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# The Effects of Peer-Play Level on Initiations and Responses of Preschool Children With Delayed Play Skills

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The potential impact of peer-play opportunities on the overall development of young children has been well-documented in the social development, occupational therapy, and special education literature. However, the effect of peer characteristics on the manifestation and facilitation of specific types of play roles and behaviors has received little attention. This topic is of key importance to occupational therapists who are striving to develop interventions that enhance the development of social participation and play in preschool children.

The purpose of this study was to examine the differences in initiation and response exhibited by preschool-aged children with social-play delays when participating in free-play dyads with peers of differing developmental levels. A single-subject alternating treatments design was replicated across five preschool-aged children with developmental play delays. Each child was paired with one peer who had lower developmental play skills and one peer who had higher developmental play skills. The arranged dyads were given the opportunity to play together in a specially designed playroom at their school. Their interactions were videotaped and later coded. All five children generally showed more initiation and response to initiation during play with higher-level peers, although one participant showed less differentiation for initiation than the other four children. An occupational therapist working with a preschool child with play delays and wanting to facilitate the child's initiation and response in play situations should consider pairing the child with play delays with a child who has higher play skills.

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## Statement of the Problem

Play has been described as the primary occupation of children (Bundy, 1992), and it is through social experiences that more mature adaptive behavior develops (Cohen, Sparling-Cohn, & O'Donnell, 1993; Hartup, 1983). Few would dispute that play-based activity constitutes much of the social milieu of preschool children, fostering development of fine motor, language, social interaction, and role skills (Neville-Jan, Fazio, Kennedy, & Snyder, 1997; Pratt, 1989). For most children, successful play interactions serve as a medium through which to experience success and demonstrate social competency (Reynolds & Jones, 1997). In addition, success in play enhances learning through the development of higher-order skills such as initiative. Both initiation and response to initiations made by a peer are important and desirable elements of interactive play. Unfortunately, not all children experience the positive play interactions that provide a foundation for social success.

Greene (1997) viewed play as an avenue through which children learn social norms, and occupational therapists address this social aspect of play during intervention. In such intervention, the focus is on interaction, or mutuality with another person (Ladd, 1983; Smith & Boulton, 1990). Children achieve success in social play and attain mutuality when they share a series of initiations and responses to initiations during the course of interaction. Though of paramount importance

during child development, such success during social play may be difficult to achieve.

Peer play is considered a central aspect of childhood play, beginning in toddlerhood and continuing throughout the life span (Simon & Daub, 1993), but from a developmental perspective, it is particularly important during the preschool years. Whether or not a child reaps the developmental and social benefits of play is influenced by countless personal and environmental variables (Pellegrini, 1985). In general, information on the specific influences of peers on the development of play and social interaction skills in preschoolers with developmental delays is limited. Available studies have reported that children with developmental disabilities have been noted to exhibit infrequent initiation during play with peers (Fenrick, Pearson, & Pepelnjak, 1984; Jenkins, Odom, & Speltz, 1989; Richardson, 2002) and to demonstrate few positive responses to peers' initiations to play (Guralnick & Groom, 1987; Guralnick & Weinhouse, 1984), even in environments that are designed to foster social interaction and play.

Providing natural opportunities for social interaction (Goldstein, English, Shafer, & Kaczmarek, 1997; Yang, Wolfberg, Wu, & Hwu, 2003), the inclusion of preschoolers with developmental delays in classrooms and playgroups has become an increasingly common occurrence in schools and clinics. These natural opportunities, however, may not be successful in meeting social interaction goals for all children with special needs (Buysee & Bailey, 1993). Typically, inclusive education programs consist of children with special needs enrolled in classrooms with same-age peers, though some researchers (Guralnick & Weinhouse, 1984) have suggested that multiage groupings, consisting of children both with and without developmental delays, may be best suited to the advancement of peer-related social skill development. Such findings indicate a need for further study of the effect of peer-play partners on the social interaction of young children with special needs (Fantuzzo et al., 1996; Fewell & Kaminski, 1988).

