
The School as Social Context: Social Interaction Patterns of Children With Physical Disabilities

Pamela K. Richardson

KEY WORDS

- school-based occupational therapy
- social environment

OBJECTIVE. The purpose of this study was to investigate the characteristics of the school social environment experienced by children with physical disabilities and the social interactional characteristics of children with physical disabilities in the school environment. The goal was to understand the interactive processes that support or inhibit these children's social interactions.

METHOD. Naturalistic observation and participant interviews were used to collect data on social interaction patterns of three children with physical disabilities 5 to 8 years of age who were enrolled in age-appropriate regular education classrooms. Descriptive codes were obtained through constant comparative analysis.

RESULTS. Four themes were identified that characterized aspects of the social environment affecting the social interactions of children with disabilities: reciprocity, characteristics of social and play interactions, effects of adult involvement, and quality of occupational engagement.

CONCLUSION. The study supports the need for occupational therapists to focus intervention on multiple aspects of the social environment to facilitate children's socialization.

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Pamela K. Richardson, PhD, OTR, is Assistant Professor, Department of Occupational Therapy, San Jose State University, One Washington Square, San Jose, California 95192-0059; crichar007@aol.com.

The relationship between physical disabilities and impaired social development in children has been well documented. Children with physical disabilities have been found to have a variety of social deficits, including limited participation in active and social play and increased dependence on others to make social arrangements (Brown & Gordon, 1987; Mulderij, 1996, 1997; Rubin, Fein, & Vandenberg, 1983), poor social skills (Philip & Duckworth, 1982), limited intrinsic motivation (Levitt & Cohen, 1977), lack of drive, and decreased concentration (Salomon, 1983; Sheridan, 1975). They have shown a significantly restricted ability to initiate and direct social interactions with siblings (Dallas, Stevenson, & McGurk, 1993a) and a tendency to engage in rigidly hierarchical relationships where they assume the role of the younger child (Dallas et al., 1993b). At school, children with disabilities participate in less cooperative play, more solitary play, and more play with teachers than typically developing peers (Nabors & Badawi, 1997). Medical and therapeutic interventions during school hours can disrupt children's class and free play time, making them less accessible to peers for unstructured social interactions (Lightfoot, Wright, & Sloper, 1999).

The play deprivation caused by lack of environmental engagement can result in secondary social, emotional, and psychological disabilities that persist into adulthood (Missiuna & Pollock, 1991). These secondary disabilities can include isolation, poor self-esteem, poor social adjustment, and unemployment (Blum, Resnick, Nelson, & St. Germaine, 1991; Kokkonen, Saukkonen, Timmonen, Serlo, & Kinnunen, 1991; LaGreca, 1990; Law & Dunn, 1993; Stevens et al., 1996; Varni, Rubenfeld, Talbot, & Setoguchi, 1989; Wallander, Feldman, &

Varni, 1989; Wallander & Varni, 1989; Yude & Goodman, 1999). Lack of mobility, overprotection by parents, and lack of opportunities for peer interaction have been cited as contributing factors to the poor social adjustment of many young adults with physical disabilities (Lightfoot et al., 1999; Stevens et al., 1996; Strax, 1991).

Contemporary theoretical and practice frameworks in occupational therapy support a focus on the interaction between the individual and the environment (Dunn, Brown, & McGuigan, 1994; Law et al., 1996; Yerxa et al., 1989). Additionally, current pediatric frameworks advocate a top-down approach to evaluation in which the quality of the child's participation in the environment is of primary concern (Coster, 1998). However, to apply these frameworks to the social functioning of children with physical disabilities, it is necessary to develop a better understanding of what specific factors in the social environment experienced by children with physical disabilities facilitate or inhibit social and occupational performance.

The school environment is an appropriate context in which to investigate children's socialization. The early school environment appears to be a critical point in children's social development where they establish an attitude toward school and themselves that is closely related to the quality of peer relationships (Ladd, 1990). The limited amount of literature on how children with physical disabilities experience their school social environment suggests that these children experience physical, organizational, and interactional barriers to social participation (Lightfoot et al., 1999; Nabors & Badawi, 1997).

