Part X

Children with Special Needs

The concluding section of this *Handbook* is devoted to the increasingly important topic of children with special needs. Karen Diamond reminds us that approximately 10% of the world's population has disabilities that can interfere with social functioning. Depending on how disability is defined, this percentage can vary dramatically according to country or state policies and practices (sometimes between 30–70%). No matter how the statistics are derived, the number of children with disabilities is large. Many of these children are unable to participate in social activities on the level of their typically developing peers.

How well do children with mild to severe disabilities adjust to the peer group? Do certain types of classroom structures (e.g., inclusive) promote higher levels of peer interaction for children with disabilities than others? How can parents, teachers, and other adults provide supporting opportunities for social interactions? Diamond discusses these and many other questions in the context of describing how deficits in cognitive processes (e.g., mental retardation) and emotion regulation (e.g., autism) increase the probability of peer interaction difficulties. However, environmental factors that include adult coaching, attitudes towards involving children with disabilities in peer interaction, and opportunities for associating with peers can serve to mediate linkages between cognitive and emotional regulation deficits and the development of social competencies. She also explains how disabilities that do not affect cognition or emotion regulation (e.g., physical disabilities, chronic illness such as asthma or cancer, blindness) likely result in different, but lesser challenges for peer group interaction. Future research that fosters an understanding of which social context characteristics are most important for facilitating social abilities in children with disabilities as well as discovering how typically developing children may benefit from interacting with peers with disabilities are pointed to as exciting new directions for study.

Bonnie Brinton and Martin Fujiki have pioneered research in a new area of social development research that focuses on children with specific language impairment (SLI). They also cover profound hearing loss in their chapter. It is fitting that this volume ends with a synthesis of their work as it takes readers to the beginning of scholarly inquiry in an area where little was known just a few short years ago. They begin with a discussion of how

profound hearing loss develops and some of the challenges that it poses for family communication and peer group interaction. The extant research literature on why profound hearing loss is often associated with children not being integrated into the fabric of peer group interaction is reviewed. From there, the authors focus on different profiles of linguistic strengths and weaknesses that children with specific language impairments bring to social interaction. It is estimated that 7% of children suffer from this disorder that stems from relatively unknown causes. The research of Brinton and Fujiki clearly highlights the importance of functional communication skills in socially competent behavior (see Hart, Newell, & Olsen, in press). They have documented how some children with SLI have difficulty entering ongoing conversations, negotiating, collaborating, and making joint decisions. Children with SLI are also prone to be more anxious and wary with peers, and suffer from deficits in language abilities that are detrimental to friendship formation and maintenance functions. Future research in this area will focus on effective and efficient ways to simultaneously facilitate language and social skill development so that children with SLI will be better able to function in socially competent ways.

References

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29

The Development of Social Competence in Children with Disabilities

Karen E. Diamond

The World Health Organization estimates that 10% of the world's population has some type of disability that interferes with full participation in the community in which the individual lives (WHO, 1999). However, definitions of disability are "moving targets" that change across communities and cultures. While individuals with more severe disabilities or identified syndromes are likely to be identified as disabled in many communities, this is less often the case for those with less severe disabilities. It is not surprising to find that children who are identified as having "mild" disabilities in Western schools are unlikely to be identified as disabled in other groups (Harry, Rueda, & Kalyanpur, 1999).

Over the past several decades in the United States, there has been an increasing emphasis on including children with disabilities in activities and environments designed primarily for children without disabilities. Opportunities that children with disabilities have to participate in activities with their typically developing peers can be very different, even within a single country. For instance, in a recent report, the proportion of elementary age children with disabilities enrolled in regular education classes in the United States ranged between 30–70%, with variations related to state policies and practices (U.S. Dept. of Education, 1997). Bochner and Pieterse (1996) reported that at least half of children with Down syndrome born in the 1970s in New South Wales, Australia, received education in primary schools designed for typically developing children, while almost all children with Down syndrome born during the same time period in South Wales, Great Britain, were enrolled in self-contained special education schools.

Normalized life experiences for children with disabilities have different meanings within

different cultures, and cultural expectations for success vary widely. Ideas of equity in opportunity and treatment reflect distinctly Western cultural values (Harry et al., 1999). Many families expect that a child with a significant disability will be cared for by family members throughout his or her life. In these families, the critical issues for a child's social development may be quite different than for families whose goal is to have their child with disabilities participate in school, work, and community activities.