The particular interest of the principal investigator of this study was the effect of a peer's developmental play level on the initiation and response to initiation exhibited by preschool children with play skill delays during free play. The play of preschoolers is characterized by an increase in independence and in social play with others, including initiative behavior. In addition, for preschool children without delays more initiation has been noted in girls 3 to 5 years of age than in boys, and levels of initiation increase for 4- and 5-year-olds overall (Saracho, 2001).

However, studies have shown that preschool children with disabilities exhibit either more or less initiation and response than children without disabilities, depending

upon their peer playmates and environmental contexts (Couch, 1997; Richardson, 2002; Strain, 1974). Opportunities to be "the leader" and to initiate play activity have been noted particularly in situations where an older child with a disability is paired with a younger or developmentally less mature child (Riordan, 1998).

The reviewed studies suggest a relationship between a child's abilities in comparison with those of a peer and a child's frequency of occurrence of initiations and responses with that peer during play. Given the opportunity in inclusive settings for therapists to influence play dyads, it is important to know if choice of a peer for a child with a play delay can influence the child's initiation and response to initiation in play environments. Therefore, the following two research questions were addressed: First, what is the difference in the amount of initiation of interaction exhibited by preschool-aged children with play delays when interacting with peers with higher developmental play skills as compared to when interacting with peers with lower developmental play skills? Second, what is the difference in the amount of response to initiation of interaction exhibited by preschool-aged children with play delays when interacting with peers with higher developmental play skills as compared to when interacting with peers with lower developmental play skills?

## Methods

This study consisted of a single subject, alternating treatments design (Kazdin, 1982) that was replicated across five children with developmental play delays and their peer-play partners. These partners represented two categories: five peers with lower developmental play skills (low peers) and five peers with higher developmental play skills (high peers). The study consisted of both baseline and treatment phases, which were conducted under the same conditions. The investigators used this method to analyze the data by looking for differences in initiation and response during free-play opportunities between the two conditions.

The baseline phase for this study consisted of play in one dyad condition, whereby the participant was paired with either a higher or lower peer playmate. The baseline condition was included to control for the possibility that either the higher or lower peer playmate would have a notable effect on the initiation and or response behaviors of participants during free-play opportunities. An intervention phase with alternating treatments followed the baseline phase. On each intervention day, each participant randomly was paired for free play, once with a lower peer and once with a higher peer. Two days of data collection per week were scheduled per participant as possible. Data

collection for each child was completed within 1 month (see Figures 1–4).

### Participants

The participants and their peer playmates were recruited from preschool classrooms within a laboratory school. Study procedures were approved by the Human Subjects Review Committee at the University of Washington. Potential participants and peer playmates were first identified based on level of play development as determined by school staff. The primary author interviewed teachers to confirm a delay in play skills in all potential participants and to confirm play skill level in peer playmates. Teachers also provided general information on each child's social interaction skills, though no specific questions relating to initiation or response were posed. In addition, either the primary author or an undergraduate occupational therapy student administered the Preschool Play Scale (PPS) to all participants.

The PPS is an observational, performance-based rating scale of the developmental play level of children birth to 6 years of age (Bledsoe & Shepherd, 1982; Knox, 1997). It is composed of four dimensions of play (space management, material management, imitation, and participation) and yields individual dimension scores as well as an overall play age score. Bledsoe and Shepherd, using two raters and a sample of preschool children who were typically developing, studied both interrater and test–retest reliability. Interrater reliabilities were moderate to high (Kendall tau rank-order correlation coefficients of .89 to .97 for category scores;  $r = .98$  to  $r = .99$  for dimension scores; and  $r = > .99$  for overall play age scores). Test–retest reliabilities ranged from Kendall tau rank-order correlation coefficients of .49 to .91 for category scores;  $r = .86$  to  $r = .96$  for dimension scores; and  $r = .96$  for play age scores. Both Bledsoe and Shepherd and Harrison and Kielhofner (1986) studied the concurrent validity of this measure. For the purposes of this study, no formal reliability data were collected for the PPS.