The concept of social networks frames investigation of how children's social environments affect their social development. A major function of social networks is to provide support, which is defined as "resources that are provided by other people and that arise in the context of interpersonal relationships [and] reach individuals through their social network connections" (Belle, 1989, p. 1). When well-functioning, social networks prepare children to become competent within the particular cultural or ecological context in which they live (Tietjen, 1989) and provide them with the skills to develop their own social networks (Cochran & Brassard, 1979). Through interactions with members of the social network, children learn the essential skill of reciprocal exchanges or the ability to offer support as well as to receive it. Children who do not engage in reciprocal exchanges will not acquire the ability to offer help and support and, consequently, will have difficulty establishing and maintaining relationships that facilitate the development of adaptive social networks (Cochran & Brassard, 1979).

In a longitudinal study of children's social networks, Feiring and Lewis (1989) found that the biggest change in

the number of peers in children's networks occurred between 6 and 9 years of age, reflecting children's transition to school and increased exposure to peers. Lewis, Feiring, and Brooks-Gunn (1988) found that children with handicapping conditions had larger social networks than typically developing peers, but unlike their peers, the social networks of children with disabilities did not show an increase in the number of peers relative to the number of adults with increasing age. The authors concluded that children's developmental delays might have limited their ability to access peers for social interactions independently, consequently limiting the number of peers in their social networks.

The positive aspects of social networks for children with physical disabilities also have been documented. Perceived social support has been suggested as an important protective factor against psychological maladjustment for children with physical disabilities (Varni & Setoguchi, 1991). In a study of children with limb deficiencies and amputations, the most powerful predictor of depressive symptoms was lack of classmate social support (Varni et al., 1989), which was also found to be correlated with trait anxiety and general self-esteem (Varni, Setoguchi, Rappaport, & Talbot, 1992). Children who were able to develop early relationships with peers had higher self-esteem, better mental health, greater levels of independence, and better employment records as adults (Strain & Smith, 1996).

The data on social networks in children with physical disabilities suggest that differences in the composition of their social networks limit opportunities to engage with peers. However, children with physical disabilities value the peer support available in their social networks and have better psychosocial and functional outcomes when this support is present. Further investigation of the school social environment can provide occupational therapists with an understanding of the interactive processes that support or inhibit children's social interactions and, hence, a framework for intervention. Therefore, this study sought to answer the following questions:

1. What are the characteristics of the school social environment experienced by children with physical disabilities?
2. What are the social interactional characteristics of children with physical disabilities in the school environment?

Method

A qualitative approach was used to investigate the school social environment and interactional characteristics of children with physical disabilities. Data were collected through naturalistic observation as well as through semistructured and informal interviews of the child and adult participants.

Participants

I used purposive sampling to select three children with physical disabilities (pseudonyms Edgar, Rosa, and Richard) who were between 5 and 8 years of age and enrolled in age-appropriate regular education classrooms. I chose this age group to observe children in the process of making the transition from primarily family-centered to more peer-oriented social networks (Feiring & Lewis, 1989; Howes, 1988; Ladd, 1990). To limit the scope of the study to social issues related to physical disability, I selected participants who were at or near grade level academically and were free of significant cognitive, communication, or behavioral problems that could affect their ability to enter into age-appropriate social engagement with peers. The children attended three different school programs in the same California community. Adult participants included the classroom teachers, special education teachers and aides, and occupational therapists and physical therapists who worked with the children at each site. The participants and their school programs are described in Table 1.

Data Collection

I used naturalistic observation combined with participant interviews to collect data on social behaviors. I conducted classroom observations over an 8-week period in the last

quarter of the school year. At each of the three sites, I observed 10 to 11 full school days, observing 1 or 2 school days at each site during any given week. Each teacher helped me to design the observation schedule for her classroom in advance, structuring it to include typical school days as well as occasional special events, such as assemblies, field days, or special projects. During the observations, I maintained field notes that described the interactions and experiences of each child throughout the entire scope of daily school activities, including classroom, recess, lunch, transitions, arrival and departure, and specialist times. This approach allowed me to observe children's interactions during times in the school day when varying levels of structure and varying amounts of adult and peer involvement were expected. When recording behaviors in field notes, I also recorded antecedent events and outcomes of the interactions.

