table?” If the child did not respond, the experimenter reported to the child where he or she was observed playing. If the child was observed playing at the Art Table in the correct sequence, the experimenter placed a copy of the play area photograph underneath the corresponding photograph attached to the child’s activity schedule. The experimenter told the child, “You picked Art Table and you played at the Art Table.” The experimenter then placed a stamp on the child’s hand. This procedure was followed for the three play selections. The experimenter compared the child’s verbal report or activity schedule to his or her nonverbal play behavior and delivered reinforcement for accurate correspondence.

If the child’s activity schedule indicated a play area in which the child did not play within the correct sequence, the experimenter would ask, “Did you play in the Block Area?” If the child did not respond, the experimenter reported to the child where he or she was observed playing. The experimenter placed a copy of the play area photograph face down underneath the corresponding photograph attached to the child’s activity schedule. The experimenter said to the child, “You did not play in the Block Area today” or “You forgot to go to the Block Area after you were finished at the Art Table.” The child did not receive a stamp for play selections indicated on the activity schedule that did not correspond to actual play behavior.

Criterion for this condition was met when the child made three play selections using the photographic activity schedule and exhibited on-task behavior in the corresponding play areas in the correct sequence for two consecutive sessions.
Play-correspondence-package continued on subsequent days until on-task behavior was maintained with the mean percentage of experimenter prompts being at or below the mean percentage of experimenter prompts in the previous conditions.

**Say reinforcement**

The same general procedures were followed in this condition as described in the previous Say reinforcement condition. The experimenter provided reinforcement to the child immediately following the indication of his or her play selections. The experimenter reminded the child to, “Follow your play schedule.” The child’s play behavior was observed and recorded. The experimenter later compared the child’s observed play behavior to the indicated play selections on his or her activity schedule.

**Generality**

Generality probes were conducted for 20% of the experimental sessions. Observation of the children during a 15-minute play period prior to or at the conclusion of the scheduled playgroup served as the generality setting. Procedures were identical to baseline procedures. The experimenter instructed the class that it was playtime. Play area photographs and clipboards were placed on a table within the children’s reach. Target children were individually given a prompt, “Where do you want to play?” Target children were not prompted to construct or follow an activity schedule.
Social Validity

A basic tenant of applied behavior analysis is science can be used to improve the human condition (Cooper, et al., 1987). Determining the social validity of intervention goals, procedures, and outcomes is an essential component of applied research (Wolf, 1978). One important aspect of determining social validity is the identification of relevant consumers (Schwartz & Baer, 1991). The relevant consumers identified for this study were comprised of early childhood teachers, early childhood special education teachers, and the parents of the children who participated in the study. For this study, these consumers were asked to provide information regarding the social importance of the intervention goals, procedures, and outcomes. Social validity forms and instructions are located in Appendix G.

Intervention Goals

The social validity of the intervention goals was addressed by gathering information from five parents of the children participating in the study. Parent 1 was Ned’s mother. Kelly’s mother and father were Parent 2 and Parent 3 respectively. Parent 4 was Michael’s mother, and Parent 5 was his father. Parents were asked to view two five-minute segments of their child. The parents were not told that one of the segments was of their child during baseline and the other during the intervention. Parents were asked to complete a checklist consisting of statements such as, “It makes me sad when my child…” or “I wish my child could….” The parents were asked to place a tally mark beside each one of the statements they felt applied to them as they viewed the videotape of their child. Items could be marked more than one time.
The experimenter compared the number of tally marks on the checklist made while the parents were viewing their children during baseline to the number of tally marks they made during the intervention segment. This was done to determine the social validity of the intervention goals. A copy of the instructions and checklist is located in Appendix G.

**Intervention Procedures**

In order to determine the social acceptability and usability (Carnine, 1997) of the intervention procedures the experimenter gathered information from three early childhood special education teachers. They were identified as relevant consumers based on their roles in providing intervention to preschoolers with disabilities that focused on preparing young children for least restrictive educational placements. These teachers were given a copy of the procedural steps for activity-schedule-training and play-correspondence-package conditions and asked to read them.

The early childhood special education teachers were asked to view two unidentified five-minute segments of videotape depicting the target children during baseline and intervention. The teachers were asked to complete an adapted version of the *Hawaii Preschool/Kindergarten Survival Skills Checklist* (McCormick & Kawate, 1982) while viewing the videotape. Two sub-categories, Appropriate Classroom Behavior and Social/Play Skills, specifically addressed skills targeted by the intervention in this research study. The early childhood special education teachers were asked to complete the checklist with regard to skills they observed or did not observe during the videotape segments. Next, the teachers were then asked to compare the skills the children exhibited in baseline to the skills the children exhibited during
intervention. The teachers were asked to identify skills on the checklist they felt improved due to the intervention. Finally, the teachers were asked to compare the time and energy needed to implement the intervention in the classroom with the possible changes observed in the children's behavior to determine whether or not the intervention seemed feasible. The teacher was asked if she would implement this strategy in her classroom based on what she read in the intervention procedures and observed on the videotape. The instructions and checklist are located in Appendix G.

Teacher 1. This teacher had 10 years of experience working in the field of early childhood special education. She has a bachelor's degree in elementary education and a master's degree in early childhood special education. She read the procedural steps, viewed the videotaped segments, and completed the skills checklist. Teacher 1 was randomly assigned to observe Ned.

Teacher 2. Teacher 2 had 5 years of experience working in the fields of childhood development and early childhood special education. She had a bachelor's degree in child development and a master's degree in early childhood special education. She read the procedural steps, and completed the skills checklist on Kelly and Michael while viewing the videotaped segments.

Teacher 3. Teacher 3 had a bachelor's degree in psychology and 2 years of experience working in the field of psychology and early childhood special education. She read the procedural steps, observed Janet while viewing the videotaped segments and completing the skills checklist.
Intervention Outcomes

Early childhood education teachers were selected as relevant consumers due to their changing roles as increased numbers of young children with disabilities are being served in community-based early childhood education and childcare programs (Buysse, Wesley, Keyes, & Bailey, 1996). Early childhood education teachers were asked to complete information regarding the social validity of the outcomes of the intervention used in this study. The teachers were asked to view two unidentified five-minute segments of videotape depicting the target children. One segment portrayed the children in a generality session prior to the implementation of the intervention. The second segment depicted the children during a generality session after the implementation of the intervention.

Twelve early childhood education teachers completed information regarding the social validity of the outcomes of the intervention used in this study. The teachers were employed by the Grove City Christian Child Care Center in Grove City, Ohio. All teachers at the center had at least a high school degree and were certified as childcare workers by the state of Ohio. The teachers were randomly selected by the director of the program to participate. The childcare experience the teachers had ranged from four to 20 years, with an average of 8 years. Teachers were randomly assigned one child to observe during baseline and intervention segments. The order the teachers viewed the videotaped segments was assigned randomly.

The teachers were assigned the same child to observe while watching both videotaped segments. While watching the videotape, the teachers were asked to complete an adapted Hawaii Preschool/Kindergarten Survival Skills Checklist.
(McCormick & Kawate, 1982) on the identified child. Two sub-categories, Appropriate Classroom Behavior and Social/Play Skills were combined on the checklist to specifically address skills targeted by the intervention in this research study. These target skills were not shared with the teachers. The instructions and checklist are located in Appendix G.

The teachers were asked whether they would recommend the child for placement in their classroom based on the skills they observed while viewing the videotaped segment after intervention. Finally, the teachers were asked after viewing the same child during baseline, whether they would recommend the child for placement in their classroom based on the skills the child exhibited. The experimenter examined the teacher’s answers by comparing their responses about the child’s skills in the intervention videotape to those in the baseline segment. Social validity for intervention outcomes was determined based on early childhood teachers identification of target children who seemed appropriate for placement in typically functioning early childhood classrooms.

There were three teachers randomly assigned to observe each participant. The teachers were separated into two groups. The first group viewed the videotaped baseline segment and the intervention segment last. The second group viewed the videotaped intervention segment first and the baseline segment second. Teachers 1, 2, and 3 observed Ned. Kelly was observed by Teachers 4, 5, and 6. The teachers who observed Michael were Teachers 7, 8, and 9. Janet was observed by Teachers 10, 11, and 12.
Teacher 1. Teacher 1 had 10 years of experience working with preschoolers in daycare and preschool settings. She had a high school degree, with some college courses in child development.

Teacher 2. Teacher 2 worked in preschool and early childhood education programs for 14 years. She held a two-year associate degree in child development.

Teacher 3. This teacher worked four years at Grove City Christian Child Care Center.

Teacher 4. Teacher 4 had seven years of experience working in childcare and preschool settings.

Teacher 5. Teacher 5 worked at Grove City Christian Child Care Center for six years.

Teacher 6. This teacher had four years of experience working in childcare settings. She was enrolled in a four-year college program for early childhood education.

Teacher 7. Teacher 7 had ten years of experience working in childcare settings. She completed several college courses in education, but did not have a degree.

Teacher 8. Teacher 8 had a two-year associate degree in child development and worked at Grove City Christian Child Care Center for seven years.

Teacher 9. This teacher worked for Grove City Christian Child Care Center for seven years.

Teacher 10. She had 20 years of experience working in childcare and preschool settings. She held a bachelor’s degree in education.
Teacher 11. Teacher 11 worked in childcare for 14 years. She was enrolled in a two-year child development program at a local college.

Teacher 12. This teacher worked for four years at Grove City Christian Child Care Center.
CHAPTER 4

RESULTS

The results of this study are presented in this chapter. The chapter begins with a report of the procedures implemented to ensure believability of the data including measures of procedural integrity for experimental procedures and experimenter prompts. Interobserver agreement data were collected and measured for procedural integrity checklists and experimenter prompts, as well as the dependent variables.

Summaries, of individual children’s data across all conditions, are presented for the dependent variables of on-task and play correspondence behaviors. The dependent variable data results for children’s on-task behavior include the percentage of intervals of observed on-task behavior for each child during all experimental conditions and generality. Data for children’s play correspondence behaviors include the total number of play correspondence behaviors for each child during all experimental conditions and generality. In addition, social validity was measured and reported for parents, early childhood special education teachers, and early childhood education teachers.
Procedural Integrity

Procedural integrity data were gathered to ensure the fidelity of implementation of experimental procedures and experimenter prompts. The data were collected using procedural integrity checklists to record observed experimental procedures. A partial-interval recording scheme was used for experimenter prompts. Interobserver agreement (IOA) was conducted for procedural integrity checklists and experimenter prompts.

Procedural Integrity Checklists

To help ensure the integrity of the experimental procedures, data were collected using procedural integrity checklists specifically designed to address each experimental and generality condition (see Appendix F). The second and third observer completed the procedural integrity checklists as they observed the experimenter during the sessions. IOA for procedural integrity checklists was measured for approximately 20% of the experimental sessions and approximately 25% of the generality sessions. Table 4.1 displays a summary of procedural integrity checklist measures and IOA conducted during experimental and generality sessions for each child. IOA for procedural integrity checklists was 100% for participants during all conditions. Procedural integrity for each child for all conditions follows. Ned

Procedural integrity checklists were completed for 22 of the 40 or 55% of the experimental sessions Ned attended. IOA was 100% and was measured for 5 of the 22 (22.8%) procedural integrity checklists for experimental sessions. During generality
<table>
<thead>
<tr>
<th></th>
<th>Ned</th>
<th>Kelly</th>
<th>Michael</th>
<th>Janet</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Experimental Sessions</td>
<td>40</td>
<td>54</td>
<td>52</td>
<td>54</td>
</tr>
<tr>
<td># of Checklists Completed for Experimental Sessions</td>
<td>22</td>
<td>36</td>
<td>39</td>
<td>34</td>
</tr>
<tr>
<td>% of Experimental Sessions Checklists were Completed</td>
<td>55</td>
<td>66.7</td>
<td>75</td>
<td>63</td>
</tr>
<tr>
<td># of Checklists for Experimental Sessions IOA was Conducted</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>% of IOA for Experimental Checklists</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td># of Generality Sessions</td>
<td>10</td>
<td>12</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td># of Checklists Completed for Generality Sessions</td>
<td>6</td>
<td>12</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>% of Generality Session Checklists were Completed</td>
<td>60</td>
<td>100</td>
<td>81.9</td>
<td>75</td>
</tr>
<tr>
<td># of Checklists for Generality Sessions IOA was Conducted</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>% of IOA for Generality Session Procedural Integrity Checklists</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.1: Summary of procedural integrity checklists completed and interobserver agreement calculated for procedural integrity checklists for participants for all conditions.
sessions, procedural integrity checklists were completed for 60% sessions or 6 of the 10 sessions Ned attended. IOA was 100% and was calculated for 33.4% of the sessions or two of the six generality checklists.

**Kelly**

The observers completed procedural integrity checklists during 36 of the 54 or 66.7% of the experimental sessions Kelly was present. IOA was determined for 19.5% of the sessions or 7 of the 36 experimental procedural integrity checklists. IOA was 100%. In generality, procedural integrity checklists were completed 100% of the 12 sessions. IOA for the checklists occurred 4 of the 12 (33.4%) generality sessions and was measured at 100%.

**Michael**

Michael attended 52 experimental sessions. Procedural integrity checklists were completed 75% of the time for 39 of the 52 sessions. IOA was 100% and calculated on 6 of the 39 or 20.6% of the experimental checklists. During generality sessions, procedural integrity was completed during 9 of the 11 (81.9%) sessions Michael attended. IOA was 100% and was calculated 22.3% of the sessions or on two of the nine procedural integrity checklists.

**Janet**

During experimental sessions, procedural integrity checklists were completed for 34 of the 54 or 63% of the sessions Janet attended. IOA was 100% for 8 of the 34 (23.6%) experimental checklists. Observers completed procedural integrity checklists
75% of the time or for 9 of the 12 generality sessions Janet attended. IOA was measured at 100% on three of the nine (33.4%) procedural integrity checklists for generality sessions.

**Experimenter Prompts**

A summary of the percentage of intervals of experimenter prompts, the mean and range of experimental prompts, as well as the percentage of interobserver agreement (IOA) for experimenter prompts follows. A description of the types of experimenter prompts is included.

Experimenter prompts were delivered for all conditions by the experimenter to the target children during playtime. In baseline experimenter prompts consisted of general prompts to the children to play such as, “Where do you want to play?” and “You need to play with toys.” Prompts provided during the activity-schedule-training condition included, “You need to show me where you want to play” and “You need to follow your play schedule.” Examples of experimenter prompts occurring in the say reinforcement condition were, “Remember to follow your play schedule” and “You need to check your play schedule.” Experimenter prompts in the play-correspondence-package condition were “Remember to follow your play schedule” and “You need to check your play schedule.” Experimenter prompts were delivered during playtime for generality sessions. The experimenter provided general prompts for target children to play, such as “Where do you want to play?” and “You need to play with toys.”

Experimenter prompts remained consistent for all generality sessions regardless of the experimental condition. Figure 4.1 visually displays the percentage of intervals of experimenter prompts for all conditions. Table 4.2 provides a summary of
the mean and range of experimenter prompt data during all conditions. Table 4.3 presents the types of experimenter prompts delivered to children for all conditions.

**Ned**

A summary of experimenter prompts delivered to Ned for all conditions follows.

**Baseline.** Baseline data were stable for all five sessions Ned attended, with a range for experimenter prompts from 16% to 23%. The mean was 20.4%. The percentage of the types of experimenter prompts delivered to Ned was verbal/physical guidance, 69.7%; modeling, 18.2%; praise, 15.2%; and negative, 9.1%. The percentage of modeling prompts in baseline was higher for Ned, than the other participants, due to the need for the experimenter to assist Ned after he initiated the construction of a marble and tube toy.

**Activity-schedule-training.** During the activity-schedule-training condition, Ned attended four sessions. The mean experimenter prompts for Ned rose to 28.7%, with a range from 24% to 40%. The types of experimenter prompts were verbal/physical guidance, 51.2%; modeling, 30.9%; praise, 14.9%; and negative, 6.4%. A result of the training aspect of this condition was an increase in modeling prompts, while the overall percentage of experimenter prompts increased slightly.