Using the aforementioned participant selection process, five groups of three children were formed to participate in the study. For each identified participant, two peer playmates who met inclusion criteria also were selected. The higher peer playmates in each group were determined to have higher play skills than the participant (as measured by the PPS) and considered to be a good play model by school staff. The lower peer playmate was determined to have lower play skills than the participating child (as measured by the PPS) and confirmed by school staff reports. Playmates consisted of children with and without developmental delays. All children in each grouping were class-

mates and had been in the same classroom with each other for at least 7 months. An attempt was made to have the difference in play level (by PPS scores) of playmates be 1 year higher (for higher peers) and 1 year lower (for lower peers) than the play age of the participant. The criteria for the lower peer was not met for those participants with mean play ages less than 3 years.

The children in all of the dyads, except the first, were enrolled in inclusive preschool classrooms. The children in dyad 1 were enrolled in the Early Childhood Educational Advancement Program (ECEAP) of the school. The ECEAP program is designed specifically to meet the educational needs of 3- and 4-year-old children from families of limited income who are “at risk” for reasons such as identified developmental disabilities or abuse and/or neglect. The children in this study represented a mix of ages, genders, ethnicities, and abilities, both within and across dyads. Descriptions of the individual children in each dyad are provided below. The ages of the participating children and their respective PPS mean play ages are reported in Table 1.

*Dyad 1: Matthew, Eva, and Lenny (pseudonyms).* Matthew, the participant for dyad 1, was an African-American boy who demonstrated aggressive behaviors, poor attention, and minimal group and constructive play skills. His lower peer, Eva, was an African-American girl who demonstrated a preference for fine motor and constructive play. His higher peer, Lenny, a Caucasian boy, was a good play model with excellent negotiation and imagination skills.

*Dyad 2: Amy, Robert, and Grace (pseudonyms).* Amy, the participant for dyad 2, generally required adult direction for successful play interactions. Her lower peer Robert, also required adult direction for successful play and he received speech and occupational therapy services. Her higher peer,

**Table 1. Descriptions of Participants and Mean Play Ages**

Participant	Chronological Age	Mean Play Age (Years)
<b>1. Matthew</b>	<b>4 yrs, 9 mos</b>	<b>4.4</b>
Eva (Lower peer)	4 yrs, 5 mos	2.5
Lenny (Higher peer)	4 yrs, 9 mos	6.0
<b>2. Amy</b>	<b>4 yrs, 5 mos</b>	<b>2.7</b>
Robert (Lower peer)	4 yrs, 10 mos	2.4
Grace (Higher peer)	4 yrs, 6 mos	5.1
<b>3. Nathan</b>	<b>5 yrs, 0 mos</b>	<b>4.0</b>
Zach (Lower peer)	4 yrs, 1 mo.	3.0
Roxie (Higher peer)	5 yrs, 3 mos	6.0
<b>4. Sam</b>	<b>6 yrs, 3 mos</b>	<b>2.8</b>
Jeff (Lower peer)	5 yrs, 4 mos	1.9
Timmy (Higher peer)	5 yrs, 0 mos	5.7
<b>5. Emily</b>	<b>3 yrs, 8 mos</b>	<b>2.5</b>
John (Lower peer)	5 yrs, 9 mos	2.3
Molly (Higher peer)	5 yrs, 0 mos	5.7

Grace, was a good play model, despite frequently “mothering” other children. All children were Caucasian.

*Dyad 3: Nathan, Zach, and Roxie (pseudonyms).* The participant for dyad 3 was Nathan, an Asian-American boy who lacked dramatic and cooperative play skills and engaged in much rough-and-tumble play. Nathan’s lower peer was Zach, a Caucasian boy who had poor speech articulation and a tendency to wander. Roxie, Nathan’s higher peer, was a Caucasian girl who was considered a good play model, despite a tendency to be “bossy” (per school staff report).

*Dyad 4: Sam, Jeff, and Timmy (pseudonyms).* Sam was the participant for dyad 4. He generally engaged in onlooker play (observation only, of a peer’s play) and required prompts for reciprocal play. Despite his age (6 years, 3 months), he was enrolled in an inclusive preschool class due to his developmental needs. Jeff, Sam’s lower peer, had muscular hypotonia and was generally accustomed to having peers do things for him, rather than participating in play or other activities. Timmy, Sam’s higher peer, had some fine motor skill delays, but was considered a good play model. All children in this dyad were Caucasian.