I conducted individual, semistructured interviews with each child's classroom teacher, occupational therapist, physical therapist, and special education teacher or classroom aide. Interviews focused on the adult's perceptions and observations of the child's social engagement and peer relationships at school. I also conducted informal interviews with all child and adult participants throughout the study to check findings with the participants (Lincoln & Guba, 1985). One adult participant from each site also reviewed

Table 1. Characteristics of Child Participants and Educational Programs

Child	Child Characteristics	Program Characteristics
Edgar	<p>Eight-year-old third grader Spanish-speaking family: parents and infant sister Fluent in spoken English Myelomeningocele, independent in wheelchair Receives occupational therapy twice a week, daily reading tutor, and catheterization program at school.</p> <p>Teacher quote: "Good-natured, loving, and caring but lacking in self-confidence. He wants to reach out to other children and be part of the group but doesn't always know the appropriate way."</p>	<p>Open alternative program Multigraded classroom (grades 3–6); 24 students Full-time instructional assistant to help with lesson preparation and general classroom management Eight students receive resource room intervention and occasional occupational therapy consultation for learning or behavioral issues (Edgar is not one of them) Approximately 25% of class from Spanish-speaking or bilingual homes Almost all instruction done in English</p>
Rosa	<p>Six-year-old first grader Bilingual family: parents and two older sisters Fluent in spoken English Myelomeningocele, independent in wheelchair Receives 1.5 hr pull-out special education daily and occupational therapy and physical therapy after school twice a week</p> <p>Teacher quote: "Friendly, well-liked, and open but needing to be more assertive and more self-aware as to how she is perceived by others."</p>	<p>K–1 combination class. 25 students Special education teacher coteaches class 4 hr per day Three students fully included (Rosa and one student each with Down syndrome and developmental delay), one student with severe behavioral problems mainstreamed part-time Approximately 50% of class from Spanish-speaking or bilingual homes All instruction done in English</p>
Richard	<p>Five-year-old pre-kindergarten student English-speaking family: adoptive grandfather, aunt, and 5-year-old cousin Spastic diplegia, uses walker Receives occupational therapy and physical therapy after school twice a week</p> <p>Teacher quote: "He has great spirit and self-confidence and an ability to deal with whatever life presents to him."</p>	<p>Private child care and preschool Approximately 20 students per day in pre-kindergarten class (some part-time students) Four students fully included in class (Richard, two students with mild autism, and one student with behavioral problems) Full-time special education aide in class, consulting special education teacher present 1 to 2 days per week. Special education support was being withdrawn gradually to prepare Richard to enter kindergarten in fall with no support.</p>

Note. All names are pseudonyms.

the initial draft of this article to check the validity of the conclusions. An experienced qualitative researcher reviewed portions of the raw data, coded data, and thematic data analysis to check the credibility of the coding scheme and analysis as well as to check the assumptions and hypotheses developed during the data collection and analysis process.

Data Analysis

I coded the data from the field notes and interviews using constant comparative analysis (Glaser, 1965). Coding categories were developed through the process of examining and sorting the data. I identified 10 categories that described aspects of children's social interactions and social experiences through this process. The categories were solitary play (parallel play, playing alone), adversarial interactions (arguments, teasing, physical aggression, etc.), helper interactions (child takes the role of helper), helpee interactions (child is being helped by others), play/social (engagement in play or socialization with peers), unsuccessful interactions (attempts to initiate an interaction were unsuccessful), individual adult attention (any adult attention), special or different treatment (special teaching techniques, therapy intervention, physical assistance, etc.), on-task/independent activity (child was working independently at a task), and off-task (child was not attending to or participating in the task). When coding was complete, I prepared a data display for each coding category.

The 10 descriptive codes generated four pattern codes from which I identified interactive patterns between the children and the social environment (Miles & Huberman, 1984). The pattern codes were reciprocity, effects of adult involvement, characteristics of play interactions, and quality of occupational engagement.