**Say reinforcement.** Of the four say reinforcement sessions for which Ned was present, the range of experimenter prompts was 18% to 19%. The mean was 18.5% and similar to baseline levels. The types of experimenter prompts for Ned were
Figure 4.1: Percentage of observed intervals in which experimenter prompts were recorded for each participant during all conditions. Triangles (△) represent training conditions.
<table>
<thead>
<tr>
<th>Children</th>
<th>Baseline</th>
<th>Activity Schedule Training</th>
<th>Say Reinforce</th>
<th>Play Correspond</th>
<th>Say Reinforce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ned 20.4&lt;sup&gt;a&lt;/sup&gt;</td>
<td>20.4&lt;sup&gt;b&lt;/sup&gt;</td>
<td>28.7</td>
<td>18.8</td>
<td>10.7</td>
<td>6.6</td>
</tr>
<tr>
<td>(16-23)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>(24-40)</td>
<td>(18-19)</td>
<td>(5-18)</td>
<td>(1-17)</td>
<td></td>
</tr>
<tr>
<td>16.0&lt;sup&gt;c&lt;/sup&gt;</td>
<td>16.0&lt;sup&gt;d&lt;/sup&gt;</td>
<td>20.0</td>
<td>14.0</td>
<td>11.3</td>
<td>8.7</td>
</tr>
<tr>
<td>(16)</td>
<td>(20)</td>
<td>(14)</td>
<td>(3-16)</td>
<td>(3-16)</td>
<td></td>
</tr>
<tr>
<td>Kelly 18.8</td>
<td>18.8&lt;sup&gt;b&lt;/sup&gt;</td>
<td>23.9</td>
<td>21.3</td>
<td>12.6</td>
<td>8.5</td>
</tr>
<tr>
<td>(14-25)</td>
<td>(17-29)</td>
<td>(19-24)</td>
<td>(3-20)</td>
<td>(4-19)</td>
<td></td>
</tr>
<tr>
<td>14.0</td>
<td>14.0&lt;sup&gt;d&lt;/sup&gt;</td>
<td>16.0</td>
<td>14.5</td>
<td>6.0</td>
<td>3.8</td>
</tr>
<tr>
<td>(8-20)</td>
<td>(16)</td>
<td>(12-14)</td>
<td>(4-8)</td>
<td>(0-6)</td>
<td></td>
</tr>
<tr>
<td>Michael 17.7</td>
<td>17.7&lt;sup&gt;b&lt;/sup&gt;</td>
<td>26.7</td>
<td>13.2</td>
<td>12.3</td>
<td>—</td>
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<tr>
<td>(14-22)</td>
<td>(16-33)</td>
<td>(12-18)</td>
<td>(6-18)</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>13.0</td>
<td>13.0&lt;sup&gt;d&lt;/sup&gt;</td>
<td>10.0</td>
<td>10.0</td>
<td>9.6</td>
<td></td>
</tr>
<tr>
<td>(12-14)</td>
<td>(10)</td>
<td>(10)</td>
<td>(3-16)</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Janet 21.1</td>
<td>21.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>24.7</td>
<td>13.8</td>
<td>13.4</td>
<td>—</td>
</tr>
<tr>
<td>(10-33)</td>
<td>(18-31)</td>
<td>(9-17)</td>
<td>(4-22)</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>17.8</td>
<td>17.8&lt;sup&gt;d&lt;/sup&gt;</td>
<td>19.7</td>
<td>—</td>
<td>7.5</td>
<td></td>
</tr>
<tr>
<td>(14-20)</td>
<td>(16-23)</td>
<td>—</td>
<td>(3-11)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Mean for experimental sessions  
<sup>b</sup> Range for experimental sessions  
<sup>c</sup> Mean for generality sessions  
<sup>d</sup> Range for generality sessions

Table 4.2: The mean and range of the intervals of experimenter prompts for participants for all conditions.
<table>
<thead>
<tr>
<th>Type of Prompt</th>
<th>Baseline</th>
<th>Activity Schedule</th>
<th>Say Reinforce</th>
<th>Play Corresponde</th>
<th>Say Reinforce</th>
<th>Generality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Training</td>
<td></td>
<td>Package</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal/</td>
<td>69.7^a</td>
<td>51.2</td>
<td>77.8</td>
<td>66.1</td>
<td>73.3</td>
<td>73.1</td>
</tr>
<tr>
<td>Physical</td>
<td>79.2^b</td>
<td>56.7</td>
<td>80.2</td>
<td>73.1</td>
<td>74.0</td>
<td>80.7</td>
</tr>
<tr>
<td>Guidance</td>
<td>72.3^c</td>
<td>53.9</td>
<td>92.8</td>
<td>68.1</td>
<td></td>
<td>80.7</td>
</tr>
<tr>
<td></td>
<td>67.6^d</td>
<td>51.1</td>
<td>76.4</td>
<td>54.4</td>
<td></td>
<td>71.2</td>
</tr>
<tr>
<td>Modeling</td>
<td>18.2^a</td>
<td>30.9</td>
<td>3.7</td>
<td>21.8</td>
<td>17.9</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.9^b</td>
<td>33.6</td>
<td>4.2</td>
<td>18.5</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.4^c</td>
<td>38.7</td>
<td>2.9</td>
<td>23.7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8.0^d</td>
<td>47.9</td>
<td>15.8</td>
<td>37.8</td>
<td></td>
</tr>
<tr>
<td>Praise</td>
<td>15.2^a</td>
<td>14.9</td>
<td>3.7</td>
<td>11.3</td>
<td>0.9</td>
<td>23.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.9^b</td>
<td>3.5</td>
<td>2.1</td>
<td>8.5</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45.2^c</td>
<td>3.8</td>
<td>4.4</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.7^d</td>
<td>1.1</td>
<td>5.3</td>
<td>5.6</td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>9.1^a</td>
<td>2.5</td>
<td>18.6</td>
<td>0.9</td>
<td>0</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19.5^b</td>
<td>6.4</td>
<td>13.6</td>
<td>0</td>
<td>3.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14.9^c</td>
<td>3.8</td>
<td>0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>21.9^d</td>
<td>0</td>
<td>2.7</td>
<td>2.4</td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Type of experimenter prompts for  
^a Ned  
^b Kelly  
^c Michael  
^d Janet  

Table 4.3: The percentage of the types of experimenter prompts delivered to participants for all conditions.
reported as verbal/physical guidance, 77.8%; modeling, 3.7%; praise, 3.7%; and negative, 18.6%. There was an increase in negative and praise prompts for Ned in this condition.

**Play-correspondence-package.** The mean for experimenter prompts during the 15 play-correspondence-package sessions Ned attended, was 10.7%, with a range from 5% to 18%. Experimenter prompts in this condition were lower than experimenter prompts during baseline. Types of experimenter prompts in this condition were verbal/physical guidance, 66.1%; modeling, 21.8%; praise, 11.3%; and negative, 1%. There was a decrease in the percentage of negative prompts for Ned.

**Say reinforcement.** Ned attended 11 sessions during the second say reinforcement phase. The range for experimenter prompts was from 1% to 17%, with a mean of 6.6%. This was the lowest percentage of experimenter prompts for all conditions. There was a drop of experimenter prompts in this condition to 6.6% from baseline where a mean of 20.4% was reported. The types of experimenter prompts during this condition included verbal/physical guidance, 73.3%; modeling, 17.9%; praise, 1%; and no negatives. There was a further decrease in negative prompts for Ned in this condition.

**Generality.** The mean for experimenter prompts delivered to Ned in the generality session while he was exposed to the experimental baseline condition was 16%. While Ned was in the activity-schedule-training condition the mean was 20%. The mean for experimenter prompts was 14% for the generality session occurring while Ned was in the say reinforcement condition. Experimenter prompts during the
generality sessions for the play-correspondence-package condition ranged from 3% to 16%, with a mean of 11.3%. For the generality sessions occurring during the second reinforcement condition, the mean for experimenter prompts was 8.7%, with a range from 3% to 16%.

The generality sessions that were coterminous with the play-correspondence-package and the second reinforcement conditions showed a similar decrease in experimenter prompts as was seen in the experimental conditions. Types of experimenter prompts were similar to the types of prompts delivered in the experimental conditions, except for a decrease in modeling prompts and elevated praise prompts. Types of prompts delivered across all generality sessions were recorded as verbal/physical guidance, 73.1%; modeling, 0; praise, 23.1%; and negative, 3.9%.

Kelly

The percentage and type of experimenter prompts for Kelly is described as follows.

**Baseline.** During baseline, experimenter prompt data were gathered for the 11 sessions Kelly attended. Prompts remained consistent with a range from 14% to 25% and a mean of 18.8%. The percentage of experimenter prompts was calculated according to the type of prompt delivered and were as follows: verbal/physical guidance, 79.2%; modeling, 4.9%; praise, 4.9%; and negative, 19.5%. Negative prompts were higher for Kelly during baseline, than they were for Ned.
Activity-schedule-training. The mean was 23.9% for experimenter prompts during 10 activity-schedule-training sessions Kelly attended. The range of prompts was from 17% to 29%, indicating an increase over baseline. Negative prompts decreased, while modeling prompts increased for Kelly in this condition. Types of prompts for Kelly included verbal/physical guidance, 56.7%; modeling, 33.6%; praise, 3.5%; and negative, 6.4%.

Say reinforcement. Of the six say reinforcement sessions for which Kelly was present, the range of experimenter prompts was from 19% to 24%. The mean was 21.3% within this condition, remaining consistent with baseline and activity-schedule-training. Types of experimenter prompts were recorded as verbal/physical guidance, 80.2%; modeling, 4.2%; praise, 2.1%; and negative, 13.6%. There was an increase in negative prompts and a decrease in praise prompts for Kelly in this condition compared to activity-schedule-training. The overall percentage of experimenter prompts in this condition was similar to those in the previous conditions.

Play-correspondence-package. The range of experimenter prompts for 14 play-correspondence-package sessions was from 3% to 20%, with a mean of 12.6%. Experimenter prompts in this condition were lower than prompts delivered in the previous three conditions. Negative prompts dropped to zero for Kelly during this condition with the remainder of prompts as follows: verbal/physical guidance, 73.1%; modeling, 18.5%; and praise, 8.5%.

Say reinforcement. Kelly attended 13 sessions during the second say reinforcement phase with a range of experimenter prompts from 4% to 19%. The mean was 8.5%, lower than the means for experimenter prompts in previous
conditions. Types of prompts remained similar to those in the play-correspondence-package condition with the following prompts recorded as verbal/physical guidance, 74%; modeling, 12.5%; praise, 3.2%; and negative, 3.4%.

The mean experimenter prompts delivered to Kelly in the generality sessions that occurred while she was in baseline was 14%, with a range from 8% to 20%. While in the activity-schedule-training condition, the mean for experimenter prompts for the generality session was 16%. The mean for experimenter prompts for the generality session occurring while Kelly was in the say reinforcement condition was 14.5%, with a range from 12% to 17%. For the generality sessions occurring during the play-correspondence-package condition, the range was from 4% to 8%, with a mean of 6%. During the second say reinforcement condition, the mean for the generality sessions was 3.8%, with a range from zero to 6%.

**Generality.** The percentage of experimenter prompts delivered to Kelly during generality sessions showed a similar decrease across conditions as the coterminous experimental conditions. The types of experimenter prompts were similar to the types of prompts delivered in the experimental conditions, except for modeling and negative prompts. Modeling was zero and negative prompts were elevated. Types of prompts were verbal/physical guidance, 80.7%; modeling, 0; praise, 3.3%; and negative, 16.2%.
Michael

A summary of experimenter prompts for Michael during all conditions follows.

**Baseline.** Data were stable for the 13 baseline sessions Michael attended. The mean for experimenter prompts during baseline was 17.7%, with a range from 14% to 22%. The types of prompts delivered to Michael during baseline included verbal/physical guidance, 72.3%; modeling, 4.4%; praise, 45.2%; and negative, 14.9%. Praise prompts for Michael were higher than for other participants during baseline.

**Activity-schedule-training.** Of the 15 activity-schedule-training sessions Michael attended, the range of experimenter prompts was from 16% to 33%, with a mean of 26.7%. This is an increase over baseline prompts. Types of experimenter prompts for Michael were verbal/physical guidance, 53.9%; modeling, 38.7%; praise, 3.8%; and negative, 3.8%. Modeling prompts increased and praise prompts decreased.

**Say reinforcement.** During six say reinforcement sessions, the range of experimenter prompts was from 12% to 18%. The mean was 15.2%, similar to baseline prompts. Negative prompts were zero and modeling prompts decreased. Prompts were verbal/physical guidance, 92.8%; modeling, 2.9%; and praise, 4.4%.

**Play-correspondence-package.** Data were consistent for experimenter prompts during the 18 play-correspondence-package sessions Michael attended. The mean was 12.3%, with a range from 6% to 18%. Prompts in this condition were lower than prompts during baseline and activity-schedule-training. Types of experimenter
prompts included verbal/physical guidance, 68.1%; modeling, 23.7%; praise, 6%; and negative, 6%. In this condition, there was an increase in modeling and negative prompts.

**Generality.** Experimenter prompts delivered to Michael during generality sessions occurring while he was in baseline ranged from 12% to 14%. The mean was 13%. While Michael was in the activity-schedule-training condition, the mean experimenter prompts for the generality sessions was 15%, with a range from 12% to 19%. The mean was 10% for experimenter prompts delivered during the generality session occurring while Michael was in the say reinforcement condition. The range was from 3% to 16%, with a mean of 9.6%, for experimenter prompts during generality sessions coterminous with the play-correspondence-package condition.

The percentage of experimenter prompts delivered to Michael during generality sessions remained consistent with the coterminous experimental conditions. The types of prompts delivered were verbal/physical guidance, 80.7%; praise, 3.3%; and negative, 9.7%. Modeling was zero during generality sessions.

**Janet**

Experimenter prompts for Janet are summarized as follows.

**Baseline.** Baseline data were consistent for the 19 sessions Janet was present. The mean for prompts during baseline was 21.1%, with a range from 10% to 33%. Types of experimenter prompts given to Janet during baseline were verbal/physical guidance, 67.6%; modeling, 8%; praise, 2.7%; and negative, 21.9%.
Activity-schedule-training. During the activity-schedule-training condition, Janet attended 16 sessions. Experimenter prompts for Janet ranged from 18% to 31%, with a mean of 24.7%. Prompt data in this condition remained consistent with baseline data. There was an increase in modeling prompts and a decrease in negative prompts to zero with types of prompts as follows: verbal/physical guidance, 51.1%; modeling, 47.9%; and praise, 1.1%.

Say reinforcement. Of the four say reinforcement sessions for which Janet was present, the mean for experimenter prompts was 13.8%, with a range from 9% to 17%. Experimenter prompts in this condition were lower than in baseline and activity-schedule-training conditions. Types of experimenter prompts were recorded as verbal/physical guidance, 76.4%; modeling, 15.8%; praise, 5.3%; and negative, 2.7%. There was an increase in verbal/physical guidance and praise prompts over previous conditions. The overall percentage of experimenter prompts in this condition was lower than in previous conditions.

Play-correspondence-package. The range of experimenter prompts for 13 play-correspondence-package sessions was from 4% to 22%, with a mean of 13.4%. The percentage of prompts in this condition was lower than the percentage of prompts during baseline and activity-schedule-training. Negative and modeling prompts rose with the types of prompts as verbal/physical guidance, 54.4%; modeling, 37.8%; praise, 5.6%; and negative, 2.4%.

Generality. During the generality sessions occurring while Janet was in baseline, the mean for experimenter prompts was 17.8%, with a range from 14% to 20%. While in activity-schedule-training conditions, the range of prompts for
generality sessions was from 16% to 23%, with a mean of 19.7%. The mean was 7.5% for experimenter prompts during generality sessions occurring during play-correspondence-package conditions. The range was from 3% to 11%.

The experimenter prompts delivered to Janet during generality sessions were consistent with the prompts delivered in the coterminal experimental conditions. The types of experimenter prompts given to Janet during generality sessions were verbal/physical guidance, 71.2%; modeling, 4.5%; praise, 6.7%; and negative, 15.6%. The types of experimenter prompts were similar to prompts delivered in the experimental conditions, except for negatives. Negative prompts were elevated.

**Interobserver Agreement for Experimenter Prompts**

Scored-interval IOA was conducted for 15 of the 59 (25%) experimental sessions for experimenter prompts. IOA on these sessions ranged from 93% to 100% for all children. Scored-interval IOA was conducted for 11 of the 13 (84%) generality sessions. IOA on these sessions ranged from 94% to 100% for all children. The following is a summary of the percentage of interobserver agreement (IOA) for experimenter prompts delivered to participants for all conditions. Table 4.4 describes the percentage of IOA for experimenter prompt data for all participants for all conditions.