*Dyad 5: Emily, John, and Molly (pseudonyms).* The participant for dyad 5 was Emily, an Asian-American girl. Though no diagnosis was confirmed, she was suspected of having a diagnosis on the autism spectrum. She generally needed adult direction for successful play interactions and had a tendency to perseverate verbally. John, Emily’s lower peer, was a Caucasian boy with a diagnosis of Down syndrome. He was very social and appeared to enjoy following other children. Molly, Emily’s higher peer, was an Asian-American girl who was frequently a group play leader.

### Study Variables

The independent variable for this study was peer-play skill level and consisted of two levels: (1) peer play skill level higher than that of the participant; and (2) peer play skill level lower than that of the participant. All participants were exposed to both conditions of the independent variable. There were two dependent variables:

The first, initiation of interaction by the participant, was defined as spontaneous behavior by the participant in an attempt to begin interaction with a peer (e.g., the participant gave a toy, said “let’s play dress up,” or threw a ball to a peer). The second, response by the participant to initiation of interaction by a peer, was defined as complementary interactive behavior by the participant that was emitted following a peer’s initiation of interaction (e.g., the participant took a toy offered by a peer, returned a ball thrown to him or her, or accepted a peer’s invitation to play dress up). The appropriateness of initiations and responses was not evaluated.

### Procedures

*Setting and play materials.* All play dyad observations were conducted in a specially designed playroom during the regular school day at a university-affiliated early childhood center in the Pacific Northwest. All children in the study were students in one of three integrated preschool classrooms or ECEAP. All programs at the center embrace the inclusion of play activities within the curriculum. In addition, this school is a research site and as such the children are accustomed to numerous visitors. An adult research assistant was positioned outside of the playroom door for safety and monitoring purposes only and was given specific instructions as to how to interact and respond to the children when necessary, with an emphasis on keeping the focus on the interaction between the children in the playroom.