Results

Reciprocity

The children in the study offered help frequently to both adults and peers. Helping efforts were often directed toward other children who had special needs. Relationships with these classmates seemed to provide important opportunities to engage in reciprocal interactions. All three children had a friend with special needs, and numerous instances of reciprocal helping were observed within these relationships. The most naturally animated, assertive, and caring behaviors observed occurred during these interactions. Other helping interactions suggested a strong desire to be a useful member of the class.

The teacher asks for volunteers to harvest cilantro in the class garden. Edgar raises his hand and says, "Me, me!" The teacher calls on two other children, then comes over to Edgar and tells him to help the two other children. He goes

outside with a small trowel and digging fork. The cilantro is in the middle of a raised bed, and Edgar cannot reach it from his wheelchair. He sits at the edge of the bed and chops at the chard with his tools.

This type of "helping" experience was observed for all three children. Others appeared to not always take the children's offers of help seriously and, consequently, did not give them the chance to take a productive role in activities. The lack of opportunity to take on the role of helpers marginalized their participation, and limited their ability to experience meaningful engagement in classroom occupations.

By contrast, a desire to help did not always extend to taking a role in classroom jobs, such as cleanup or group projects. Teachers were inconsistent in conveying their expectations that the children do their fair share, although they expressed frustration that the children did not take responsibility for being contributing class members. The response of their peers to the lack of cooperative effort ranged from resentment to an "I'll take care of it myself" attitude.

The teacher announces cleanup for recess. The children start to pick up rapidly so that they can be dismissed. Rosa closes her journal, and her crayon falls to the floor. She wheels up to Iris, who is nearby at the sink washing her hands and asks her to pick up the crayon. Megan is busily straightening up the table. Iris finishes washing her hands and hurries back to the table to be dismissed. The crayon is still on the floor. Rosa goes directly outside, and Megan puts Rosa's journal away.

Not surprisingly, most of the help the children received involved physical assistance. Many peers, particularly those in the upper grades, had developed the ability to anticipate needs and offer help unobtrusively. These helping instances often served as a positive peer interaction opportunity. Edgar in particular appeared to revel in these brief interactions.

The kids head in from recess across the field. Tim struggles to push Edgar's wheelchair across the grass. Edgar drops a book (it looks like on purpose). Tim says, "I'll get that for you." Edgar laughs, almost a shriek, as Tim gives it to him.

This tendency to equate helping with socializing was seen on numerous occasions in this study. Peers and adults approached readily to help, resulting in an interaction that was usually positive as well as centered on the child's needs. These interactions seemed to encourage inappropriate bids for attention at other times, as the children in the study attempted to re-create the positive social experiences attained during helping interactions.

Although adults and other children appeared to be able to ascertain when help was truly needed, numerous instances of unsolicited and unneeded help offered to each child were observed.

Rosa is in a group of children making spiders out of pipe cleaners and felt. The teacher asks each child to pick out four pipe cleaners to be the legs. Anna and Andrea immediately start helping Rosa get pipe cleaners. The teacher tells them, "You help her pick them out." Anna lays the legs out on the felt body of the spider. Rosa sits quietly and watches. The teacher explains how to glue the spiders then gives everyone a glue bottle. Rosa starts to squeeze glue onto her spider. Anna says, "No, Rosa!" She takes Rosa's glue bottle and puts the glue on then folds the felt over to make the body. Rosa raises her hands and says to the teacher, "We're done!"

The children rarely declined this type of unnecessary help. The value of the positive social interaction appeared to outweigh the value of performing the task independently.

Effects of Adult Involvement

All of the children in the study received substantial adult attention, which ranged from assistance with physical, self-care, and academic tasks to monitoring of academic and play activities. Adults were very "present" in the children's environment, even during inherently unstructured activities such as recess or lunch. At times, the children sought out adults as social partners. The adults were willing to adjust their interactive style to suit the children's needs, providing interaction experiences that were less challenging and more immediately rewarding.

Richard sits down at the table at the play kitchen. He plays by himself for a few minutes, until the aide comes over. They talk and play for a couple of minutes until the aide leaves, then Richard plays by himself for awhile. The aide is sitting nearby, and Richard initiates a conversation with her about a TV show. He approaches a nearby table where the teacher is sitting. He talks to her and plays around with her for a few minutes, doing a lot of giggling.