**Ned**

The percentage of IOA for experimenter prompts during baseline was 96.5%, with a range from 96% to 97%. During activity-schedule-training, the mean IOA was 98%. For say reinforcement conditions, IOA for experimenter prompts was calculated
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Table 4.4: The mean and range of interobserver agreement for experimenter prompts for participants for all conditions.
with a mean and range of 98. The range of IOA for the play-correspondence-package condition was 92% to 100%, with a mean of 96.7%. In the second say reinforcement phase the mean IOA was 98.6%, with a range of 96% to 100%.

There was 100% IOA for experimenter prompts delivered in the generality sessions occurring during baseline, activity-schedule-training, and in both phases of say reinforcement. The percentage of IOA for experimenter prompts during the generality sessions coterminous with the experimental play-correspondence-package condition was 97%, with a range from 96% to 98%.

**Kelly**

Baseline IOA for Kelly ranged from 97% to 98%, with a mean of 97.5%. During activity-schedule-training, IOA was 97.6%, with a range of 97% to 98%. For say reinforcement conditions the percentage of IOA for experimenter prompts was 100%. IOA for prompts during play-correspondence-package conditions ranged from 95% to 100% with a mean of 97%. The IOA in the second say reinforcement condition was 98.6%, with a range of 96% to 100%.

For generality sessions occurring during baseline, the mean IOA was 97.5%, with a range of 95% to 100%. Experimenter prompt IOA was 100% for activity-schedule-training and say reinforcement conditions. During the play-correspondence-package condition, IOA ranged from 98% to 100%, with a mean of 98.7%. The mean and range of IOA for the second say reinforcement phase was 94%.
Michael

IOA for experimenter prompts during baseline showed a mean of 99.3%, with a range from 98% to 100%. During the activity-schedule-training condition, the mean IOA was 98%. For the say reinforcement condition, IOA for experimenter prompts was 100%. The percentage of IOA during the play-correspondence-package condition was 98%, and ranged from 98% to 100%.

For generality sessions conterminous with baseline and play-correspondence-package conditions, IOA ranged from 96% to 100%, with a mean of 98%. IOA for generality sessions occurring during activity-schedule-training was 98.3%, with a range of 95% to 100%. There was 100% IOA for experimenter prompts delivered in the generality session occurring during the say reinforcement condition.

Janet

For experimenter prompts the percentage of IOA during baseline ranged from 96% to 100%, with a mean of 97.8%. For the activity-schedule-training condition, the mean IOA was 97.3%, with a range from 96% to 100%. The mean IOA was 97% for experimenter prompts in the say reinforcement conditions. The mean IOA was 98%, with a range from 96% to 100% during play-correspondence-package conditions.

For generality sessions occurring during baseline, the mean agreement of IOA for prompts was 98.8%, with a range of 96% to 100%. IOA was 100% for experimenter prompts in generality sessions during the experimental activity-schedule-training condition. The mean IOA for experimenter prompts was 98% for generality sessions coterminous with the experimental play-correspondence-package condition.
Procedures to Ensure the Believability of Dependent Variables

Interobserver agreement (IOA) was collected for children’s on-task and play correspondence behaviors for all conditions. On-task behavior was calculated using scored-interval and weighted IOA. Percentage agreement for event recording was used for play correspondence behavior.

Interobserver Agreement for On-task Behavior

Scored-interval and weighted IOA was conducted for children’s on-task behavior for 15 of the 59 (25%) experimental sessions and 11 of the 13 (85%) generality sessions (see Table 4.5). The following is a summary of the IOA for children’s on-task behavior for all conditions.

Ned

Of the baseline sessions Ned attended, IOA measures were conducted for 40% or two of the five sessions. For scored-interval, the mean IOA was 96.5%, with a range of 96% to 97%. Weighted IOA had a mean of 87% and ranged from 86% to 88%. IOA was calculated for one of the five (20%) activity-schedule-training sessions. The mean scored-interval IOA for on-task behavior during this condition was 98% agreement, with weighted IOA of 97%. IOA was calculated for Ned’s on-task behavior for one of the four (25%) say reinforcement sessions. The mean scored-interval IOA was 98% during this condition for on-task behavior, with the mean weighted IOA of 96%. On 3 of 15 (20%) play-correspondence-package sessions Ned
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<sup>a</sup> Scored-interval IOA data  
<sup>b</sup> Weighted IOA data

Table 4.5: The mean and range of scored-interval and weighted interobserver agreement.
attended, scored-interval IOA ranged from 97% to 100%, with a mean of 98.4%; weighted IOA ranged from 89% to 99% with a mean of 94.3%. During the second say reinforcement phase, IOA was measured for 4 of the 11 (36.4%) sessions Ned attended. The mean scored-interval IOA for on-task behavior during this condition was 97.4%, and ranged from 95% to 100%; the mean weighted IOA was 96%, and ranged from 90% to 100%.

Scored-interval IOA for on-task behavior was 100% and calculated for 6 of the 10 or 60% of the generality sessions Ned attended. Weighted IOA for generality sessions ranged from 99% to 100%, with a mean of 99.8%.

Kelly

IOA measures were calculated for 3 of the 11 (27.3%) baseline sessions Kelly attended. The mean scored-interval IOA for Kelly’s on-task behavior during baseline was 97%; with weighted IOA ranging from 67% to 83% with a mean of 77%. Kelly attended 10 activity-schedule-training sessions and IOA was measured for three or 30% of those sessions. The mean scored-interval IOA for on-task behavior during this condition was 97.3%, with a range from 97% to 98%; the mean weighted IOA was 95.3% and ranged from 94% to 97%. During say reinforcement conditions the mean scored-interval IOA ranged from 95% to 100%, with a mean of 97.5% for two of the six or 33.4% sessions Kelly attended; weighted IOA ranged from 97% to 99% with a mean of 98%. IOA measures were completed for 3 of the 14 (21.5%) of the sessions Kelly attended during the play-correspondence-package condition. The mean scored-interval IOA of 96.7%, and a range from 96% to 98%; weighted IOA ranged from
92% to 97% with a mean of 94.3%. For the second say reinforcement phase, scored-interval IOA ranged from 98% to 100%, with a mean of 98.7%; while weighted IOA had a mean of 96% and ranged from 89% to 100%.

IOA was calculated for Kelly’s on-task behavior for 3 of the 13 (23.1%) sessions she attended. Of the 12 generality sessions Kelly attended, IOA was measured for nine or 75% of the sessions. The mean scored-interval IOA for Kelly’s on-task behavior during generality sessions was 98.8%, and ranged from 95% to 100%. Weighted IOA ranged from 83% to 100%, with a mean of 95.6%.

Michael

During baseline conditions, IOA was calculated for three of the nine (33.4%) sessions Michael attended. Scored-interval IOA for Michael’s on-task behavior during baseline ranged from 95% to 97%, with a mean of 96.3%; with a mean weighted IOA of 86.7% and a range from 81% to 93%. IOA measures were completed for 25.7% activity-schedule-training sessions Michael attended or 4 of the 15 sessions. The mean scored-interval IOA for on-task behavior during this condition was 97.5%, with a range from 95% to 98%; weighted IOA ranged from 83% to 99% with a mean of 93.2%. IOA was calculated for two of the seven or 28.6% of the say reinforcement sessions, with 100% scored-interval IOA; Weighted IOA ranged from 99% to 100% with a mean of 99.5%. For play-correspondence-package conditions, scored-interval IOA ranged from 96% to 98%, with a mean of 96.8%. IOA was measured for 5 of the 18 (27.8%) sessions Michael was present in this condition. The mean weighted IOA was 94.2% and ranged from 91% to 96%. 

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During generality, IOA was calculated for 9 of the 11 (81%) sessions Michael attended. The mean scored-interval IOA for Michael's on-task behavior during generality sessions was 98.8%, with a range of 95% to 100%. Weighted IOA for generality sessions ranged from 76% to 100%, with a mean of 94.8%.

Janet

Janet attended 29 baseline sessions and IOA was calculated for 6 of 29 or 20.7% of the sessions. The range of scored-interval IOA for Janet's on-task behavior during baseline was 97% to 100%, with a mean of 99%; weighted IOA ranged from 51% to 99% with a mean of 73%. The mean scored-interval IOA for Janet's on-task behavior during the activity-schedule-training condition was 97.7%, with a range from 92% to 100%; while the mean weighted IOA was 97.5% and ranged from 93% to 100%. IOA was measured for 4 of the 16 (25%) activity-schedule-training sessions.

IOA was measured for one of the four or 25% of the say reinforcement sessions with a mean scored-interval IOA of 95% and a mean weighted IOA of 93%. Of the 13 play-correspondence-package sessions Janet attended, IOA was determined for 4 of the 13 or 30.8% of the sessions. The range of scored-interval IOA for Janet's on-task behavior during this condition was 95% to 100%, with a mean of 97%; weighted IOA ranged from 93% to 99% with a mean of 96.3%.

For generality sessions, IOA was calculated for 8 of the 12 (66.7%) sessions Janet attended. The mean scored-interval IOA for Janet's on-task behavior was 99%, with a range from 96% to 100%. Weighted IOA ranged from 88% to 100%, with a mean of 94%.
Percentage Agreement for Play Correspondence Behavior

Play correspondence behavior was recorded on a daily observational form. As the children made their play selections, the experimenter recorded the selections in the correct sequence on the play observation form. Play selections were numbered 1, 2, and 3. The second observer proceeded to record the actual play behavior of the child underneath the child’s play selections. The experimenter checked the accuracy of the second observer as she reviewed the activity schedule with the children. The videotaped session was viewed for any disagreements between the experimenter and the second observer. Percentage agreement was conducted for 57 of the 59 (97%) experimental sessions and 12 of the 13 (92%) generality sessions (see Table 4.6).

Ned

Observers recorded a total of 138 play correspondence opportunities for Ned across all conditions. Observers agreed on 137 of the 138 (99.3%) recorded play correspondence behaviors for Ned. During baseline, activity-schedule-training, both phases of say reinforcement, and generality sessions, IOA was 100%. For play-correspondence-package conditions, agreement was 44 of 45 play correspondence behaviors with a percentage of agreement of 97.7%.

Kelly

Kelly had 195 opportunities for play correspondence behavior to occur across all conditions. Of the 195 comparisons, observers agreed 194 times for an IOA of 99.5%. There was 100% IOA for play correspondence behaviors observed during
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<sup>a</sup> Number of sessions
<sup>b</sup> Number of agreements for play correspondence
<sup>c</sup> Number of disagreements for play correspondence
<sup>d</sup> Percentage of agreement for play correspondence

Table 4.6: Accuracy of observation for children’s play correspondence behavior for all conditions.
baseline, activity-schedule-training, say reinforcement, play-correspondence-package and generality sessions. During say reinforcement IOA was 97.4% for 38 out of 39 agreements.

**Michael**

There were 189 play correspondence opportunities for Michael across all conditions. Observers agreed 99.5% of the time or 188 times out of the 189 occasions. IOA for play correspondence behaviors in baseline, activity-schedule-training, say reinforcement, and generality sessions, was 100%. For play-correspondence-package conditions, agreement occurred 53 out of 54 times for an agreement of 98.1%.

**Janet**

Observers agreed 100% on Janet’s play correspondence behavior across all conditions. Janet had 195 opportunities for play correspondence behavior to occur and observers agreed 195 times.

**Dependent Variables**

The dependent variables measured in this study were children’s on-task and play correspondence behavior. Dependent variables were observed and measured during a regularly scheduled playtime in an integrated playgroup setting.

**On-Task**

The results of individual children’s on-task behavior are represented for all experimental conditions. Further, results are described for children’s on-task behavior during generality sessions coterminous with experimental sessions. Each data point represents one session. Each generality data point represents one generality session.
coterminous with the experimental condition. Figure 4.2 visually displays the percentage of intervals of participant’s on-task behavior for all conditions. Table 4.7 presents the mean and range of participants on-task data for experimental conditions.

**Ned**

The results of Ned’s on-task data are summarized as follows.

**Baseline.** There were five data points during baseline for Ned, with all points falling at or near 20% (see figure 4.2.). Baseline data demonstrated stability and little variability with a mean of 19.2%, and a range from 16% to 26%. Ned’s highest percentage of on-task behavior, 26%, occurred during the first session (see Table 4.7).

**Activity-schedule-training.** There were four sessions for Ned in this condition. The percentage of on-task behavior in activity-schedule-training ranged from 66% to 76%, with a mean of 70.5%. There was an abrupt increase in data levels between baseline and this condition. Visual inspection revealed little variability and a gradual upward trend within this phase.

**Say reinforcement.** The mean for on-task behavior was 23% in this condition, with a range from 22% to 25%. Four data points demonstrated an immediate decrease in level between this condition and the previous one. Data in this condition returned to baseline levels with only a 3% difference between the means of the two conditions. These data suggested no variability and a zero-slope within the phase.

**Play-correspondence-package.** Fifteen data points were calculated to determine the percentage of intervals of on-task behavior for Ned. The mean was 76.6%, with a range from 52% to 86%. Again, visual inspection of the data demonstrated an
Figure 4.2: Percentage of observed intervals in which on-task behavior was recorded for each participant during all conditions with triangles (△) representing training conditions.
<table>
<thead>
<tr>
<th></th>
<th>Baseline Schedule</th>
<th>Activity Say Reinforce</th>
<th>Play Correspond</th>
<th>Say Reinforce</th>
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<td>23</td>
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</tr>
<tr>
<td></td>
<td>(16-26)</td>
<td>(66-76)</td>
<td>(22-25)</td>
<td>(52-86)</td>
</tr>
<tr>
<td>Kelly</td>
<td>13.4</td>
<td>63.3</td>
<td>17.3</td>
<td>72.5</td>
</tr>
<tr>
<td></td>
<td>(1-29)</td>
<td>(37-77)</td>
<td>(7-31)</td>
<td>(55-88)</td>
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<td>24.2</td>
<td>70.7</td>
</tr>
<tr>
<td></td>
<td>(8-31)</td>
<td>(59-89)</td>
<td>(8-37)</td>
<td>(53-84)</td>
</tr>
<tr>
<td>Janet</td>
<td>4</td>
<td>56.9</td>
<td>21</td>
<td>58.7</td>
</tr>
<tr>
<td></td>
<td>(0-21)</td>
<td>(29-74)</td>
<td>(3-48)</td>
<td>(30-72)</td>
</tr>
</tbody>
</table>

Table 4.7: The mean and range of children’s on-task behavior during the experimental sessions.
immediate increase in level compared to baseline and say reinforcement phases. There was a slight upward trend, similar to the trend in the activity-schedule-training condition. There was little variability within the phase. Ned was absent sessions 22 through 29 due to illness. He had four data points in this condition when the absence began. With the break in sessions due to illness, Ned returned on session 30 maintaining his increased on-task performance.

Say reinforcement. Returning to a say reinforcement condition and using 11 data points, the range of on-task behavior for Ned was from 68% to 91%, with a mean of 80.1%. The data continued at the level from the previous condition. Abrupt changes however, were present between this phase and the first say reinforcement phase, with an increase in level. There was some variability within the phase. A slight upward trend continued from the previous condition.

Generality. The following is a summary of Ned’s on-task behavior for generality sessions compared concurrently with experimental phases. Baseline conditions were present for all generality sessions. Ned was present for nine generality sessions. The mean percentage of intervals for on-task behavior for all generality sessions for Ned was 52.3%, with a range from 0 to 96% (see Table 4.8).

Ned attended one generality session while in baseline. The mean and range of on-task behavior was 16%. This level of behavior was within the range of on-task behavior in the experimental baseline. During the generality session for the activity-schedule-training condition, the mean and range was 41%. This data point was lower than the range of on-task behavior displayed in the experimental activity-schedule-training. Ned had zero on-task behavior for the generality session occurring during the
<table>
<thead>
<tr>
<th>Children</th>
<th>Baseline</th>
<th>Activity Schedule Training</th>
<th>Say Reinforce</th>
<th>Play Correspond Package</th>
<th>Say Reinforce</th>
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<tbody>
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<tr>
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<td>(16)</td>
<td>(41)</td>
<td>(0)</td>
<td>(77-96)</td>
<td>(50-84)</td>
</tr>
<tr>
<td>Kelly</td>
<td>8</td>
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<td>20</td>
<td>86.5</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>(8)</td>
<td>(12-30)</td>
<td>(17-23)</td>
<td>(73-100)</td>
<td>(92-96)</td>
</tr>
<tr>
<td>Michael</td>
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<td>31.7</td>
<td>15</td>
<td>67.4</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>(19-20)</td>
<td>(22-40)</td>
<td>(15)</td>
<td>(62-81)</td>
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</tr>
<tr>
<td>Janet</td>
<td>1</td>
<td>33.3</td>
<td>--</td>
<td>43</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(4-69)</td>
<td></td>
<td>(9-76)</td>
<td>--</td>
</tr>
</tbody>
</table>

Table 4.8: The mean and range of children’s on-task behavior during generality sessions coterminous with experimental conditions.
say reinforcement phase. Ned’s behavior was lower than that of his range of on-task behavior in the corresponding experimental phase. Two data points from generality sessions occurring while Ned was in the play-correspondence-package phase, indicated an abrupt change over previous generality session on-task behavior. In these sessions, on-task behavior ranged 75% to 96%, with a mean of 82.7%. There were three data points with a mean of 72.7% for Ned in generality sessions, while he was in the second say reinforcement phase. The data were variable and ranged from 50% to 84% and fell below the range of on-task behavior in the experimental phase.