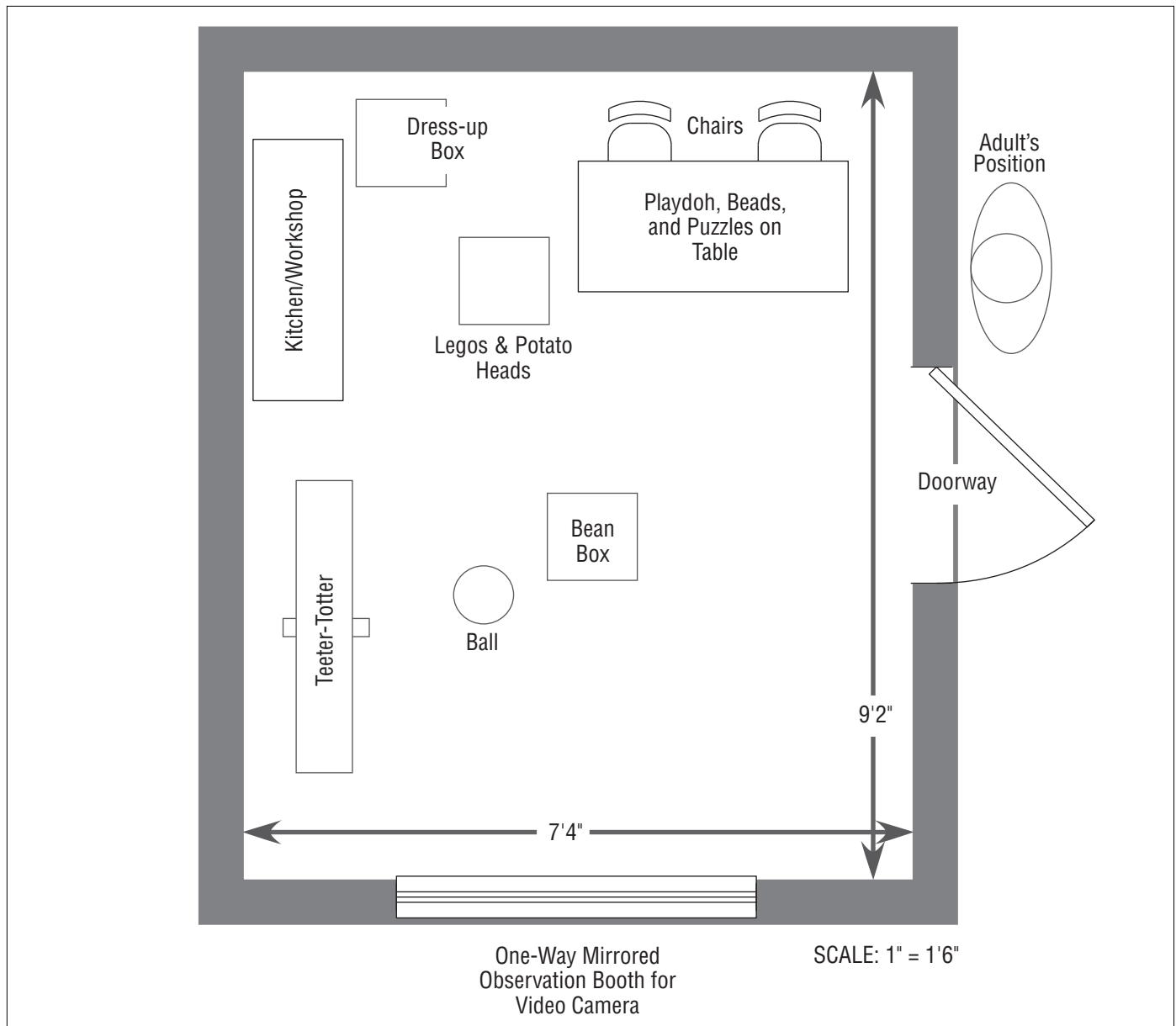
The playroom and play materials were held constant throughout the study. See Table 2 and Figure 1. The playroom, a small testing room, was wired for sound that was transmitted to an adjacent observation room, making it ideal for unobtrusive videotaping. Both rooms were separated by a one-way mirror that allowed persons in the observation room to observe and videotape the children’s play without disrupting the interactions. The playroom was equipped with toys specifically chosen and arranged for the study. Five categories of play items were selected from the PPS through consensus by a panel of experts considered specialists in child development. The panel also selected 10 play items, through consensus, two from each of the five selected categories that would be developmentally appropriate, balanced for possible gender differences, and encouraging of social interaction among children.

### Data Collection

An analog video camera with microphone was used to videotape the play sessions. Data were collected from videotapes of each free-play episode. These free-play episodes were 11 min in length, allowing for a full 10 min of useable footage for data coding. Random assignment without

**Table 2. Play Categories and Play Items Used in This Study**

Category of Play	Play Items
Gross Motor	teeter-totter playground ball
Exploration	small bean box and small toys Play-Doh and accessories
Manipulation	beads with string puzzles
Construction	Legos Mr. and Mrs. Potato Head
Imagination	play kitchen and workshop items dress-up box



**Figure 1. Diagram of a playroom and arrangement of study materials**

replacement of peer playmates (higher and lower) was determined by the flip of a coin once for every 2-day block. Two days of data collection per week were scheduled per participant. This was negotiated with school staff to provide minimal disruption to the children's school programs. Data were collected on 5 days for four of the children. Amy had 6 days of data collection because classroom activities precluded alternating conditions on 1 day.

**Data Coding.** Initiation and response were coded using interval coding procedures that allowed continuous viewing of each tape without interruption. In order to do this, single electronic beeps were superimposed onto the videotapes at 30-second intervals. The timing of the first beep was randomly determined. Using the beeps as cues for the beginning and ending of each interval, the observers recorded codes into an audiotape recorder as they viewed the tapes.