If children are to successfully participate in school and community settings with peers, developing age-appropriate social behaviors is an important challenge. There is consistent evidence that children with disabilities display lower levels of social competence than typically developing peers. Peer relationship problems have been reported for children with learning disabilities (Juvonen & Bear, 1992), communication disorders and mild mental retardation (Guralnick, Connor, Hammond, Gottman, & Kinnish, 1996), and sensory disabilities (Erwin, 1993), as well as for children with significant mental, physical, and behavioral disabilities (Staub, Schwartz, Gallucci, & Peck, 1994) and chronic health problems (Wallander & Varni, 1998). For all of these children, problems with peer relationships become especially evident as children's activities become less structured (e.g., recess or lunch at school).

Because independent living is an important value in Western societies, much of the research on social relationships between children with disabilities and their typically developing age-mates has taken place in European countries or the United States. This research forms the basis for this chapter. The framework for discussing social development is a distinctly Western one. In addition, some disabilities that will be discussed in this chapter (especially learning disabilities and mild mental retardation) are unknown in many groups. The social stigma surrounding a child's identification as a "slow learner" is uniquely Western.

Contextual Variables

Contextual variables are related to social competence for children with disabilities. In recent research, Guralnick and his colleagues (1996) found that preschool children with mild disabilities displayed more frequent social interaction and higher levels of social play when they were in a play group with typically developing children than when they participated in a specialized group that included only children with disabilities. Bronson and her colleagues found that preschool children with disabilities displayed clear benefits in the quality of their social interactions with peers when they were enrolled in classrooms that were most similar (in terms of class size, teacher:child ratio, activity choices, and with a small proportion of children with identified disabilities) to early childhood settings designed for children without disabilities. Children in more inclusive settings engaged in more and higher levels of peer interaction and were more independent and less controlled by adults. Relationships between classroom structure and social competence remained significant even after accounting for the child's intellectual abilities (Bronson, Hauser-Cram & Warfield, 1997; Hauser-Cram, Bronson, & Upshur, 1993). Similar results have been reported for older children, and for children with more severe disabilities (Fryxell & Kennedy, 1995).

Developmental Perspectives on Peer-Related Social Competence for Children with Disabilities

The extent to which children with disabilities grow up to live independently (or semi-independently) as adults depends to a considerable extent on their ability to engage in appropriate social interactions with others. Dodge and his colleagues have suggested that children's social strategies are governed by underlying social-cognitive processes, including encoding relevant social cues, interpreting these cues correctly, generating a variety of responses, evaluating each response, and enacting the selected response (Crick & Dodge, 1994; Dodge, Pettit, McClaskey, & Brown, 1986). Guralnick (1999) adapted this model for children with disabilities, postulating that the social-cognitive skills described by Dodge and his colleagues are built upon foundation processes of emotion regulation and shared understanding. These foundation processes, along with social-cognitive processes, are nested within *higher order* processes that "represent the over-arching social task recognition, monitoring, and goal maintaining (planning) features that characterize socially competent functioning" (Guralnick, 1999, p. 22). Thus, foundation processes of emotion regulation and shared understanding, social information-processing variables, and higher order processes determine the social strategies that a child uses in an interaction. If any of these processes are adversely affected by characteristics of the individual (e.g., cognitive deficits) or of the environment (e.g., environmental factors that make emotion regulation more difficult), less competent social strategies may result. Because these processes are closely linked, significant peer interaction deficits may result when there are even relatively small discrepancies from expected developmental levels (Guralnick, 1999).

Qualities of the social environment also contribute to the development of socially competent behavior (Diamond & Innes, 2001; Guralnick, 1999). One would hypothesize that children who have opportunities to practice social skills within supportive peer social networks are likely to demonstrate more social competence than children without these experiences. An important component of supportive peer networks includes the adults who support children's development of age-appropriate social interaction strategies. Teachers provide support when they arrange the physical environment to allow interactions to occur and use child-directed learning strategies in their teaching (Staub et al., 1994). Parents of children with and without disabilities play an important role in fostering children's peer social network by arranging play opportunities outside of the school classroom (e.g., Block & Malloy, 1998; Ladd & Hart, 1992). Finally, the attitudes of others (including attitudes of peers and adults) play a role in supporting opportunities for social interactions (Helmstetter, Peck, & Giangreco, 1994; Okagaki, Diamond, Kontos, & Hestenes, 1998).

What does this suggest about social development of children with disabilities? First, disabilities that are associated with deficits in cognitive processes (such as mental retardation) or emotion regulation (for example, autism) increase the likelihood that a child will have significant difficulties in peer interaction. In addition, this model suggests that environmental factors mediate the influence of cognitive and emotional regulation deficits on the development of socially competent behaviors. These environmental factors include opportunities to participate in a broad range of social networks, the role played by adults in helping children develop appropriate social interaction strategies, and attitudes toward the

participation of children with disabilities in peer activities. Finally, this model implies that disabilities that do not affect cognition or emotion regulation (e.g., physical disabilities or blindness) are likely to have different, lesser impacts on children's development of age-appropriate social relationships.