Adults may have approached the children in this study for interactions because they were less frequently engaged with peers and, therefore, more available for interactions with adults. Adults also were observed to interrupt children's play interactions by involving themselves in the play activities or offering assistance.

Rosa is in a group of children playing word bingo. The special education teacher sits down to play with them. Rosa looks at her card and says, "I got a Bingo." The teacher says, "Not yet." The teacher compliments Rosa each time she marks a square correctly. She rarely does this with the other children.

Although at times the adult assistance facilitated the children's abilities to participate in activities, interaction with adults during recess and play times often served to remove them from the opportunity to be part of a peer interaction group and disrupted the flow of play activities. The time spent in one-to-one or small group activities with

adults appeared to form the basis for a more social adult-child relationship.

The special education teacher takes Rosa and two other children to the special education room. They stop in the office to visit. Rosa gets a kiss and hug from the speech therapist and resource room teacher in the office. The children stop to pet the office cat. They stop to count toy pigs in the window of the resource room.

Numerous incidents were observed where teachers and aides provided significant support for the children's classroom and social participation, and on balance the influence of adults on the children's social environment was positive. Richard's special education teacher commented, however, that one of her biggest dilemmas was how to provide enough support that the regular education teacher was willing to have her and her students in the class, but not so much that the students became overly dependent on her presence. This statement illustrates the fine line between support that facilitates social inclusion and "support" that inhibits peer interactions.

Characteristics of Play Interactions

The children in the study were observed to have many unsuccessful attempts at initiating interactions with others. Causes appeared to be poor timing, interaction attempts that were interpreted by peers as inappropriate, and lack of interest on the part of the potential play partner. In addition, their difficulty with physically approaching children for play sometimes resulted in verbal compensations, such as shouting at children from a distance or, in some cases, tattling.

Edgar watches three girls play jump rope. The recess supervisor tells him to move away from the girls so that the rope will not hit him. He laughs at the girls, who are starting to get silly with the jump rope rhymes. He moves closer to one of the girls who is turning the rope. She pushes his wheelchair away with her foot and says, "Move!" He moves back.

As this anecdote demonstrates, the children in the study were frequently onlookers, rather than active participants in play. At times, this behavior was a result of their initiations being rebuffed. Other episodes of onlooking occurred because physical limitations precluded participation in the activity.

When unsuccessful in engaging their peers, the children often approached an adult to socialize, almost always receiving a positive response. Adults also approached them to offer assistance or socialize. Consequently, as stated earlier, many of their play and social interactions involved adults.

A second play characteristic observed in the children in the study was a lack of depth of engagement, or superficiality, of their social and play interactions. During recess and

other free play times, the children moved freely between groups of peers. Episodes of extended one-on-one play interactions were infrequent. A “hit and run” quality to their socialization was observed. They engaged with many children, but did not stay long with a specific individual or group. Many of their play and social interactions centered on themselves through helping interactions and conversations about their equipment.

Rosa leaves the classroom with a group of girls to go out for recess and snack. The girls cluster around Rosa, opening her yogurt and juice containers for her and getting out her cookies. Rosa and the others chatter away as they eat snack. The girls leave after a few minutes, and another group of girls approaches Rosa to ask her about her wheelchair.

The children in the study did not engage in a large amount of solitary play, and when they did, it often was by default rather than by choice usually because attempts at engaging others were unsuccessful. During solitary play, they were not fully engaged in their activities, often directing their attention to other children playing nearby.

Richard plays with the cars on the car mat, watching as two other boys play with a marble game a foot or two away. He repeatedly makes overtures to the two boys that are barely acknowledged. The other boys continue to play together enthusiastically. Richard plays alone, occasionally looking over at the boys.

Quality of Occupational Engagement

The quality of engagement by the children in the study in academic and play occupations was inconsistent. Although at times all three demonstrated episodes of absorbed attention in activities, at other times they required adult attention to persist at ordinary tasks. They received adult supervision and encouragement during both play and classroom activities. When attention was not focused on them, they frequently sought attention from others nearby. When directed at other children, these interaction initiation attempts were most often rebuffed.