For example, if during a single 30-second interval, Sam threw a ball to Timmy and gave Timmy a tool when asked, the coder would say "initiation" and "response" respectively to each act. The raters viewed a tape continuously, without stopping. The codes were later transcribed onto coding forms. An episode of initiation or response only needed to happen once during a given interval for the interval to be coded positively for that behavior. Multiple occurrences were not counted. There was a maximum of 20 intervals and thus a maximum of 20 initiations and responses could be attained. This procedure was chosen over momentary time sampling since it allowed continuous observation through whole intervals in an effort to get data that were truly representative of the children's interactions.

**Agreement. Inter-observer agreement.** A training videotape including two children who were not participants in

the study was made. Using this videotape, the two raters practiced coding for the dependent variables (initiation and response). These two raters coded all of the videotapes for the first week of the study and 20% of the subsequent tapes and attained 100% agreement. The latter were randomly selected. To determine interrater agreement for initiation and response behaviors coded during observation intervals, point-by-point percent agreement was calculated (Kazdin, 1982). Agreement was calculated by dividing the number of agreements (intervals coded the same by both raters) by 20 (the maximum number of possible agreements), and then multiplying that quantity by 100. Agreement for an interval was noted only when both raters marked the same behavior (e.g., initiation) in that interval. Average interrater agreement during the study ranged from 80% to 100% ( $M = 92\%$ ).

*Procedural agreement.* To ensure that standard procedures were used within and across conditions, a procedural agreement checklist (Billingsley, White, & Munson, 1980) was developed. It delineated procedures related to room arrangement and management, videotaping, timing of research activities, and adult interactions with the participants and peers. This checklist was completed by a research assistant during each data collection session. Procedural agreement was 100% for all but one session. For that session agreement was 91% as the timing device unexpectedly stopped, necessitating timing the remainder of the session using a wristwatch with a second hand.

## Results

The occurrence of initiation of interaction for each participant and the occurrence of response to initiation of interaction are shown in Figures 2 and 3, respectively. During the intervention phase when the two conditions were alternated on a single day, the number of data collection days per child was 5. However, Amy had an extra day during the intervention phase because only data with the lower peer were collected on the first day of intervention. All 5 children generally showed more initiation and response to initiation during play with higher-level peers, although Amy showed less differentiation for initiation than the other 4 children. Summary data for differences between conditions during the intervention phase of the study are reported in Table 3.

The purpose of this study was to investigate the effect of peer developmental play level on the initiation and response behaviors of preschoolers with play skill delays. The results of this study indicated that for preschoolers with developmental play skill delays, play with familiar peers who had higher-level skills generally resulted in higher lev-