What Do We Know about the Social Development of Children with Disabilities?

Research in inclusive play groups has consistently demonstrated that children with disabilities are included in social interactions with their peers much less than are children without disabilities, with social play less sophisticated than that of typically developing peers (Guralnick & Neville, 1997). Despite lower overall rates of interaction, interactions between children with disabilities and their typically developing peers have been reported to occur quite often in preschool and elementary school settings (Guralnick et al., 1996). Although varying with the type of disability, the majority of children with disabilities who participate in programs with their typically developing peers are reported to have at least one mutual friend (Buysse, 1993). These results suggest that children with disabilities are included in some activities with typically developing peers. At the same time, because children with disabilities participate in social play less often and in less sophisticated ways, their social experiences are likely to be different from those of typically developing children. The sections that follow focus on research that has examined the social development of children with specific types of disabilities.

Disabilities that affect cognition

Children with mild mental retardation or learning disabilities.   In the United States, children with learning problems related to low levels of school achievement without other obvious disabilities are typically identified as having either a learning disability or mild mental retardation. There is substantial evidence that children with learning disabilities, mild mental retardation, and low ability are not clinically different groups. Gresham and MacMillan (1997) argue that "blurring of these formerly distinct groups makes much of the research on differences in social competence and affective characteristics [of children with these disabilities] uninterpretable" (p. 403). Thus, they suggest that research on the social skills of children with mild disabilities (i.e., students with mild mental retardation, specific learning disabilities, and low ability) should be aggregated. This is the approach that is taken in this chapter.

Research on the social competence of young children with mild mental retardation conducted by Guralnick and his colleagues has used a planned play group methodology to study the development of young children's social relationships. Results have been consistent in describing children with mild disabilities as less preferred playmates than their peers (e.g., Guralnick et al., 1996), with peer interaction difficulties associated with deficits in

communication skills (a higher order process), as well as difficulties using appropriate interaction strategies (i.e., deficits in social information processing) which may, or may not, be related to deficits in communication and cognition (Guralnick, 1999). The importance of communication skills for social interaction is supported in many studies in which typically developing children were more successful in their social bids than were children with communication disorders (Guralnick et al., 1996; Hartas & Donahue, 1997).

Recently, Kravetz, Faust, Lipshitz, and Shalhav (1999) found some support for the hypothesis that difficulties in interpersonal understanding contribute to social behavior problems in preadolescent children with learning disabilities. Deficits in generating alternative solutions to social problems have been reported in studies of adolescents with learning disabilities (e.g., Hartas & Donahue, 1997). Leffert and Siperstein (1996) found that 10–13-year-old children with mild mental retardation were similar to typically developing peers in accurately interpreting hostile intentions in peer conflict situations, and varying their choice of social strategy based on the situational context. Unlike typically developing children, children with mental retardation encoded benign intention cues with significantly greater accuracy than they interpreted them. In the procedure used in this study, both hostile and benign intention cues were associated with negative outcomes. The authors suggest that children's difficulties interpreting benign cues were related to underlying cognitive difficulties reconciling situations in which there was a conflict between intention (benign) and outcome (negative). Thus, mild deficits in social understanding also appear to be related to difficulties in peer interaction with these deficits appearing as early as preschool.

Although children with mild cognitive disabilities display significant deficits in peer interaction, the developmental processes that underlie peer-related social competence may be substantially similar to those described for children without disabilities. Guralnick and Hammond (1999) found similar sequential play patterns for typically developing preschool children and children with disabilities that were consistent regardless of the setting in which children were observed (inclusive class with typically developing peers or self-contained special education class). Siperstein and Leffert (1997) found that children with mental retardation who displayed sociable behaviors gained greater acceptance from their peers without disabilities in inclusive settings, while children who displayed sensitive-isolated behaviors were more likely to be rejected.

There is considerable evidence that preschool and elementary-age children and adolescents with mild cognitive disabilities are less popular and more likely to be rejected and neglected than their peers without disabilities when sociometric assessments are used (e.g., Diamond, LeFurgy, & Blass, 1993; Ochoa & Palmer, 1995; Taylor, Asher, & Williams, 1987). Results are somewhat different when the focus becomes that of mutual friendships. Juvonen and Bear (1992) reported that third graders with learning disabilities in inclusive elementary classes reported similar levels of mutual friendship and acceptance by classmates as did their classmates without disabilities, while Vaughn and Elbaum (1999) reported that students with learning disabilities were similar to their classmates without disabilities in their reports of the number and quality of their friendships. These results are consistent with Bukowski and Hoza's (1989) suggestion that having friends and being well accepted are distinctly different.