The teacher is sitting on the floor with a group of children, introducing a counting activity. Rosa puts her arm around Megan and leans into her. Megan gently pushes her away. Rosa crawls off around the perimeter of the group. The teacher sees her and tells her to sit next to Iris. Rosa crawls up to Iris, who smiles and puts her arm around her. Rosa sits there for a moment, then crawls behind the teacher, telling her that she is going to sit in the circle because she cannot see her. The special education teacher looks over from her group and says, “Rosa, quit messing around.”

None of the children’s teachers identified them as having attention deficits. Rather, the frequent pursuit of adult attention appeared to be more related to the experience of having adults constantly available for assistance and praise.

Edgar’s teacher noted that though he was very capable academically, he seemed to require adult attention to complete even routine assignments. Even when engaged in an activity, he managed to find a way to attract attention to himself.

During quiet seat work time, Edgar picks up a book he had chosen earlier and makes a couple of brief attempts to read. He takes the book back to his cubby, wheeling close to several children and peering over their shoulders. They each stop to look at him briefly and return to their work. Edgar goes back to his seat to write a poem. He lays his head on the table and sighs loudly as he writes.

Each of the children spent time away from classmates because of interventions such as therapy, catheterization, tutoring, and adaptive physical education. The missed classroom time sometimes disrupted the children’s ability to be fully engaged in the classroom activities.

Edgar returns to the room as the class is quietly listening to the teacher read a story. He pulls up next to the counter, plays briefly with the geosafari game, and then picks up a book. Edgar makes a show of holding the book up in front of his face. He is utterly uninvolved with the story.

Richard was more successful than the other two children at engaging in extended object-centered or make-believe play with other children. He was not as focused on obtaining adult attention, which allowed him to direct his own attention to his peers and the task.

Richard is working a large alphabet floor puzzle. Two girls walk across the puzzle. Richard says to them, “Don’t walk on the rug!” He looks over at me and says, “We’re making a carpet. We take the letters out.” I tell him I like the carpet. He says, “You can’t help us.” Another boy comes and watches. He holds a letter L like a gun and pretends to shoot Richard, who continues to work diligently.

Richard’s ability to immerse himself in play and to maintain his engagement in activities without the help of adults was commensurate with that of his peers. Consequently, he seemed more likely to be viewed as “just another kid” as a play partner rather than as someone who needed help. This ability to maintain occupational engagement seemed to facilitate his ability to engage in reciprocal play with peers.

Discussion

The importance of reciprocity in the peer relationships of children with disabilities has been emphasized in recent studies (Grenot-Scheyer, Staub, Peck, & Schwartz, 1998; Van der Klift & Kunc, 1994). Of primary importance is the opportunity for children with disabilities to develop a balance between providing and receiving help. In this study, each of the children had developed reciprocal relationships with other children in their class who had special needs.

These relationships had evolved into friendships. However, classroom structures to support reciprocity were limited and inconsistently applied. Teachers seemed to have difficulty identifying situations where the children with physical disabilities could offer authentic assistance to others.

Snell, Janney, and Colley (2000) argued that help should be provided on an as-needed basis, not on the basis of global perceptions of the individual as “able” or “not able.” The children in this study appeared to be quite skilled at identifying situational needs for help. However, the fact that interactions with peers were more reliably positive when they were being helped than when they attempted to engage socially seemed to encourage them to seek or accept help when it was not truly necessary. This acceptance of helping interactions tended to reinforce the perception among children and adults that they were not able and, therefore, not truly a peer.

Meyer et al. (1998) discussed “friendship frames” that characterize the social relationships between adolescents with and without disabilities. The authors found that the “I’ll help” frame was the most frequently observed social interaction pattern, and when children with disabilities were viewed with this frame, they were not viewed in the “just another kid” frame. Consequently, adults who supported helping behaviors of children without disabilities may have actually facilitated the development of unbalanced peer relationships, making it more difficult for the children with disabilities to be perceived as an equal. Staub, Schwartz, Galluci, and Peck (1994) described helping relationships that evolved into friendships but emphasized that both parties had something to contribute, facilitating the reciprocity of the relationship.