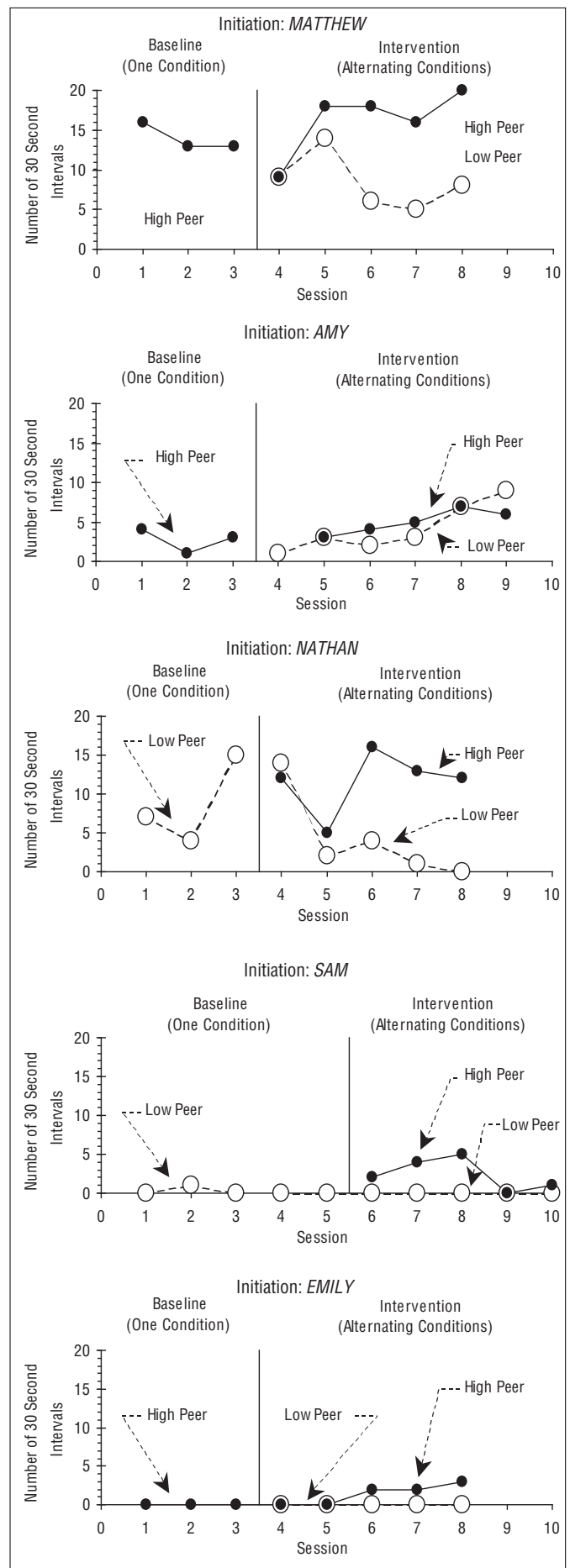


Figure 2. Initiation of interaction with high and low peers.

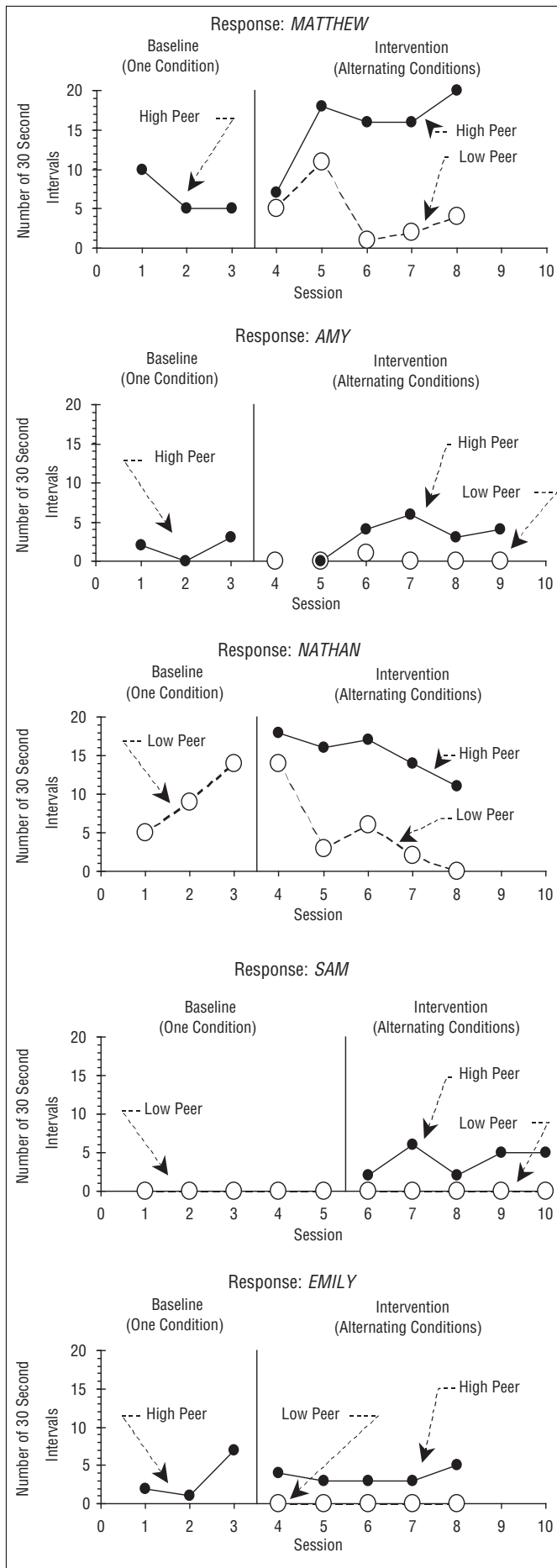


Figure 3. Response to initiation of interaction with high and low peers.