**Kelly**

On-task data for Kelly is summarized as follows.

**Baseline.** Baseline responding demonstrated stability when the 11 data points fell at, or near, 13%. Kelly’s on-task behavior ranged from 1% to 29%, with a mean of 13.4% (see Table 4.7). There was little variability and a zero-slope within this phase (see Figure 4.2). Kelly’s highest percentage of on-task behavior occurred on the first day of baseline at 29%.

**Activity-schedule-training.** There were 10 data points in the activity-schedule-training condition. The mean percentage of intervals of on-task behavior for Kelly in this condition, was 63.3%, with a range from 37% to 77%. There was an immediate change in the level between baseline and activity-schedule-training. Kelly’s mean on-task behavior increased from 13.4% in baseline to 63.3% in this condition. Visual inspection revealed some variability and a gradual upward trend within this phase.
Say reinforcement. The mean for on-task behavior in this condition was 17.3%, with a range from 7% to 31%. Six data points indicated steady responding with a trend downward. There was an immediate decrease in on-task performance from the previous condition. Data in this condition returned to similar levels of on-task behavior found in baseline, with only a 4% difference between the means of the two conditions.

Play-correspondence-package. There were fourteen data points in this condition with a ranging from 52% to 86%, and a mean of 76.6%. Data demonstrated an immediate increase in level in this condition compared to the say reinforcement condition and baseline. Within this phase, there was a gradual upward trend, similar to the trend in the activity-schedule-training condition and some variability.

Say reinforcement. Returning to say reinforcement, Kelly’s on-task behavior remained consistent from the previous condition. The percentage of intervals of on-task behavior for Kelly in this condition was based on 13 data points with a mean of 80.1%, and ranging from 68% to 91%. There was no change in the level between this phase and the play-correspondence-package phase. Abrupt changes however, were present between this phase and the first say reinforcement phase. There was an increase in level in this phase over baseline level. Within this phase, there was some variability and a continuing upward trend, similar to the trend line in the previous condition, demonstrating overlap.
Generality. A summary of Kelly’s on-task behavior for generality sessions is reported as related to coterminous experimental phases. Baseline conditions were present for all generality sessions. Kelly attended 12 generality sessions, with a range of on-task behavior from 8% to 96%, and a mean of 53.3% (see Table 4.8).

Two generality sessions occurred while Kelly was in baseline. For the two sessions there was a mean and range of 8%. This percentage of on-task behavior was within the range of on-task behavior in the experimental baseline. For two generality sessions during the activity-schedule-training condition, on-task behavior ranged from 12% to 30%, with a mean of 21%. These data were lower than the range of on-task behavior displayed in the experimental activity-schedule-training condition however, an upward trend is indicated. During the say reinforcement condition, there were two generality sessions. Kelly’s on-task behavior for the sessions ranged from 12% to 30%, with a mean of 20%. The mean for these sessions fell within the range for on-task behavior in the corresponding experimental phase. The mean for on-task behavior was 86.5%, with a range from 73% to 100%, for two generality sessions occurring while Kelly was in the play-correspondence-package phase. There was an increased change in this condition compared to the data in the previous generality sessions, from 23% to 100% on-task behavior. A similar change occurs in the corresponding experimental conditions. Returning to the second say reinforcement phase, four generality sessions were conducted and on-task responding was stable. The mean on-task behavior was 92%, with a range from 90% to 96%. The data from the generality sessions fell within and above the range of on-task behavior in the corresponding experimental phase.
The results of Michael's on-task data are presented as follows.

**Baseline.** There were 13 data points in baseline that demonstrated stable responding (see Figure 4.2). On-task behavior during baseline ranged from 8% to 31%, with a mean of 21.1% (see Table 4.7). There was little variability and a zero-slope. Michael was absent due to illness from session seven through session 10.

**Activity-schedule-training.** The range of on-task behavior in this condition was 59% to 89%, with a mean of 70.8%. There were 15 data points revealing an immediate increase in level between this condition and baseline, with the mean in baseline at 21.1% compared to 70.8% in this condition. Data maintained steady responding with a gradual upward trend within this phase.

**Say reinforcement.** There was an immediate decrease in on-task behavior this condition. On-task behavior ranged from 8% to 37%, with a mean of 24.2%. Six data points demonstrated a change in level between this condition and the previous one. Data in this condition returned to similar levels of on-task behavior found in baseline, with only a 3% difference between the means of the two conditions. Inspection of the data suggested some variability, but a zero slope within the phase.

**Play-correspondence-package.** Eighteen data points were calculated to determine the percentage of intervals of on-task behavior for Michael. The mean was 70.7%, with a range from 53% to 84%. Again, visual inspection of the data yielded an immediate increase in level to 63% in this condition from 8% in the say reinforcement condition. There was consistent responding, with some variability and zero-slope within the phase.
Generality. Michael was present for 11 generality sessions. The mean percentage of intervals for on-task behavior for all generality sessions for Michael was 44.2%, with a range from 15% to 81% (see Table 4.8).

The mean for on-task behavior was 19.5%, with a range from 19% to 20%, for the two generality sessions occurring while Michael was in baseline. The percentage of on-task behavior was within the range of on-task behavior in the experimental baseline. During three generality sessions while Michael was in the activity-schedule-training condition, the mean for on-task behavior was 31.7%, with a range from 22% to 40%. The mean for the data in generality was lower than the range of on-task behavior displayed in the experimental activity-schedule-training. Michael attended one generality session during the say reinforcement phase. The mean and range of on-task behavior was 15%, within the range for on-task behavior in the corresponding experimental phase. Examination of the five data points from the generality sessions while Michael was in the play-correspondence-package phase yielded a mean of 67.4%, with a range from 50% to 81%. There was a change in the level of the data compared to previous generality sessions.

Janet

The following is a summary of Janet’s on-task data.

Baseline. There were 21 data points in baseline for Janet’s on task behavior ranging from 0 to 21%, with a mean of 4% (see Table 4.7). Baseline data demonstrated stability when the data points fell at, or near, 4% (see Figure 4.2). There was no variability and a zero-slope.
Activity-schedule-training. During 15 sessions in this condition, on-task behavior ranged from 29% to 74%, with a of 56.9%. There was an abrupt change in level between Janet’s mean on-task behavior in baseline at 4% and this condition (56.9%). Visual inspection revealed some variability and a gradual upward trend within this phase.

Say reinforcement. The mean for on-task behaviors in this condition was 21%, with a range from 3% to 48%. Four data points demonstrated an immediate decrease in level between this condition and the previous one, although there was one overlapping data point for session 45.

Play-correspondence-package. Thirteen data points for this condition revealed some variability, with a consistent upward trend. The range of Janet’s on-task behavior for this condition was from 30% to 72%, with a mean of 58.7%. Data demonstrated an immediate increase in the level of this condition and the say reinforcement condition, as well as baseline. There was one overlapping data point on session 45 from the previous phase. Data showed some variability and a gradual upward trend within this phase.

Generality. The mean for on-task behavior across 12 generality sessions was 22.8%, with a range from 0% to 76% (see Table 4.8). Five generality sessions occurred during baseline with on-task behavior for Janet ranging from 0 to 1%, with a mean of 1%. The mean for on-task behavior in this generality session was within the range of on-task behavior in the experimental baseline. During three generality sessions while Janet was in activity-schedule-training conditions, the mean on-task behavior was 33.3%, with a range from 4% to 69%. The data showed a steep upward
trend within the phase and fell within the range of on-task behavior displayed in the experimental activity-schedule-training. The mean on-task behavior was 43%, with a range from 9% to 76%, for four generality sessions occurring during play-correspondence-package conditions. Data within these generality sessions revealed an upward trend.

Play Correspondence

The following is a summary of individual children's play correspondence behavior for all conditions. It includes the number of opportunities the child had for play correspondence behavior to occur, the number of children's play correspondence behaviors, and the percentage of play correspondence behavior across all conditions. The percentage of play correspondence behavior is located in Tables 4.9 for experimental conditions.

Ned

Ned’s play correspondence data across all conditions is summarized as follows.

Baseline. Ned attended five baseline sessions with a total of 15 play correspondence opportunities. Ned’s play behavior corresponded to his activity schedule 1 out of 15 opportunities or 6% of the time. During the first observation period in baseline, Ned made three play selections by placing the photographs of play areas on his activity schedule. He played in the first play area indicated on his activity schedule and received one point for play correspondence behavior. The four following data points remained stable, indicating an absence of play correspondence behavior during baseline.
Figure 4.3: Number of observed play correspondence behaviors recorded for each participant during all conditions with x's denoting the absence of play selections and therefore no opportunity for correspondence. Triangles (▲) represent training conditions.
<table>
<thead>
<tr>
<th>Child</th>
<th>Baseline</th>
<th>Activity Schedule Training</th>
<th>Say Reinforce</th>
<th>Play Correspond Package</th>
<th>Say Reinforce</th>
</tr>
</thead>
<tbody>
<tr>
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<td>4</td>
<td>4</td>
<td>15</td>
<td>11</td>
</tr>
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<td></td>
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<td>1&lt;sup&gt;c&lt;/sup&gt;</td>
<td>12</td>
<td>12</td>
<td>45</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>1&lt;sup&gt;d&lt;/sup&gt;</td>
<td>7</td>
<td>0</td>
<td>36</td>
<td>26</td>
</tr>
<tr>
<td>Kelly</td>
<td>11</td>
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<td>6</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>33</td>
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<td>18</td>
<td>42</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>30</td>
<td>18</td>
<td>42</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>22</td>
<td>3</td>
<td>33</td>
<td>30</td>
</tr>
<tr>
<td>Michael</td>
<td>13</td>
<td>15</td>
<td>6</td>
<td>18</td>
<td></td>
</tr>
<tr>
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<td>18</td>
<td>54</td>
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</tr>
<tr>
<td></td>
<td>0</td>
<td>27</td>
<td>3</td>
<td>40</td>
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</tr>
<tr>
<td>Janet</td>
<td>21</td>
<td>16</td>
<td>4</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>0</td>
<td>29</td>
<td>3</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Number of sessions
<sup>b</sup> Number of opportunities child had to make a play selection
<sup>c</sup> Number of play selections the child made
<sup>d</sup> Number of play selections child corresponded with play behavior

Table 4.9: Amount of play correspondence behavior during experimental sessions.
Activity-schedule-training. The percentage of play correspondence behaviors was 58.3% for the four activity-schedule-training sessions Ned attended. His play behavior corresponded with his activity schedule 7 times out of 12 occasions. He consistently followed the first two play selections on his activity schedule during this condition. The level of the data in this phase suggested an abrupt change from baseline.

Say reinforcement. Although Ned constructed his activity schedule and received reinforcement for doing so, his play behavior did not correspond with his activity schedule in this condition. The level of the data in this phase was similar to baseline, however it indicated an immediate change from the previous phase. Ned attended four say reinforcement sessions. He did not follow his activity schedule. Out of 12 opportunities in this condition, play correspondence behavior did not occur.

Play-correspondence-package. The first seven data points indicated Ned consistently followed his activity schedule for one or two play correspondences each session. This was followed by an upward trend as Ned began to correspond two and three play selections evidenced by the final eight data points. Ned attended 15 play-correspondence-package sessions with play correspondence behavior occurring 36 out of 45 occasions or 80% of the time.

Say reinforcement. The number of play correspondence behaviors for Ned returning to this condition was 26 out of 33 opportunities. (78.8%). Ned attended 11 say reinforcement sessions and play correspondence behavior occurred 78.8% of the time. He had two single, four double, and five triple matches for play correspondence behavior in this condition. Data were variable with an upward trend within the phase.
Generality. The following is a summary of Ned’s play correspondence behaviors for generality sessions coterminous with experimental conditions. Ned was present for a total of nine generality sessions. During one baseline generality session, one activity-schedule-training generality session, and one say reinforcement generality session, Ned displayed no play correspondence behavior. There was a change in Ned’s play correspondence behavior during generality sessions occurring during play-correspondence-package conditions. His play correspondence behavior occurred 22.2% of the time or two of the nine occasions. During the second say reinforcement condition, Ned’s play correspondence behavior during generality sessions continued to increase to 55.6%. His play behavior corresponded to his activity schedule five times out of nine opportunities. See Table 4.10 for a summary of play correspondence behavior for generality sessions coterminous with experimental conditions.

Kelly

A summary of Kelly’s play correspondence behavior data across all conditions follows.

Baseline. During baseline, Kelly attended 11 sessions providing her 33 opportunities for play correspondence behavior to occur. She displayed no play correspondence behavior in this condition. Baseline data assumed a stable level in the absence of play correspondence behavior.

Activity-schedule-training. Kelly’s play correspondence behavior increased to 73.3% in this condition. Kelly’s play behavior corresponded to her activity schedule 22 times out of 30 occasions occurring during 10 activity-schedule-training sessions.
<table>
<thead>
<tr>
<th>Child</th>
<th>Baseline</th>
<th>Activity Schedule Training</th>
<th>Say Reinforce</th>
<th>Play Correspond Package</th>
<th>Say Reinforce</th>
</tr>
</thead>
<tbody>
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<td>Ned</td>
<td>1&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>1</td>
<td>3</td>
<td>3</td>
</tr>
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<td>9</td>
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<tr>
<td></td>
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<td>2</td>
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<td>5</td>
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<td>___</td>
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<td>4</td>
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</tr>
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<td>___</td>
<td>11.1</td>
<td>___</td>
<td>50</td>
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</tbody>
</table>

<sup>a</sup> Number of sessions
<sup>b</sup> Number of opportunities for play correspondence behavior
<sup>c</sup> Number of play correspondences
<sup>d</sup> Percentage of play correspondence behavior

Table 4.10: Number and percentage of play correspondence behaviors during generality sessions coterminous with experimental conditions.
Kelly attended. One data point, representing the fourth observation period in this condition, designated the absence of play correspondence behavior. The level of the data in this phase showed an immediate increase over baseline. Kelly had two single, four double, and four triple matches for play correspondence in this condition.

**Say reinforcement.** Data level in this phase was similar to the level of data in the previous phase. There was with an increased level in this phase compared to baseline. Two of the five data points represented a single play correspondence. Three data points indicated an absence of play correspondence behaviors. Kelly’s play correspondence behavior was 20% for five say reinforcement sessions she attended, with three play correspondence behaviors out of 15 opportunities.

**Play-correspondence-package.** During the 14 sessions Kelly attended during play-correspondence-package conditions, her play behavior corresponded to her activity schedule 33 times out of 42 occasions. Play correspondence behavior increased to 78.6% in this phase, an immediate change in level over baseline and say reinforcement phases. Data were consistent as indicated by four triple and 10 double matches for play correspondence behavior occurring in this phase.

**Say reinforcement.** Data demonstrated a similar level in this phase as was seen in the previous phase. The number of play correspondence behaviors for Kelly returning to this condition was 36 out of 39 opportunities. Play correspondence behavior was 76.9% for the 13 sessions she attended. Data were variable as indicated by five-triple, six-double, and two-single matches for play correspondence behavior occurring in this phase.
Generality. Kelly’s play correspondence behavior data for 12 generality sessions coterminous with experimental conditions, is summarized as follows. Kelly was present for two generality sessions occurring during baseline and she displayed no play correspondence behavior during six episodes. For generality sessions at the time of activity-schedule-training and say reinforcement conditions, play correspondence behaviors occurred 16.7% of the time or on one of six occasions. During generality sessions for play-correspondence-package conditions, Kelly had four play correspondence behaviors out of six opportunities or 66.7%. Play correspondence behavior continued to increase to 83.3% for generality sessions during say reinforcement phase when Kelly’s play behavior corresponded to her activity schedule on 9 of 12 occasions. The data for generality sessions occurring during say reinforcement, play-correspondence-package, and the second say reinforcement followed similar increases and decreases in level as the coterminous experimental conditions.