Research on the social development of children with learning disabilities and mild men-

tal retardation points to the important relationship between communication skills and social initiations with peers. Deficits in foundation processes (specifically mutual understanding of roles, rules, and expectations governing social behavior) and in social-cognitive processes (especially interpreting social cues) may account for some of the delays in social development reported for children with mild cognitive disabilities. Although children with mild mental retardation and learning disabilities are less popular than their normally developing peers, they may be similar to children without disabilities in the number of best friends and in the quality of their friendships.

Children with Down syndrome.   As a group, children with Down syndrome show greater expressive than receptive language delays, especially as they advance in mental age. Cognitive performance is also delayed, with IQ scores often diminishing (and mental age scores increasing) as children grow older (Rynders & Horrobin, 1990). Using the model of social competence described earlier, one would expect to find that such deficits in cognitive and language abilities (higher order variables) would be associated with difficulties in many social-cognitive processes, including encoding and accurately interpreting cues, and generating and enacting social strategies. Sigman and Ruskin (1999) have reported, however, that delays in language skills were not associated with comparable delays in nonverbal communication or play skills for children with Down syndrome. In addition, they found that preschool children with Down syndrome were responsive to adults' displays of emotion, and regularly initiated social interactions with adults. The frequency of early social interactions with adults was associated with peer involvement in later childhood. Classroom and playground observations suggested that peers accepted more than 70% of the social play initiations of children with Down syndrome. Similarly, children with Down syndrome accepted a significant majority (73%) of peer play initiations (Sigman & Ruskin, 1999). These results suggest that although children with Down syndrome have significantly delayed cognitive abilities and expressive language skills, nonverbal abilities, especially social and emotional responsiveness, may play an important role in the development of social competence.

A substantial number of children with Down syndrome are reported to have best friends, including friends who are typically developing (Sigman & Ruskin, 1999). In a recent study in Great Britain, Begley (1999) found that 8–16-year-old children with Down syndrome had generally positive perceptions of their acceptance by peers, with children in mainstream schools reporting more positive self-perceptions than children enrolled in self-contained special education schools. Bochner and Pieterse (1996) reported that slightly more than one third of the teenagers with Down syndrome they studied in New South Wales participated in inclusive social activities with typically developing peers (e.g., Girl Guides), while approximately half participated in a club or activity designed specifically for adolescents with disabilities (e.g., Special Olympics). Many teenagers with Down syndrome also spent much of their social lives with their families, a result that has also been reported for adolescents with Down syndrome in the United States (Putnam, Pueschel, & Gorder-Holman, 1988).

Greater sociableness in children with Down syndrome, compared to children of the same mental age, is a common finding (Kasari & Hodapp, 1996). Children with Down syndrome appear interested in others, even during infancy, and this general social respon-

siveness continues into adulthood. It has been suggested that the higher levels of social and emotional responsiveness seen in children with Down syndrome, compared to children with other syndromes, may lead to higher levels of social competence. Although adolescents with Down syndrome appear to spend more of their leisure time alone than do their peers without disabilities, recent research suggests that these children have positive perceptions of their acceptance by peers.

Children and adolescents with Down syndrome have cognitive and communication delays that are typically associated with deficits in many of the social information-processing components of socially competent behaviors. Research suggests that children with Down syndrome may be especially adept at emotion regulation; children with Down syndrome generally appear socially interested and responsive and show relatively few negative behaviors. Thus, motivation to participate in social interactions, along with a "more sociable style" (Kasari & Hodapp, 1996, p. 6) may mediate the effects of cognitive and communication deficits on social competence.

Children with severe mental retardation and multiple disabilities. When children with severe disabilities are enrolled in self-contained special education classrooms with peers who also have severe disabilities, opportunities for peer interactions are severely limited by the nature of each child's disability. There is evidence, however, that significant social benefits accrue to children with severe disabilities from their planned participation in general education settings with classmates without disabilities (Fryxell & Kennedy, 1995). Hanline (1993) found that preschool children with severe disabilities had numerous opportunities for peer social interactions in an inclusive summer program, and Kennedy and his colleagues have reported that elementary and middle-school students with severe disabilities who were enrolled in general education classes had more social contacts with typically developing peers, received and provided higher levels of social support, and had larger and more durable friendship networks than students in self-contained special education classrooms (Kennedy, Shukla, & Fryxell, 1997). It is important to note that the students they observed were enrolled in schools in which inclusion efforts were planned on a building-wide basis. Hughes and her colleagues reported different results when they observed social behaviors of students with moderate to severe mental retardation and their typically developing peers in a high school lunchroom. (Students with disabilities participated in lunch and nonacademic classes, but spent most of their day in special education classes.) Few social interactions occurred over 3 months of observation. The authors suggest that a lack of shared classroom experiences may have played an important role in limiting interactions (Hughes et al., 1999).