Table 3. Across-Subject Comparison of Initiation and Response and Peer-Play Level

Variables	Matthew HI/LO	Amy HI/LO	Nathan HI/LO	Sam HI/LO	Emily HI/LO
Initiation	4/0	2/1	4/1	4/0	3/0
Response	5/0	4/0	5/0	5/0	5/0

Note. These summaries were drawn from the figures illustrating the performance of individual children. This table illustrates the number of paired sessions that a particular condition was more prevalent. The maximum number of sessions was five. Sessions in which both conditions were equal were not included.

els of both initiation and response. By highlighting the effect of peer playmates with both higher and lower skills on these behaviors, the results of this study have the potential to impact the way in which occupational therapy interventions for preschool children with developmental play delays are developed and implemented.

Closer review of the videotapes revealed that participants often responded to an initiation by a peer prior to making an initiation. Further, during review of the tapes, it was noted that both Matthew and Nathan often engaged in reciprocal interactions with their peers. This involved mutual give and take and the creation of play schemes. For example, Matthew would put on a ring from the dress up box, and say "I am a superhero, zap" as he pointed it at Nathan. Then the two boys would continue to play using a superhero theme.

When therapeutic goals emphasize the development of initiation and response in play, the data from this research suggest that pairing a preschool child with a higher peer may facilitate the emergence of initiation and response and/or increase the frequency of these behaviors. This is contrary to research that suggests children tend to initiate and lead when paired with lower level peers (Erwin, 1993; Mulderij, 1997). However, because levels of initiation increase in 4- and 5-year-olds (Saracho, 2001), it may be that the participants in the current study were developmentally too immature to demonstrate initiation and leadership without having a model. Regardless of the explanation, the conflicting results between the current research and research by Erwin (1993) and Mulderij (1997) serve as a caution to practitioners about generalizing findings from one age group to another.

Practitioners also can benefit from examining the patterns of initiation and response development in children with low play skills. Emily and Sam both had absent to low levels of initiation and response. Both of these children's levels of initiation and response were zero for all data collection sessions with a lower peer, except for one day in baseline for Sam. However, during the intervention phase, when paired with a higher peer, Sam demonstrated initiations on 4 out of 5 days and responses on 5 out of 5 days. Emily only

demonstrated initiations and responses with a higher peer. Relative to initiations it was not until her sixth session with a high peer that an initiation was observed. In two subsequent sessions Emily continued to exhibit initiations. This suggests that sometimes a participant may need to be paired with a higher peer for several days before the participant begins to initiate. Therefore, a therapist should try pairing a preschool child with low play skills with a child with higher play skills during numerous occasions to adequately evaluate the effectiveness of such pairings.

## Study Limitations and Directions for Future Research

There are a few important points that need to be considered with regard to this study and future related research. First, caution is indicated in generalizing the results of this research because of the sample size ( $N = 5$ ), the participation of children from only one university laboratory school, and the inclusion of children with mean play ages less than 4.4 years as measured by the PPS. Second, specific information on children's initiation skills would have been valuable, though a good measure was not available. Third, in retrospect, the study could be shortened by eliminating the baseline phase, as differences between baseline and intervention phases were not noted.

Nevertheless, the consistency of results across preschoolers of differing age (3 through 6 years of age), gender, ethnicity, and developmental level suggests that further research is likely to be successful in establishing generality of effect for children similar to the ones in this study. Given the research results, replication of this study in other settings where children play is desirable. In addition, future research is needed that includes children such as those with autism or physical disabilities.

## Recommendations for Practice

The primary practice recommendation from this study is that, in the absence of data or experiences that would contradict, occupational therapists working on social play skills with young children with play delays should consider pairing these children with peers with higher skills. The findings from this study suggest that such pairings may result in the demonstration of higher levels of initiation and response during free play. In order to determine whether or not such a pairing is effective for a particular child, the therapist should systematically collect data through direct observation or videotaping, and then chart the data. This process is congruent with evidenced-based practice for occupational therapists that work with preschool children

through direct service or through consultation in preschool or home environments.▲

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