Michael

The following are the results of Michael’s play correspondence data across all conditions.

Baseline. Baseline data assumed a stable level in the absence of play correspondence behavior for the 13 sessions Michael attended. Michael demonstrated no play correspondence behavior out of 39 occasions.
Activity-schedule-training. Michael attended 15 activity-schedule-training sessions with 27 play correspondence behaviors out of 45 opportunities in this condition. The increase of play correspondence behavior to 60% indicated a change in the level of the data in this phase compared to baseline. The first data point in this phase represented the only absence of play correspondence behavior for this condition. Data were variable, with an upward trend within the phase indicated by four-single and 10-double matches for play correspondence behavior.

Say reinforcement. During this condition two of the six data points represented single play correspondence behaviors. Four data points indicated an absence of play correspondence behavior. Michael was present for six say reinforcement sessions. His play correspondence behavior decreased to 16.7% when his play behavior corresponded to his activity schedule on only 3 of 18 occasions.

Play-correspondence-package. The number of play correspondence behaviors for Michael was 40 out of 54 opportunities, or 74.1%, for the 18 play-correspondence-package sessions he attended. There was an increase in level between this phase and baseline and the say reinforcement phase. Data demonstrated an upward trend within this phase as Michael moved from consistently corresponding two play selections to corresponding three play selections toward the end of the phase.

Generality. Michael’s play correspondence behaviors for generality sessions coterminous with experimental conditions are summarized as follows. Michael was present for a total of 11 generality sessions. Play correspondence behavior did not occur for any of the six opportunities for generality sessions during baseline and activity-schedule-training conditions. For say reinforcement generality sessions, play
correspondence behavior occurred once out of three opportunities or 33.3%. Play correspondence behavior was 60% during play-correspondence-package with Michael’s play behavior corresponding with his activity schedule 9 of 15 occasions.

Janet

Janet’s play correspondence behavior across all conditions is summarized as follows.

Baseline. Janet displayed no play correspondence behavior during the 21 baseline sessions she attended. There were 63 opportunities for play correspondence behavior to occur during baseline. Baseline data assumed a stable level in the absence of play correspondence behavior.

Activity-schedule-training. The percentage of play correspondence behavior for Janet in this condition was 60.4%. Her play behavior corresponded to her activity schedule 29 times out of 48 opportunities. There were 16 data points for Janet in activity-schedule-training conditions. The level of the data in this phase showed a gradual change from baseline, but an upward trend within the phase. Data were variable with two data points indicating an absence of play correspondence behavior, while four data points represented single, three double, and six triple matches for play correspondence behavior.

Say reinforcement. The number of play correspondence behaviors for Janet in this condition was 3 out of 12 opportunities. She had 25% play correspondence behavior for the 12 sessions she attended. Data were variable, with an increased level
in this phase compared to baseline. Two of the four data points represented single play
correspondence behavior. Two data points indicated an absence of play
correspondence behavior.

**Play-correspondence-package.** Janet attended 13 play-correspondence-package
sessions with 76.9% play correspondence behavior for this condition. The number of
play correspondence opportunities for Janet was 39 and she corresponded 30 times.
There was an immediate increase in level in this phase over baseline and the say
reinforcement phases however, data demonstrated a downward trend as indicated by
four triple and nine double matches for play correspondence behavior occurring in this
phase.

**Generality.** For generality sessions coterminous with experimental conditions,
Janet was present for 12 sessions. She displayed no play correspondence behavior out
of 15 occasions for generality sessions while she was in baseline. During activity-
schedule-training play correspondence behavior for generality sessions was 11.1%,
occurring on one of nine occasions. For generality sessions during play-
correspondence-package conditions data were stable, with play correspondence
behavior occurring 50% of the time for 12 opportunities.

**Social Validity**

Information was collected from relevant consumers and evaluated to determine
the social validity of the intervention goals, procedures, and outcomes. The following
is a summary of the results of the social validity information gathered from parents of
the children participating in the study, early childhood special education teachers and
early childhood education teachers.
Intervention Goals

Results of the information gathered from the parents of children participating in the study were used to address the social validity of the intervention goals. Results are summarized as follows.

Parents

The experimenter totaled the parent’s tally marks separately for videotaped baseline and intervention segments and compared the numbers between the two segments (see Table 4.11).

Parent 1. Parent 1 was the mother of Ned. She placed four tally marks on her checklist for the videotaped segment of Ned in baseline. She expressed concern over Ned’s inability to play with other children and appropriately engage with toys. There were no marks on the checklist corresponding to the videotaped segment of Ned during intervention. Tally marks decreased from three for the baseline segment to zero for the intervention segment. Parent 1 identified the segment of Ned during the intervention condition as the one where Ned displayed important play behaviors. She gave an example of an important behavior she observed during that segment; Ned was sharing and taking turns with a peer model.

Parent 2. Kelly’s mother was Parent 2. She scored 21 tally marks for the videotape segment of Kelly in baseline compared to 4 tally marks while viewing Kelly in the videotaped segment during intervention. She expressed sadness regarding Kelly’s ability to play with other children as well as fear about Kelly’s immediate and
<table>
<thead>
<tr>
<th>Table 4.11: The number of negative statements parents made while viewing their children’s play behavior during videotaped segments for baseline and intervention.</th>
<th>Ned</th>
<th>Kelly</th>
<th>Michael</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of tally marks for baseline segment</td>
<td>P1&lt;sup&gt;a&lt;/sup&gt; – 4</td>
<td>P2&lt;sup&gt;b&lt;/sup&gt; – 21</td>
<td>P4&lt;sup&gt;d&lt;/sup&gt; – 27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P3&lt;sup&gt;c&lt;/sup&gt; – 32</td>
<td>P5&lt;sup&gt;e&lt;/sup&gt; – 7</td>
</tr>
<tr>
<td>Number of tally marks for intervention segment</td>
<td>P1 – 0</td>
<td>P2 – 4</td>
<td>P4 – 7</td>
</tr>
<tr>
<td></td>
<td>P3 – 11</td>
<td>P5 – 3</td>
<td></td>
</tr>
<tr>
<td>Behaviors exhibited were important to the parent</td>
<td>P1 – Yes</td>
<td>P2 – Yes</td>
<td>P4 – Yes</td>
</tr>
<tr>
<td></td>
<td>P3 – Yes</td>
<td>P5 – Yes</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Parent 1  
<sup>b</sup> Parent 2  
<sup>c</sup> Parent 3  
<sup>d</sup> Parent 4  
<sup>e</sup> Parent 5
future educational needs. Parent 2 identified the segment of Kelly during the intervention condition as the one where Kelly displayed important play behaviors. She gave examples of important behaviors she observed during that segment as Kelly transitioning from one play area to another without adult assistance and Kelly’s attempts to interact in the Kitchen area with a peer. There was a decrease in tally marks from 21 for the baseline segment to 4 for the intervention segment.

Parent 3. Parent 3 was Kelly’s father. He placed 32 tally marks for the videotape segment of Kelly in baseline. The tally marks decreased to 11 while he was viewing Kelly during intervention. The concerns he marked on the checklist were Kelly’s inability to participate with other children, function without assistance in a classroom, fears regarding Kelly’s immediate and future educational needs. Parent 3 identified the segment of Kelly during the intervention condition as the one where Kelly displayed important play behaviors. The example of important behavior he observed during the videotaped segment was Kelly sitting at the art table using markers without stereotypic behavior.

Parent 4. Michael’s mother was Parent 4. She tallied 27 concern statements while viewing the segment of Michael during baseline. Her concern statements decreased to 7 while she was observing Michael in the intervention segment. She noted the following concerns. Michael’s expressive language delay. his inability to play with other children and his twin sister, and his stereotypic behaviors. She identified the videotaped segment of Michael during intervention as the segment
where Michael displayed important play skills. One example of an important play skill she observed Michael exhibiting was sitting at the Lego table playing with blocks, without the occurrence of stereotypic behavior.

Parent 5. Parent 5 Michael’s father. He marked 7 of concern statements on the checklist while he was viewing the videotaped segment of Michael in baseline. This decreased to 2 tally marks during the intervention segment. Parent 5 concerns were that people would realize how intelligent and capable Michael was and that he would be able to attend an inclusive preschool next year. Michael’s father identified the intervention segment as the videotape depicting Michael exhibiting important play skills. He identified Michael participation in art and fine motor activities as important play skills.

Intervention Procedures

The experimenter gathered information from early childhood special education teachers to determine the social acceptability and usability (Carnine, 1997) of the intervention procedures. Data were examined to determine the social validity of the intervention procedures (see Table 4.12).

Early Childhood Special Education Teachers

Teachers were asked to identify specific skills listed on an adapted Hawaii Preschool/Kindergarten Survival Skills Checklist (McCormick & Kawate, 1982) during videotaped segments of the target children. Based on what the teachers observed on the videotaped segments, they were asked to evaluate the intervention procedure.
Teacher 1. Teacher 1 was randomly assigned to observe Ned. Teacher 1 found that Ned exhibited two skills from the checklist during baseline and all of the skills during the intervention segment. This indicated an increase in observed skills from 13% in baseline to 100% for the intervention segment.

This teacher identified all the skills on the checklist as having the potential for improvement when the intervention procedures she read about were implemented. She wrote that based on the improvement she observed in Ned’s skills between the two videotaped segments, she would be willing to use this intervention in her classroom.

Teacher 2. Teacher 2 had 5 years of experience working in the fields of childhood development and early childhood special education. She had a bachelor’s degree in child development and a master’s degree in early childhood special education. She read the procedural steps, and completed the skills checklist on Kelly and Michael while viewing the videotaped segments. This teacher did not identify any of the skills on the checklist while she was viewing Kelly and Michael in the baseline segment. She observed 14 of the 15 or 93% of the skills on the checklist for Kelly while watching the intervention segment. For Michael, during the intervention segment, she observed 11 of the 15 or 73% of the skills on the checklist.

Teacher 2 recognized all the skills on the checklist as having the potential for improvement when the intervention procedures she read about were implemented. She stated that she would be willing to use this intervention in her classroom based on the change she observed in the children’s skills.
<table>
<thead>
<tr>
<th>Skill</th>
<th>Observed During Baseline</th>
<th>Observed During Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Modifies behavior when provided with verbal direction</td>
<td>J</td>
<td>N&lt;sup&gt;a&lt;/sup&gt; J&lt;sup&gt;b&lt;/sup&gt; K&lt;sup&gt;c&lt;/sup&gt; M&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>2. Complies with directions</td>
<td></td>
<td>N J K M</td>
</tr>
<tr>
<td>3. Makes own decisions</td>
<td></td>
<td>N J K M</td>
</tr>
<tr>
<td>4. Spontaneously begins play activities during playtime</td>
<td></td>
<td>N J K M</td>
</tr>
<tr>
<td>5. Focuses on task</td>
<td>N</td>
<td>N J K M</td>
</tr>
<tr>
<td>6. Uses materials away</td>
<td></td>
<td>N J K M</td>
</tr>
<tr>
<td>7. Maintains play activity for appropriate length of time</td>
<td></td>
<td>N J K M</td>
</tr>
<tr>
<td>8. Puts materials away</td>
<td></td>
<td>N J M</td>
</tr>
<tr>
<td>9. Makes transitions from one activity to another</td>
<td></td>
<td>N J K M</td>
</tr>
<tr>
<td>11. Socializes with others</td>
<td></td>
<td>N K</td>
</tr>
<tr>
<td>12. Cooperates with others</td>
<td></td>
<td>N K</td>
</tr>
<tr>
<td>13. Takes turns</td>
<td></td>
<td>N K</td>
</tr>
<tr>
<td>14. Shares materials/toys with peers</td>
<td></td>
<td>N K</td>
</tr>
<tr>
<td>15. Responds when spoken to</td>
<td>J</td>
<td>N J K M</td>
</tr>
</tbody>
</table>

<sup>a</sup> Ned  
<sup>b</sup> Kelly  
<sup>c</sup> Michael  
<sup>d</sup> Janet

Table 4.12: A summary of the information collected from early childhood special education teachers for all participants.
Teacher 3. Teacher 3 had a bachelor’s degree in psychology and 2 years of experience working in the field of psychology and early childhood special education. She read the procedural steps, observed Janet while viewing the videotaped segments and completing the skills checklist. During the baseline segment, Teacher 3 observed three or 20% of the skills on the checklist. For the intervention segment, teacher 3 observed 11 of the 15 or 73% of the skills on the checklist.

Teacher 3 did not answer the question regarding the impact of the intervention on the skills described in the checklist. She did however, claim she would use this intervention in her classroom based on the changes she observed in Janet’s skills.

Intervention Outcomes

Information was gathered from early childhood education teachers and evaluated to determine the social validity of the intervention outcomes. Results are summarized as follows. The teachers completed an adapted Hawaii Preschool/Kindergarten Survival Skills Checklist (McCormick & Kawate, 1982) while viewing videotaped segments of the participants.

Ned

There were three teachers randomly assigned to observe Ned. One of the teachers recommended Ned for placement in her classroom based on viewing the baseline segment. All of the teachers recommended his placement in their classrooms following the intervention segment. Table 4.13 describes the skills the teachers observed for Ned while viewing the videotaped segments.
<table>
<thead>
<tr>
<th>Skill</th>
<th>Observed During Baseline</th>
<th>Observed During Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Modifies behavior when provided with verbal direction</td>
<td>T3</td>
<td>T1&lt;sup&gt;a&lt;/sup&gt; T2&lt;sup&gt;b&lt;/sup&gt; T3&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>2. Complies with directions</td>
<td>T3</td>
<td>T1 T2 T3</td>
</tr>
<tr>
<td>3. Makes own decisions</td>
<td>T1 T2</td>
<td>T1 T2 T3</td>
</tr>
<tr>
<td>4. Spontaneously begins play activities during playtime</td>
<td>T3</td>
<td>T1 T2 T3</td>
</tr>
<tr>
<td>5. Focuses on task</td>
<td>T1 T2 T3</td>
<td>T1 T2 T3</td>
</tr>
<tr>
<td>6. Uses materials away</td>
<td>T3</td>
<td>T1 T2 T3</td>
</tr>
<tr>
<td>7. Maintains play activity for appropriate length of time</td>
<td>T2 T3</td>
<td>T1 T2 T3</td>
</tr>
<tr>
<td>8. Puts materials away</td>
<td>T1</td>
<td></td>
</tr>
<tr>
<td>9. Makes transitions from one activity to another</td>
<td>T2 T3</td>
<td></td>
</tr>
<tr>
<td>10. Does not disturb peers</td>
<td>T3</td>
<td>T2 T3</td>
</tr>
<tr>
<td>11. Socializes with others</td>
<td>T1 T2 T3</td>
<td></td>
</tr>
<tr>
<td>12. Cooperates with others</td>
<td>T1 T2 T3</td>
<td></td>
</tr>
<tr>
<td>13. Takes turns</td>
<td>T1</td>
<td>T3</td>
</tr>
<tr>
<td>14. Shares materials/toys with peers</td>
<td>T1</td>
<td>T3</td>
</tr>
<tr>
<td>15. Responds when spoken to</td>
<td>T1</td>
<td>T1 T2 T3</td>
</tr>
</tbody>
</table>

<sup>a</sup> Skills observed by Teacher 1  
<sup>b</sup> Skills observed by Teacher 2  
<sup>c</sup> Skills observed by Teacher 3

Table 4.13. Summary of observed skills for Ned during baseline and intervention videotaped segments by early childhood education teachers
Teacher 1. During the baseline segment, Teacher 1 observed three skills from the checklist that Ned exhibited. She stated that she would not recommend him for placement in her classroom after viewing him on the baseline segment. The percentage of skills she observed rose from 20% in the baseline segment, to 87% in the intervention segment. She observed 13 skills on the checklist while viewing the intervention segment and recommended Ned’s placement in her class based on those skills.

Teacher 2. Teacher 2 observed Ned and identified three skills while viewing the baseline segment. Although she would not recommend him for placement in her class after viewing the baseline segment, she did recommend his placement after watching the intervention segment. She observed 12 skills from the checklist during the intervention segment increasing Ned’s percentage of observed skills from 20% for baseline to 80% during the intervention.

Teacher 3. This teacher observed 40% or six of the skills on the checklist while watching the baseline segment. She observed 14 of the 15 skills on the checklist or 93% during the intervention segment.