The findings of the present study related to the effects of adult interaction support the findings of these previous studies. The adults were able to limit inappropriate helping by peers and actively encouraged the children with disabilities to be independent. However, they were less able to provide opportunities for the children with disabilities to help others, perhaps for several reasons. Time limitations and the need to manage the class as a whole were challenges for the classroom teachers. Teachers and aides did not appear to have a clear understanding of the children’s physical disabilities, as evidenced by the many questions on this topic directed toward me. Consequently, it was often difficult for them to develop and communicate performance expectations confidently. The occupational and physical therapists were knowledgeable about the children’s functional skills, but because they spent little time in the classroom, this knowledge was not conveyed consistently to the teachers. The aides were better acquainted with the children as social beings than the teachers because of the individual time

spent with them. However, their duties as classroom helpers seemed to result in more helping and social interactions, which tended to draw the children away from peer interaction opportunities and did not nurture the children’s roles as helpers.

The quality of the children’s social and play interactions in this study suggested that they lacked skills in the initiation and maintenance of interactions. These deficits could be attributed to difficulty reading social cues, lack of knowledge of appropriate ways to engage others in interactions, and lack of real-life experience to draw on to enrich the social or play experience. The frequency with which they engaged in supported social interactions with adults may have detracted from their opportunities to engage in more developmentally appropriate interactions with peers. It also created expectations about the structure and theme of play and social interactions that could not always be met when interacting with peers.

The findings regarding the quality of the children’s occupational engagement also appeared to relate to the adult involvement in their school and play activities. Interactions with adults were child-centered. The expectations developed during these interactions of being the center of attention seemed to result in attention seeking during other activities, which affected the children’s abilities to experience meaningful engagement in occupations of play and school work. Each classroom program offered many opportunities for active participation, but the children were not always able to take advantage of these opportunities because of their difficulty with fully immersing themselves in their daily occupations. These daily occupations are the basis for the development of friendships and social support networks (Cochran & Brassard, 1979; Hartup, 1979). Occupational engagement that is decreased in quality and quantity can potentially affect children’s social relationships, adjustment, and life satisfaction (Ladd, 1990; Lightfoot et al., 1999; Strain & Smith, 1996).

Implications for Occupational Therapy Practice

The results of this study suggest several areas in which school-based occupational therapists can improve the social learning context for children with physical disabilities. The focus of intervention must expand beyond the child to include adults and peers in the school environment. Treatment frameworks that address the interaction between the child and the social environment as well as psychosocial components of function are essential (Cronin, 2000; Richardson, Florey, & Greene, 2001). Key areas for intervention include the following: developing strategies for children with physical disabilities to exploit fully opportunities to engage in daily school occupations, educating adults on

ways to create opportunities for children to be actively engaged participants in daily occupations, and facilitating reciprocal interactions between children with and without disabilities that promote the development of friendships and supportive peer networks. The occupational therapist's knowledge of physical and psychosocial development and the effects of disabling conditions as well as the interaction between the individual and the performance context can be used to educate adults and children; to alter or adapt the social and physical environment; to provide consultation to other professionals; to develop programs; and to provide direct intervention to children in groups, classrooms, and individual contexts. This involvement requires a broader and more visible role for occupational therapists in school-based practice.

Directions for Future Research

Further study of the structure of the social networks of children with physical disabilities can elucidate how their play and socialization compares with typical peers and identify areas for further research and intervention. Analysis of the structure and theme of social interactions between children with and without physical disabilities can inform us on the relationship between helping and social interactions in peer relationships. Investigation into the role of childhood occupations in the play, socialization, and friendship of children with physical disabilities can yield important information on the relationship between the quality of occupational engagement and success in social interactions. Additionally, exploration into children's perceptions of helping, playing, and reciprocating may help to understand how children with and without physical disabilities construct their social relationships and negotiate the roles of helper, helpee, and play companion. Finally, within the school environment, the relationship between adult involvement in children's socialization and children's social success with peers deserves further investigation. In the meantime, this study contributes a conceptual frame with which to observe the effects of the social environment on the ability of children with physical disabilities to engage in interactions that will support the development of social support networks. ▲

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