Kelly

Three teachers were randomly assigned to observe Kelly during both baseline and intervention videotaped segments. All of the teachers recommended against placement in their classrooms following the baseline segment, however they all recommended her for placement based on the skills they observed in the intervention segment. Table 4.14 summarizes the results for Kelly of skills the teachers observed.
<table>
<thead>
<tr>
<th>Skill</th>
<th>Observed During Baseline</th>
<th>Observed During Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Modifies behavior when provided with verbal direction</td>
<td>T4&lt;sup&gt;a&lt;/sup&gt;</td>
<td>T6&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>2. Complies with directions</td>
<td>T6</td>
<td>T4 T5&lt;sup&gt;c&lt;/sup&gt; T6</td>
</tr>
<tr>
<td>3. Makes own decisions</td>
<td>T7</td>
<td>T4 T5 T6</td>
</tr>
<tr>
<td>4. Spontaneously begins play activities during playtime</td>
<td></td>
<td>T4 T5 T6</td>
</tr>
<tr>
<td>5. Focuses on task</td>
<td>T4&lt;sup&gt;d&lt;/sup&gt; T6</td>
<td>T4; T5; T6</td>
</tr>
<tr>
<td>6. Uses materials away</td>
<td></td>
<td>T4 T5 T6</td>
</tr>
<tr>
<td>7. Maintains play activity for appropriate length of time</td>
<td></td>
<td>T4 T5 T6</td>
</tr>
<tr>
<td>8. Puts materials away</td>
<td></td>
<td>T4 T6</td>
</tr>
<tr>
<td>9. Makes transitions from one activity to another</td>
<td>T4&lt;sup&gt;e&lt;/sup&gt;</td>
<td>T4 T5 T6</td>
</tr>
<tr>
<td>10. Does not disturb peers</td>
<td></td>
<td>T4 T5 T6</td>
</tr>
<tr>
<td>11. Socializes with others</td>
<td></td>
<td>T4 T6</td>
</tr>
<tr>
<td>12. Cooperates with others</td>
<td></td>
<td>T4 T6</td>
</tr>
<tr>
<td>13. Takes turns</td>
<td></td>
<td>T4 T5 T6</td>
</tr>
<tr>
<td>14. Shares materials/toys with peers</td>
<td></td>
<td>T4 T5 T6</td>
</tr>
<tr>
<td>15. Responds when spoken to</td>
<td>T4&lt;sup&gt;f&lt;/sup&gt;</td>
<td>T4 T5 T6</td>
</tr>
</tbody>
</table>

<sup>a</sup> Skills observed by Teacher 4  
<sup>b</sup> Skills observed by Teacher 6  
<sup>c</sup> Skills observed by Teacher 5

Table 4.14: Summary of observed skills for Kelly during baseline and intervention videotaped segments by early childhood education teachers.
Teacher 4. Teacher 4 observed three or 20% of the skills on the checklist during the baseline segment and 13 or 80% of the skills during the intervention segment. She recommended placement in her classroom after viewing the intervention segment, but not after the baseline segment.

Teacher 5. Teacher 5 identified 13% or 2 of the 15 skills on the checklist while viewing the baseline segment. This increased to 75% during the intervention segment when she identified 9 of the 15 skills on the checklist. Teacher 5 recommended against placement in her classroom after the baseline segment, but for placement following the intervention segment.

Teacher 6. This teacher viewed Kelly in the baseline segment and noted one skill from the checklist that she observed, however she observed 13 skills during the intervention segment. She did not recommend placement in her classroom after identifying 7% of the skills on the checklist during baseline. She did recommend placement after the intervention segment where she observed 87% of the skills on the checklist.

Michael

The following three teachers were randomly assigned to observe Michael during both videotaped segments. Each of the teachers recommended placements in their classrooms after viewing the intervention segment. None of the teachers recommended placement in their classrooms based on the baseline segment. A summary of the skills the teachers observed for Michael is located in Table 4.15.
<table>
<thead>
<tr>
<th>Skill</th>
<th>Observed During Baseline</th>
<th>Observed During Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Modifies behavior when provided with verbal direction</td>
<td>T7&lt;sup&gt;a&lt;/sup&gt; T8&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>2. Complies with directions</td>
<td>T7</td>
<td>T8</td>
</tr>
<tr>
<td>3. Makes own decisions</td>
<td>T7</td>
<td>T9&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>4. Spontaneously begins play activities during playtime</td>
<td>T7</td>
<td>T9</td>
</tr>
<tr>
<td>5. Focuses on task</td>
<td>T8</td>
<td>T7 T8 T9</td>
</tr>
<tr>
<td>6. Uses materials away</td>
<td>T7</td>
<td>T8 T9</td>
</tr>
<tr>
<td>7. Maintains play activity for appropriate length of time</td>
<td>T7</td>
<td>T8 T9</td>
</tr>
<tr>
<td>8. Puts materials away</td>
<td>T7</td>
<td></td>
</tr>
<tr>
<td>9. Makes transitions from one activity to another</td>
<td>T7</td>
<td></td>
</tr>
<tr>
<td>10. Does not disturb peers</td>
<td>T7</td>
<td>T8 T9</td>
</tr>
<tr>
<td>11. Socializes with others</td>
<td>T9</td>
<td></td>
</tr>
<tr>
<td>12. Cooperates with others</td>
<td>T9</td>
<td></td>
</tr>
<tr>
<td>13. Takes turns</td>
<td>T9</td>
<td></td>
</tr>
<tr>
<td>14. Shares materials/toys with peers</td>
<td>T9</td>
<td></td>
</tr>
<tr>
<td>15. Responds when spoken to</td>
<td>T9</td>
<td>T7</td>
</tr>
</tbody>
</table>

<sup>a</sup> Skills observed by Teacher 7  
<sup>b</sup> Skills observed by Teacher 8  
<sup>c</sup> Skills observed by Teacher 9

Table 4.15: Summary of observed skills for Michael during baseline and intervention videotaped segments by early childhood education teachers.
Teacher 7. This teacher did not observe any of the skills on the checklist while she viewed Michael during the baseline segment and she did not recommend his placement in her classroom. During the intervention segment, she observed 11 of the 15 skills on the checklist or 73% and did recommend placement.

Teacher 8. This teacher noted one skill she observed Michael exhibiting during the baseline segment and six skills during the intervention segment. She noted an increase in skills from 7% for baseline to 40% for intervention. Teacher 8 recommended against placement in her classroom after baseline, but for placement following the intervention segment.

Teacher 9. During the baseline segment Teacher 9 observed 1 of the 15 skills (7%) on the checklist compared to the intervention segment where she observed 10 skills. She did not recommend his placement in her classroom based on the skills she viewed during baseline. However, she did recommend placement in her classroom after viewing the intervention segment and identifying 67% of the skills on the checklist.

Janet

Three teachers were randomly assigned to observe Janet during baseline and intervention segments. All three teachers recommended against Janet’s placement in their classroom based on the skills they observed during the baseline segment. One teacher recommended against placement following the intervention segment. One teacher recommended Janet for placement in her classroom after viewing Janet’s skills in the intervention segment. One teacher recommended Janet for placement in her
classroom after viewing the intervention segment if considerations were made for adaptations or support in the classroom. Results of the skills the teachers observed for Janet are summarized in Table 4.16.

Teacher 10. This teacher observed one skill while viewing the baseline segment and eight skills while viewing Janet in the intervention segment. This indicated an increase in observed skills from 7% in baseline to 53% for the intervention segment. Teacher 10 did not recommend placement in her classroom based on what she observed in baseline. After viewing the intervention segment, teacher 10 did recommend placement in her classroom with consideration for adaptations or support.

Teacher 11. Teacher 11 viewed Janet during baseline and did not observe her displaying any of the skills on the checklist. Teacher 11 did observe 8 of the 15 skills or 53% of the skills on the checklist while watching the intervention segment. She did not recommend placement in her classroom based on the baseline segment, however she did recommend placement based on the intervention segment.

Teacher 12. Teacher 12 did not observe any skills from the checklist during baseline and three skills while watching the intervention segment. The percentage of skills she identified during the intervention segment for Janet was 20%.
<table>
<thead>
<tr>
<th>Skill</th>
<th>Observed During Baseline</th>
<th>Observed During Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Modifies behavior when provided with verbal direction</td>
<td></td>
<td>T10&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>2. Complies with directions</td>
<td></td>
<td>T10</td>
</tr>
<tr>
<td>3. Makes own decisions</td>
<td></td>
<td>T11&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>4. Spontaneously begins play activities during playtime</td>
<td></td>
<td>T10 T11</td>
</tr>
<tr>
<td>5. Focuses on task</td>
<td></td>
<td>T10 T11 T12&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>6. Uses materials away</td>
<td></td>
<td>T10 T11 T12</td>
</tr>
<tr>
<td>7. Maintains play activity for appropriate length of time</td>
<td></td>
<td>T10 T11 T12</td>
</tr>
<tr>
<td>8. Puts materials away</td>
<td></td>
<td>T11</td>
</tr>
<tr>
<td>9. Makes transitions from one activity to another</td>
<td></td>
<td>T11</td>
</tr>
<tr>
<td>10. Does not disturb peers</td>
<td>T10&lt;sup&gt;10&lt;/sup&gt;</td>
<td>T10 T11 T12</td>
</tr>
<tr>
<td>11. Socializes with others</td>
<td></td>
<td>T10</td>
</tr>
<tr>
<td>12. Cooperates with others</td>
<td></td>
<td>T10</td>
</tr>
<tr>
<td>13. Takes turns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Shares materials/toys with peers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Responds when spoken to</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Skills observed by Teacher 10  
<sup>b</sup> Skills observed by Teacher 11  
<sup>c</sup> Skills observed by Teacher 12

Table 4.16: Summary of observed skills for Janet during baseline and intervention videotaped segments by early childhood education teachers.
CHAPTER 5

DISCUSSION

This chapter discusses the results of the study investigating the effects of correspondence training and activity schedules on the play behavior of preschoolers with autism in an inclusive classroom. Limitations to the study, results relative to research questions, implications for practice, and directions for future research will be discussed.

Limitations of the Study

This study was limited by the setting and the length of the study.

Setting

Three parents of participants and two volunteers were used to staff the inclusive classroom where this study was conducted. The experimenter was the only early childhood special education staff involved in the classroom. It is not certain the effects of this intervention on a classroom being managed by professional early childhood special education staff.

In this study, the children were only allowed to choose among four play areas in which to play. The need to videotape all aspects of the children’s play during playtime restricted the amount of classroom space that could be used. The space within the range of the video camera allowed four play areas to be established.
Preschool classrooms often offer five or six distinct areas from which children can choose to play. It is not known what the effects of more play area choices would have on the participants.

Length of Study

This study was conducted over a course of 18 weeks. The school year ended before maintenance and follow-up data could be collected. Although generality sessions indicated skills were being maintained across settings, it is not clear how long skills would be maintained over time.

Research Questions

The following is a discussion of the results of the study as they pertain to the research questions provided in Chapter 1.

What are the effects of a play-correspondence-package on the on-task behavior of preschoolers with autism during playtime in an inclusive classroom?

Data were collected each session on children’s on-task behavior during this study. On-task behavior for all participants was low during baseline, with Janet’s observed behavior near zero. Participants were engaged in stereotypic behavior and needed constant prompts to remain in the observed play areas. Ned used play materials for stereotypic movements such as spinning wheels on a truck or bouncing while holding an item. Michael engaged in removing small pieces of paper from the bulletin boards and bouncing across the room. Kelly spent her time in baseline, using play items in a visually stereotypic manner. Janet did not sit down during baseline. She spent her time on the circling the play areas and finger-flicking.
During activity-schedule-training participant's on-task behavior increased and gradually continued to improve. Experimenter prompts were higher during this condition due to the training aspect of the intervention. Figure 5.1 displays both the on-task and experimenter prompt data. If children were not on-task, the experimenter prompted the child to play and modeled appropriate interaction with play materials. Participant's on-task behavior increased for generality sessions during this condition compared to baseline, but remained lower by approximately 45%, than their on-task behavior in the experimental sessions.

Participants on-task behavior in the say reinforcement condition decreased to similar baseline levels, although experimenter prompts remained similar to previous conditions. On-task behavior for all participants returned to baseline levels during the generality sessions occurring during this condition.

For play-correspondence-package conditions, participant's on-task behavior again increased and continued to improve for the duration of the study. Experimenter prompts during this condition gradually decreased for all participants. Negative experimenter prompts decreased for all participants (see Figure 5.1). Levels of on-task behavior were now evident during generality sessions.

Ned and Kelly were returned to say reinforcement conditions. Both children maintained increased levels of on-task behavior, with experimenter prompts continuing to decrease (see Figure 5.1). Kelly’s on-task behavior continued to improve during generality sessions for this condition.
Figure 5.1: Percentage of observed intervals in which on-task behavior (data points) and experimenter prompts (bars) were recorded for each participant during all conditions. Triangles (▲) represent training conditions.
Research reveals that type and accessibility of play materials (Martin et al., 1991; McCabe et al., 1999) teacher directives and modeling (McCathren et al., 1995) serve to promote on-task behavior. In the present study as participant’s on-task behavior increased, experimenter prompts decreased. This finding is consistent with the findings of Martin et al. (1991) and McCabe et al. (1999).

Correspondence training was used along with activity schedules to promote on-task behavior. The results of this study support the existing literature on correspondence training, specifically that it can be used to increase desirable behaviors in preschool children (Baer et al., 1988; Odom et al., 1992; Weninger & Baer, 1990). The findings advocate for the premise that by teaching verbal behaviors regarding appropriate conduct, appropriate nonverbal conduct will occur (Baer, 1990).

The findings in the present study extended the correspondence literature in two ways. First, although previous research has been conducted with preschoolers in inclusive settings, the children were verbal. The present procedure was implemented in an inclusive classroom with four children having limited verbal repertoires. Second, this study employed photographic activity schedules as verbal mediators for correspondence training to occur allowing nonverbal participants to participate.

Activity schedule literature supports the results of this study. Activity schedules have been used to increase the on-task behavior of older individuals with autism (Pierce & Schreibman, 1994; MacDuff et al., 1993) and the on-task play behavior of preschoolers with disabilities (Frazier, 1997; Valk & Schwartz, 1997). This study extends the literature by combining activity schedules with correspondence...
training and implementing the combined strategy with preschoolers with autism in an inclusive classroom. Another extension of existing activity schedule literature was the participation of two female participants in the present study. Other studies have used only male participants.

The present study supports and extends findings in the correspondence training and activity schedule literature. To date, no reported studies have used correspondence training and photographic activity schedules with young children with autism.

**What are the effects of a play-correspondence-package on the play correspondence behavior of preschoolers with autism in an inclusive classroom?**

In baseline, all participants were given the opportunity using activity schedules to select where they wanted to play. They inconsistently made selections by placing photographs on their activity schedules, but only Ned corresponded one play selection to play behavior in baseline.

During activity-schedule-training conditions participants were prompted to make play selections and prompted to play in the corresponding play area indicated on their activity schedules. By the end of the condition, each participant was independently corresponding at least two consecutive play selections with play behavior. Ned and Michael did not exhibit play correspondence behavior in the generality sessions for this condition however, Kelly and Janet each had one match for correspondence.

Play correspondence behavior was at a zero level for Ned during the say reinforcement condition and decreased for the other participants. During play-correspondence-package conditions, participant’s play behavior consistently
corresponded with two of the three play selections indicated on their activity schedules. Play correspondence behavior occurred one time during the generality sessions for this condition for Ned and Kelly. After returning to the say reinforcement condition, Ned and Kelly's play behavior consistently corresponded to their activity schedules during generality sessions. Michael and Janet's play behavior consistently corresponded to at least two of the three play selections on their activity schedules during generality sessions for this condition.

The results of this study endorse findings in other correspondence training literature. Deacon and Konarski (1987) contend that the relationship between verbal behavior and a nonverbal response is strengthened by reinforcement. In the present study, participant's verbal to nonverbal correspondence behavior increased throughout the study as seen in other studies (Deacon & Konarski, 1987; Israel & O'Leary, 1973; Odom et al., 1992). Interestingly by the end of the study, participants were making unprompted comments like, "Forgot to play in blocks" or "I need go dollhouse." Suggesting that, participants were beginning to self-manage their play behavior to correspond with their activity schedules without experimenter prompts. Another indicator of the self-management component was indicated when the participants did not need to check their activity schedules periodically during playtime in order to follow their sequence of play selections.

All of the participants had severe language deficits. Ned imitated short phrases and used spontaneous words for snack time. Kelly and Michael imitated single words, but used no spontaneous language. Janet did not imitate or use spontaneous language. The results indicated that participants, in the absence of extensive verbal language.
could use the photographs to accurately represent play preferences and correspond their play behavior. As the study continued three of the four participant’s verbal language skills improved. Ned was able to eventually use spontaneous language to voice play selections and to review play correspondences. Kelly imitated phrases and by the end of the study used spontaneous single words to make selections. Michael’s verbal imitation improved throughout the study. Janet’s nonverbal skills improved. On one occasion in response to the experimenter prompting her to follow her schedule, she picked up her activity schedule, removed the photograph of the next play area, and proceeded to a play area not indicated on her activity schedule.

The correspondence training literature was extended by the results in this study for the use of photographic activity schedules. The children in this study were taught to use the activity schedules as mediators to indicate play area preferences for the correspondence training component. Correspondence training primarily has been used with individuals who could verbalize. The children in this study quickly learned the relationship between what they forecasted they were going to do and their nonverbal play behaviors. They did however, need the activity schedules as visual cues to make play selections, remain on-task, and follow the sequence of play activities indicated on their schedules.

The findings in this study support existing research on activity schedules. The children in this study learned to follow a sequence of three activities represented on their activity schedules as was done in studies by Frazier (1997), Valk and Schwartz (1997) and MacDuff et al. (1993). The correspondence training component of this intervention package extended existing activity schedule literature. Another extension
of the activity schedule literature was the procedural integrity occurring through the observation and measurement of experimenter prompts. As well, social validity measures were conducted for parents of the participants, early childhood special educators, and early childhood teachers.

To what extent does the child’s on-task behavior generalize to conditions in which the delivery of reinforcement is withheld?

Participant’s gains during experimental conditions were evident in generality probes gathered conterminous with experimental conditions. On-task and play correspondence behavior gradually increased across generality sessions reflecting behavior changes occurring during experimental conditions. Experimenter prompts also consistently decreased across generality sessions (see Figure 5.1). Although the children wanted the reinforcement (stamps on their hands) during the experimental conditions, they continued to follow their activity schedules in the absence of reinforcement during generality sessions.

Initially, none of the participants interacted with other children in the classroom. Only Ned would remain in the same play area as another child. Michael, Janet, and Kelly would run away from peers if they were approached. Ned began to interact nonverbally with peers during the play-correspondence-package condition. He would take turns with the marble works toy or pretend doctors kit. He began to verbally interact with peers during the second say reinforcement condition. Kelly, Michael, and Janet quickly began tolerating peers in close physical proximity and gradually throughout the study began to nonverbally interact with peers in the classroom, such as sharing pretend food or building together with the same blocks.
Existing literature suggests that naturalistic strategies promote the maintenance and generalization of newly learned skills (Rule et al., 1998). This study was conducted in a typical preschool classroom with developmentally appropriate play materials and peer models and addressed these essential components of naturalistic instruction; context, following the child’s lead, and development of functional skills (Rule et al., 1998).

Playtime was presented to the participants in a natural context as it was to the other children in the room in terms of influences of materials, social relations, adult interactions, and time. Interventions occurring within natural contexts promote application of results (Reifel & Yeatman, 1993; Rule et al., 1998) as was indicated by the findings in this study. Participants not only generalized their on-task and play correspondence behaviors to other conditions they also began to use their newly acquired play skills to begin social interaction.

The results of this study extend the literature on naturalistic instruction by the indication that a combined strategy of correspondence training and activity schedules can be implemented within the natural context of an inclusive preschool classroom. Further, the intervention was implemented simultaneously in the natural environment with four preschoolers with autism.

To what extent do parents of the children participating in the study rate the intervention goals relevant for their child?

Five of the eight parents of children participating in the study volunteered to provide social validity information for this study. They were the parents of Ned, Kelly, and Michael. Parents identified play skills their children exhibited after the
intervention as being very important for their children. This suggested that the intervention goals were socially valid for the children participating in the study and their parents. Parents reported that there were positive changes in their children’s play behavior at home as well, particularly when their children were exposed to large family gatherings. Kelly and Michael’s parents specifically mentioned incidents of their children participating in play with other children visiting their homes. All four parents stated that these were new behaviors for their children.

Parents also reported that it was very important for their children to be exposed to typically developing peers. Kelly and Michael’s parents felt another positive change for their children following the intervention, was their child’s increased awareness of peers. Ned’s mother reported that she felt this intervention helped prepare Ned for a placement in an integrated preschool classroom next year.

The findings in this study support the findings in existing literature on parent perceptions of early intervention services and inclusive placements for their preschoolers with disabilities (Guralnick, 1994; Romer & Umbreit, 1998). A study by Guralnick (1994) found that of 281 mothers of preschoolers with disabilities, 85% perceived definite benefits of their children receiving early intervention services in mainstream settings, as did the parents in this study.

**To what extent do early childhood special educators rate the intervention trustworthy and usable?**

Social validity information was gathered from three early childhood special education teachers. The information collected from the teachers included several important factors. First, the teachers observed an increase in the overall play skills of
the participants from baseline to intervention. Second, the teachers felt the improvement of the participant’s play skills was most likely due to the intervention. Third, the teachers reported that the benefits of the intervention on the participant’s play skills were worth the cost, time, and effort to implement the intervention. Finally, all three teachers said they would use this intervention in their classrooms with children exhibiting similar behaviors to the participants they observed in the study.

The results of this study support and extend the social validity literature in terms of intervention procedures. Although the goal of behavioral research is the improvement and implementation of effective educational practices, there exists a “research-to-practice gap” (Carnine, 1998). Behavioral research must be concerned with developing “teacher-researcher partnerships” (Gettinger, Stoiber, & Lange, 1999). The results of this study address the trustworthiness and usability of this strategy by practitioners (Carnine, 1998). Trustworthiness refers to the confidence the practitioner develops in recognizing the intervention as the change agent. The teachers in this study indicated trustworthiness in the intervention as directly influencing positive behavior changes in all four participants. They also indicated the usability of the intervention, which refers to the likelihood of them using the intervention in their own classrooms. All three teachers agreed that the intervention had usability.

To what extent do early childhood educators rate independent play skills for preschoolers with autism as important for inclusion opportunities?

Twelve early childhood education teachers completed information to determine if the behavior skills of children they were assigned to observe were sufficient to warrant the child’s placement in their classrooms. Two of the twelve
teachers felt the participant’s play skills were sufficient to warrant the child’s placement in their classrooms. Eleven of the twelve teachers felt the participant’s play skills following intervention were sufficient for placement in inclusive classrooms. Nine teachers changed their opinions of the appropriateness of the participant’s placement in their classroom.

Social validity of the intervention outcomes was determined when early childhood education teachers indicated a willingness to have participants considered for placement in their classrooms. The response was so positive from the teachers, that Ned’s mother was able to enroll him for participation in a summer preschool program at the same childcare center.

The literature on the changing roles of early childhood education teachers in terms of inclusion was supported by the findings in this study (Odom et al., 1999). Teachers were willing to allow children with disabilities participate in their classrooms when they felt competent and that the children’s needs are being met (Buysse et al., 1996; King-Sears & Cummings, 1996). The results of this study extended the existing literature by describing an non-intrusive, transportable strategy to support preschoolers with autism in inclusive environments (Baer, 1990; Odom et al., 1992).

Implications for Practice

This study suggested that the combined methods of correspondence training and activity schedules were effective strategies for increasing the on-task engagement of preschoolers with autism. The goal in early childhood special education is the prevention and remediation of developmental deficits resulting in placements in the least restrictive environment. This intervention strategy was successful in the
development of play skills facilitating independent performance during playtime.

Independent performance is valued in settings where teacher-child ratios are low. The participants independently used their activity schedules while experimenter prompts were faded and reinforcement eliminated during generality sessions. The participants increased their independent play skills during a 45-minute play period. Independent performance during playtime might possibly increase inclusive opportunities for preschoolers with autism.

The success of implementing this strategy in an inclusive preschool classroom suggested that it could serve as a non-intrusive strategy for facilitating the inclusion of preschoolers with disabilities. Participants initially carried their activity schedules with them to each play center. The activity schedules were small enough to fit beside them on a table or in a small container. The other children in the classroom were not distracted by the activity schedules except to infrequently question whether they could use one. The transportability of the activity schedule provided constant and available visual cues for participants to remain engaged and on-schedule. The implementation of this strategy allowed the participants to increase their play skills and become active members in a community of their peers (Schwartz et al., 1998).

Children with autism have difficulty organizing and interacting with their environment. The use of this strategy appeared promising and revealed itself as a viable strategy for children with autism to enhance their organizational skills and active engagement during play. Photographs provided visual support for participants with severe language deficits to make play selections, transition from one activity to
another, and remain engaged. The results of the study indicated this strategy was a positive intervention to replace inappropriate and stereotypic behavior with appropriate behavior.

Another positive aspect of this study was the use of photographs as verbal mediators for nonverbal preschoolers. The photographs were be used to indicate preference and non-preference activities facilitating increased on-task engagement. These findings suggest the use of this strategy to increase verbalizations regarding preference and non-preference activities reducing disruptive and other inappropriate behaviors.

**Directions for Future Research**

Future research may determine if the skills the participants acquired in this study could be generalized with other intervention agents and across other educational settings. It would be interesting to follow these students to see if the activity schedules could be eliminated when language skills became strong enough to support the verbalizations needed for correspondence training.

This line of research has implications for use with a wide range of children with disabilities. An interesting study might involve the use of sign language and correspondence training with hearing impaired children or the use of augmentative communication devices for nonverbal children.

Future research might investigate the use of correspondence training and printed activity schedules for older children with autism who can read. The written activity schedule could serve as a type of homework log supporting the child’s inclusion in mainstream education.
Finally, research might examine the effectiveness of this strategy used in the home and throughout the day. It might serve as a valuable tool to increase the engagement of children with autism at home and throughout the day. The investigation of reinforcement delayed until the end of the day for corresponding with an activity schedule would prove interesting.

**Summary**

The reauthorization of IDEA in 1997 produced a move in early childhood special education to provide inclusive opportunities for young children with disabilities. Parents and early childhood education teachers identify benefits for both children with disabilities, and children without disabilities.

Successful inclusion of preschoolers with autism is facilitated by independent play skills. In this study, the use of correspondence training and activity schedules was effective in promoting play skills of preschoolers with autism. The intervention was also reported as valuable to parents of the participants, early childhood special educators, and early childhood educators. Children without verbal skills were able to make play selections, remain engaged, and transition from one play activity to another. The children responded quickly to the intervention and the activity schedules seemed important to the children participating in the study. Anecdotally, two of the four participants spontaneously retrieved their activity schedules from the countertop on the first day of summer program.

The challenges confronting early childhood special educators include how to help preschoolers with disabilities develop skills that will allow them to transition successfully into inclusive environments and continue to progress developmentally.
The strategy investigated in this study could be used to facilitate play skills within self-contained classroom. Because the activity schedules are transportable, they can follow the child into any environment.

Early childhood educators are confronted with identifying strategies to support the child’s inclusion in their classrooms. The non-intrusive implementation of this strategy in an inclusive preschool classroom suggests that it is an effective method for not only supporting existing skills, but also promoting skill development in children with autism.

The present study investigated the effects of correspondence training and activity schedules on the on-task and play correspondence behaviors of preschoolers with autism. It was implemented in an inclusive preschool classroom with parents and volunteers managing the classroom. The intervention consisted of using activity schedules to help children correspond their verbal behavior to their nonverbal behavior. Experimenter prompts remained consistently for all conditions. Daily observations were completed during a 45-minute playtime. All sessions were videotaped.

Results of the study indicated that all four children learned to develop an activity schedule and followed a pre-selected sequence of activities. On-task and play correspondence behaviors increased for all of the children.

Parents of the children participating in the study found that the behavior changes resulting from the implementation of the intervention were important for their children and themselves. They also noted positive changes in their children’s play behavior at home.
Early childhood special education teachers felt that the intervention was
trustworthy and usable. They reported observed behavior changes in the
children's play skills were most likely due to the intervention. All three teachers
contended they would implement the intervention in their classrooms for children with
poor play skills.

The information gathered from the early childhood teachers indicated that the
behavioral outcomes resulting from the implementation of this intervention were
valuable. The play skills observed post intervention suggested to these teachers that
the child they observed would benefit from placement in an inclusive environment.

Implications for the use of correspondence training and activity schedules are
broad. The strategy was shown effective with nonverbal children with autism and
would likely be effective with children with mild disabilities as well. It is an
inexpensive, transportable strategy allowing mobility across settings and people. This
is a non-intrusive strategy facilitating the inclusion of preschoolers with autism into
typical environments.

Future research on this topic needs to address the combined strategy of
correspondence training and activity schedules. Directions for future research include
the effectiveness of this strategy for children with other types of disabilities, school-
age inclusion classrooms, and as a strategy for promoting verbalization with nonverbal
children.
LIST OF REFERENCES


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Osnes, P.G., Guevremont, D.C., & Stokes, T.F. (1986). If I say I'll talk more, then I will: Correspondence training to increase peer-directed talk by socially withdrawn children. Behavior Modification, 10 (3), 287-299.


APPENDIX A

PARENT SCRIPT AND CONSENT FORMS FOR PARTICIPANTS
Oral Script for Parental Call

"Hello, my name is Rebecca Morrison and I am a doctoral student in Early Childhood Special Education at The Ohio State University. I am in the process of planning my dissertation research which will take place at the Grove City Christian Child Care Center, in Grove City, Ohio. I will conduct this research under the supervision of Dr. Diane Sainato, Associate Professor, in the School of Physical Activities and Educational Services at The Ohio State University. I am confirming your interest in having your child participate in the study. If so, I will be mailing you a letter that further describes the study and includes a permission slip for participation.

I will be using a strategy called correspondence training with photographic activity schedules to teach your child to interact with toys and eventually make simple play choices. Correspondence Training is looking at the connection between what your child says he/she will do and what he/she actually does. I will use the activity schedules to support your child's verbal skills and visually display play choices.

If you have any questions about the study or the letter I will be mailing, please feel free to call me at 471-7800 or you can contact Dr. Sainato at 292-8709.

Thank you for your interest in my study, I look forward to working with you and your child."
Consent For Participation In
Social And Behavioral Research

I consent to my child's participation in research entitled: The Effects of Correspondence Training Using Photographic Activity Schedules on the Play Skills of Preschool Children with Autism.

Dr. Diane Sainato, or her authorized representative, Rebecca Morrison, has explained the purpose of the study, the procedure to be followed, and the expected duration of my child's participation.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Further, I understand that I am free to withdraw my consent for my child at any time and to discontinue participation in the study without prejudice to me or my child. Possible benefits of the study have been described as having alternative procedures, if such procedures are applicable and available.

Finally, I acknowledge that I have read and understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date:______________________

Name:______________________

Participant

Signed:______________________

Principal Investigator

Signed:______________________

Parent or Guardian

Student Investigator

Witness:______________________
Parent Permission for Videotapes and Photographs

I give Rebecca Morrison permission to videotape and photograph my child
__________________________, during the playgroup at Worthington Christian
Church. I understand the videotapes and photographs will be used for research and
conference presentation purposes only.

__________________________  ______________________
Parent                  Date

__________________________  ______________________
Witness                  Date
Permission for Assessment & Testing

I give permission for my child, __________________________ to participate in the following activities for documentation for research purposes only. Please check the boxes where you grant permission.

- [ ] Vineland Adaptive Behavior Scale: Completed by Suzi Bone (early intervention specialist).

- [ ] Autism Checklist: Completed by Nikki Kerns (early childhood special education teacher).

- [ ] Battelle Developmental Inventory: Completed by Becky Morrison

__________________________
Parent                     Date

__________________________
Witness                    Date
LIABILITY RELEASE FORM

(ALL PARTICIPANTS)

In consideration for __________________ being accepted by Worthington Christian Church for participation in a playgroup.

I hereby release and agree to hold harmless the Worthington Christian Church, its directors, employees and agents from all claims or liabilities of any kind relating to this participant.

Furthermore, I assume all risk to personal injury, sickness, death, damage, and expense to this participation as a result of the said event.

_________________________________  ______________________________________
Participant  Phone Number

_________________________________  ______________________________________
Legal Guardian  Date  Address
APPENDIX B

PEER MODEL INFORMATION
October 24, 1998  Subject: WCC Playgroup

Dear Parents,
Thank you for your interest in the preschool playgroup located at Worthington Christian Church. I hope this will be a beneficial experience for you and your child.

The preschool playgroup was developed to provide an opportunity for young children with special needs to learn play skills along side of their peers. It will also serve as a study site for my dissertation. I am currently a doctoral candidate at The Ohio State University in special education. The strategy being used is a strategy I developed during the 14 years I worked as an early childhood special education teacher. It consists of using picture schedules to help children organize and engage in appropriate play schedules.

Along with promoting positive and appropriate play and social interaction skills with all the children, the children will experience a wide variety of preschool activities. Activities will provide the children exposure to early literacy and color, shape, letter, and number concepts among others. My commitment is for the typically developing children to benefit and grow from their involvement in a preschool experience as well as their exposure to children with differences. I will provide information and support about individual differences for the typically developing peers.

One parent will lead the playgroup each day and one parent will assist the lead parent each day. I will be in the classroom providing intervention for the children with special needs during playtime. I will assist the lead and assistant parents during snack, circle, and story time. If you would like to volunteer one day in the classroom please let me know.

The playgroup will be held Tuesday through Friday, 9:45 – 11:45. It will be in the middle classroom in the preschool hallway (the three-year-old classroom on Sundays). If you prefer a three-day schedule for your child, please let me know I would be happy to accommodate you. The playgroup will run from November through June.

I look forward to working with you and your child. Please don’t hesitate to contact me with any questions or concerns you might have.
Thank you,
Becky Morrison

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Consent For Participation In
Social And Behavioral Research

I consent to my child's participation as a peer model in research entitled: The Effects of Correspondence Training Using Photographic Activity Schedules on the Play Skills of Preschool Children with Autism.

Dr. Diane Sainato, or her authorized representative, Rebecca Morrison, has explained the purpose of the study, the procedure to be followed, and the expected duration of my child's participation.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Further, I understand that I am free to withdraw my consent for my child at any time and to discontinue participation in the study without prejudice to me or my child. Possible benefits of the study have been described as have alternative procedures, if such procedures are applicable and available.

Finally, I acknowledge that I have read and understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: __________________ Name: __________________________

Participant

Signed: __________________________
Principal Investigator

Signed: __________________________
Parent or Guardian

Student Investigator

Witness: __________________________
Parent Permission for Videotapes and Photographs

I give Rebecca Morrison permission to videotape and photograph my child
________________________, during the playgroup at Worthington Christian
Church. I understand the videotapes and photographs will be used for research and
conference presentation purposes only.

________________________
Parent                      Date

________________________
Witness                    Date
LIABILITY RELEASE FORM

(ALL PARTICIPANTS)

In consideration for ____________________ being accepted by Worthington Christian Church for participation in a playgroup.

I hereby release and agree to hold harmless the Worthington Christian Church, its directors, employees and agents from all claims or liabilities of any kind relating to this participant.

Furthermore, I assume all risk to personal injury, sickness, death, damage, and expense to this participation as a result of the said event.

_________________________   __________________________
Participant                  Phone Number

_________________________
Legal Guardian   Date

_________________________
                 Address
APPENDIX C

PLAYGROUP INFORMATION
Parent & Volunteer List

Dear Parents & Volunteers,

I want to thank you for all of your assistance and support. You are all doing a very nice job on your “lead mom” days. The playgroup is running very smoothly and much of the credit goes to you.

The following is a description of your role as “lead mom” or if you stay in the classroom to assist. If you have questions or concerns about any of the items listed below, please let me know. Again, let me express my appreciation and thanks for all your hard work.
Becky

1. Beginning 2-2-99 Becky will not be available during playtime to provide directions and instructions for non-target children.

2. If you have questions about materials or activities during playtime, use your own judgement. Anything I have out in the room may be used. Extra art materials for special projects must be placed in art containers, but otherwise are welcome. Do not invite target children to participate in the art activity.

3. Please do not verbally interact with target children unless it is an emergency or the child needs to use the bathroom. If your child is searching you out for guidance, please make me aware of it, so we can decide how to handle it. Of course, if they seek out hugs that is fine, just non-verbally send them on their way after a hug or two (remember-do not say, go play).

4. Please do not verbally or physically prompt or redirect target children to play or engage in an activity. This might be difficult for you as the parent, if so, please let me know so we can decide what to do.

5. Please do not direct peer models to play when they are in close proximity to target children.

6. If a target child leaves the play area physically guide the child back to the play area. Get my attention or Delia’s. Do not tell them to go play.

7. Please try to remember not to block the camera. It helps to think of placing yourself on the perimeter of the entire play area as a whole.

Please remember to monitor peer models, addressing peer model conflict and behavior issues.
### Playgroup Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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</thead>
</table>
| 9:45 – 9:50 | Children Arrive  
|           | Hang coats and book bags on hooks in the hall |
| 9:50 – 10:50 | Play Centers  
|           | Art, Fine Motor, Dramatic Play, Blocks & Trucks, Table Toys |
| 10:50 – 11:10 | Circle & Music |
| 11:10 – 11:30 | Snack |
| 11:30 – 11:45 | Story Time |
| 11:45       | Depart |

### Materials Needed

1. Children need a book bag with a change of clothes in it each day.
2. Old adult shirt for an art smock
3. Two group snacks each month (enough for 12 children)
4. Two rolls of paper towels each month

Optional: If you would like to send in a 1 – 2 inch, three ring notebook, and a package of form covers, I will use it to collect pictures of your child and samples of their work at school. Please put your child's name on the front of the notebook in permanent form.
APPENDIX D

TOYS AND PLAY MATERIALS
List of Toys & Materials by Play Area

Block Area
Defined by city map carpet
• cardboard blocks
• mega blocks
• star blocks
• waffle blocks
• wooden blocks
• foam blocks
• medium cars
• matchbox cars
• train track & trains
• construction garage & vehicles
• semi-truck
• dump truck
• school bus

Art Table
Defined by Little Mermaid carpet
• construction & writing paper
• paper plates
• pencils
• markers & crayons
• glue sticks
• glitter glue
• tempra paints & brushes
• dot paints
• watercolor paint
• stencils
• play dough & utensils
• popsicle sticks
• material, yarn, macaroni, pipe cleaners
• puzzles

Dollhouse Area
Defined by dark green carpet
• large dollhouse
• dollhouse accessories & people
• Lego table & Lego’s
• marble works & marbles
• magnets
• felt board & accessories
• small dollhouse & people
• zoo animals
• dinosaurs

Kitchen Area
Defined by brown dog carpet
• pretend sink, stove & refrigerator
• pretend food & dishes
• pretend doctor kit
• pretend cash register
• pretend money
• shopping cart
• child size table & chairs
• 3 baby dolls
• baby doll crib
• baby doll highchair
• pooh puppets
• dress-up clothes & hats
APPENDIX E

DATA COLLECTION FORMS
## Data Collection Sheet for On-task & Experimenter Prompts

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APPENDIX F

PROCEDURAL INTEGRITY INFORMATION
Baseline Procedural Integrity

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<tr>
<th>Procedure</th>
<th>Yes</th>
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<tr>
<td>1 Experimenter presented 3x5 inch photographs of four play areas to the child at a table in the classroom.</td>
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<tr>
<td>2 Clipboard with the child's name and Velcro on the front were located on the table beside the photographs.</td>
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<tr>
<td>3 Experimenter asked child, <em>Where do you want to play?</em> and waited 15s for child to respond.</td>
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<tr>
<td>4 If child made a play selection within 15s, the experimenter followed-up by asking the child, <em>Where do you want to play next?</em> And <em>Next?</em></td>
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<tr>
<td>5 If the child did not make a selection within 15s, the experimenter prompted the child to <em>Go play with your toys.</em></td>
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<tr>
<td>6 Experimenter gave general prompts to play only when the child was off-task or engaged in self-stimulatory behavior. (E.g. <em>Go play, you need to play, remember to play.</em>)</td>
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<td>7 Experimenter gave specific prompts to play when the child was engaged in disruptive behavior.</td>
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### Play-Schedule-Training Procedural Integrity

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Yes</th>
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<tbody>
<tr>
<td>1  Experimenter provided photographs of four play areas and a clipboard for the child.</td>
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</tbody>
</table>
| 2  Experimenter asked child to make a play selection. \*Where do you want to play?\*
If the child did not make a selection the experimenter prompted the child to make one. |     |    |
| 3  Experimenter prompted child to place the photograph on clipboard.        |     |    |
| 4  Experimenter followed steps 2 and 3 until the child had three photographs on the front of his/her clipboard. |     |    |
| 5  Experimenter asked the child to name or point to the first play area photograph on his/her clipboard and said \*Show me where that is or show me where you need to play.\* |     |    |
| 6  Experimenter observed child to see if he/she proceeded to corresponding play area. |     |    |
| 7  If child did not go to play area, the experimenter prompted child to look at his/her play schedule and to play in the area indicated. |     |    |
| 8  Experimenter used graduated guidance to prompt child to interact with materials |     |    |
| 9  If child was not interacting appropriately with materials, experimenter modeled appropriate play with materials. |     |    |
| 10 Experimenter allowed the child to interact with materials in the play area for 5 or more minutes. |     |    |
| 11 After 5 minutes if the child was observed off-task, the experimenter prompted the child to get his/her clipboard. |     |    |
| 12 Experimenter told the child, \*We are all done in (name of area). You get a stamp on your card for playing in (name of area).\* |     |    |
| 13 Experimenter repeated steps 5-12 for the second and third photographs on the child’s clipboard. |     |    |
## Say + Reinforcement Procedural Integrity

<table>
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</table>
| 2  Experimenter asked child to make a play selection. *Where do you want to play?*  
If the child did not make a selection the experimenter prompted the child to make one.  |
| 3  Experimenter prompted child to place the photograph on clipboard.       |
| 4  Experimenter followed steps 2 and 3 until the child had three photographs on the front of his/her clipboard. |
| 5  Experimenter placed a stamp on the child's hand or card for each play selection made. |
| 6  Experimenter prompted the child to "Go play and remember to follow your play schedule." |
| 7  Experimenter observed child to see if he/she proceeded to corresponding play area. |
| 8  Experimenter gave general and schedule prompts to play only when the child was off-task or engaged in self-stimulatory behavior. (e.g. *Go play, you need to play, remember your play schedule.*) |
| 9  Experimenter gave specific prompts to play when the child was engaged in disruptive behavior. |
### Play-Correspondence-Package

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Yes</th>
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| 2  Experimenter asked child to make a play selection. **Where do you want to play?**  
If the child did not make a selection the experimenter prompted the child to make one. |     |    |
<p>| 3  Experimenter prompted child to place the photograph on clipboard.       |     |    |
| 4  Experimenter followed steps 2 and 3 until the child had three photographs on the front of his/her clipboard. |     |    |
| 5  Experimenter asked the child to review his/her play selections and said, <strong>Go play, you need to remember your play schedule.</strong> |     |    |
| 6  Experimenter observed child to see if he/she proceeded to corresponding play area. |     |    |
| 7  If child did not go to play area, the experimenter prompted child to look at his/her play schedule and to play in the area indicated. |     |    |
| 8  The experimenter provided specific prompts to the child to remember his/her play schedule when the child was engaged in disruptive, stereotypic, or off-task behavior. |     |    |
| 9  At the conclusion of the play period, the experimenter asked the child to review his/her play schedule. |     |    |
| 10 The experimenter asked the child if he/she played in sequence of play schedule selections. |     |    |
| 11 The experimenter placed photographs of the areas where the child was observed playing on the child’s play schedule. |     |    |
| 12 The experimenter placed a stamp on the child’s card or hand for each photograph that corresponds with the child’s selections. |     |    |</p>
<table>
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<td>need to play, remember to play)</td>
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### Percentage of Interobserver Agreement

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<td>5-4</td>
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Decision Rules

1. Play type (SLAI) will not be coded if the child is off task.

2. The first interval where child is observed manipulating toys in functionally different ways will be coded on-task. If the behavior is observed in the next interval it will be coded off-task (and considered repetitive or perseverative). All consecutive intervals where the behavior is observed will be coded off-task.

3. If the child’s play is obstructed by themselves, another child, or an adult the interval will be coded by placing an X through the entire interval. These intervals will be subtracted from the total number of possible intervals for the child.

4. If the child is going to or returning from the bathroom, or in the bathroom the interval will be coded by placing an X through the entire interval. These intervals will be subtracted from the total number of possible intervals for the child.

5. If the child is out of the view of the camera (and therefore not in a play area) the interval will be coded by placing an X through the entire interval. These intervals will be subtracted from the total number of possible intervals for the child.

6. A prompt will not be coded if the child sits down to play with their back to the camera and an adult non-verbally adjusts his/her position to face the camera.

Observer List: Baseline

1. Physically guide children back to a play area if he/she leaves the area and ask Becky to give a prompt.
2. Monitor target children to ensure they are facing the camera if possible.
3. Give Becky a cue if she needs to adjust a target child’s position for the camera.
4. Ask adults not to block the view of the camera.
5. Cue Becky to prompt target children to go play, if the child is engaged in self-stimulatory or disruptive behavior.
6. Complete Baseline Procedural Integrity
7. Indicate the beginning and ending of each session.
APPENDIX G

SOCIAL VALIDITY FORMS
Parent Instructions

Dear Parents

Thank you for your time. Please follow the directions below.

1. View the videotape labeled # 1 first.
2. While viewing this tape, please complete the checklist marked # 1.
3. The next day view videotape # 2.
4. While viewing this tape, please complete the checklist marked # 2.

Checklist

<table>
<thead>
<tr>
<th>It makes me sad when my child...</th>
</tr>
</thead>
<tbody>
<tr>
<td>I wish my child could....</td>
</tr>
<tr>
<td>It worries me when my child...</td>
</tr>
<tr>
<td>It scares me to think of my child</td>
</tr>
<tr>
<td>It scares me when I see my child</td>
</tr>
<tr>
<td>I wish my child would not do that</td>
</tr>
<tr>
<td>Why does my child do those odd behaviors...</td>
</tr>
</tbody>
</table>

Which tape did you observe your child exhibiting play skills that you feel are important for his/her development?

Give an example of an important skill you observed your child doing.

What concerns you most about your child?
Early Childhood Special Education Teacher Instructions

Instructions for viewing the videotape:

1. Read the sheet entitled “Intervention Procedures.”
3. Participate in question and answer session with Becky regarding Intervention Procedures and the Hawaii Checklist.
4. You will be assigned one child as you view a 5-minute segment of videotape of children playing.
5. Complete the Checklist with a black ink pen.
6. During the next videotape segment you will observe the same child and complete the Checklist with a black ink pen.
7. Answer the follow-up questions.

Follow-up Questions:

1. What skills listed on the Checklist do you see as having the potential for improvement as a direct result of the Intervention Procedures? (Please list the number of the skill as listed on the Checklist).

2. Balancing the time and effort (in your best estimation) it would take to implement the procedures described in the intervention with the changes (if any) you observed in the child’s play behavior would you use this strategy in your classroom?

   No ____    Yes ____
Early Childhood Teacher Instructions

Instructions for viewing the videotape:


2. Participate in question and answer session with Becky regarding Intervention Procedures and the Hawaii Checklist.

3. You will be assigned one child to observe as you view a 5-minute segment of videotape of children playing.

4. Complete the Checklist.

5. During the next videotape segment you will observe the same child and complete the Checklist with a black ink pen.

6. Answer the follow-up questions.

Follow-up Questions:
Based on the skills you observed for the children you were watching, would you recommend that child for an inclusive placement in your classroom for videotape # 1?

Based on the skills you observed for the children you were watching, would you recommend that child for an inclusive placement in your classroom for videotape # 2?
Preschool/Kindergarten Survival Skills Checklist*

Child: _____ Assessor Number: ________ Date: ________

<table>
<thead>
<tr>
<th>Skill</th>
<th>Not Observed</th>
<th>Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Modifies behavior when provided with verbal direction</td>
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<tr>
<td>2. Complies with directions</td>
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<tr>
<td>3. Makes own decisions</td>
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<td>4. Spontaneously begins play activities during play time</td>
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<td>5. Focuses on a task</td>
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<td>6. Uses materials appropriately</td>
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<td>7. Maintains play activity for an appropriate length of time</td>
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<td>8. Puts materials away</td>
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<td>9. Makes transitions from one activity to another</td>
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<tr>
<td>10. Does not disturb peers</td>
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<tr>
<td>11. Socializes with others</td>
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<tr>
<td>12. Cooperates with others</td>
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<td>13. Takes turns</td>
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<td>14. Shares material/toys with peers</td>
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<tr>
<td>15. Responds when spoken to</td>
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