For children with severe disabilities, some competencies appear more important than others in the development of interactions with peers. Responsiveness to others and motivation to engage in interactions are positively associated with the development of social relationships for children with severe disabilities, while limitations in physical mobility, often associated with severe mental retardation, reduce opportunities to participate in activities with peers (Grenot-Scheyer, 1994; Strain, 1985). Interactions between children with severe disabilities and their typically developing peers are usually not symmetrical: the typically developing peer often directs the interaction and/or provides assistance, while the child with a severe disability is a more passive recipient.

Although much research on the social development of children with mental retardation has resulted in identification of specific deficits, children with mental retardation may have more strategy capabilities than are often identified (cf. Bray, Saarnio, & Hawk, 1994). Many children and adolescents with mild, as well as more severe, mental retardation participate in social relationships with peers, with some children participating in peer group activities in ways similar to age-mates without disabilities.

Not surprisingly, the significant deficits in cognition and communication that are found in individuals with severe disabilities are related to deficits in many of the social-cognitive processes that underlie socially competent behavior. Children with severe disabilities who are more responsive to peers' initiations and motivated to engage in social interactions demonstrate higher levels of social competence, with opportunities to participate in settings with normally developing peers related to more competent social interactions for children with severe disabilities.

Disabilities related to behavior/affect regulation

Children with autistic spectrum disorders.   Children with autism and related disorders (e.g., Asperger syndrome, Pervasive Developmental Disorder) show consistent, pervasive impairments in social interactions and communication that are manifested in the first three years of life (Sigman & Ruskin, 1999). Defining features of autism include social and communicative deficits and repeated stereotyped behaviors, with the key diagnostic behaviors those that reflect social development (Volkmar & Lord, 1998). Current estimates suggest that autism occurs in as many as 1 in 1,000 children, with the rate of autism spectrum disorders approaching 1% of the school age population (Kadesjö, Gillberg, & Hagberg, 1999; Sponheim & Skjeldal, 1998). Mental retardation is present in approximately 75% of individuals with autism, with the frequency of children's stereotyped behaviors increasing with more severe retardation (Volkmar & Lord, 1998). Not surprisingly, nonretarded autistic children display higher levels of social behavior than mentally retarded autistic children (Lord, 1993).

Descriptions of the social development of children with autism point to deficits in the development of basic interpersonal skills during infancy. These include failure to make eye contact and to use gaze to regulate interaction, as well as failure to engage in early social games, such as peek-a-boo (Volkmar, 1993). Although social skills change as children develop, social responsivity remains a source of difficulty.

There is also evidence of deficits in emotion regulation that are related to social competence in children with autistic spectrum disorders. Yirmiya, Kasari, Sigman, and Mundy (1989) found that children with autism showed significantly more facial expressions of negative affect than did children of the same mental age who had mental retardation or were typically developing. They suggested that the effect on the interactive partner may have been significant because the negative expressions were so unexpected.

There is evidence that social deficits in autism may be associated with specific deficits related to theory-of-mind skills, especially deficits in shared attention and understanding of others' intentions and desires (Phillips, Baron-Cohen, & Rutter, 1998). Just as work with typically developing children provides evidence that children's understanding of oth-

ers' mental states has important implications for social development and communication (Astington & Jenkins, 1995), so, too, does this appear to be important in the social development of young children with autism. Children with autism appear to have most difficulty with tasks that require nonverbal joint attention skills (Mundy & Crowson, 1997), with impairments in joint attention more severe for social than nonsocial stimuli (Dawson, Meltzoff, Osterling, Rinaldi, & Brown, 1998). Mundy and Crowson (1997) have also suggested that children's joint attention bids may provide a measure of motivation to communicate (see also Yirmiya, Pilowsky, Solomonica-Levi, & Shulman, 1999). Dawson and her colleagues recently proposed, however, that deficits in joint attention may be a result of a more basic failure to attend to social stimuli, with deficits in social orienting behaviors occurring earlier in development than deficits in shared attention (Dawson et al., 1998). Bauminger and Kasari (2000) also provide evidence that children with autism lack an understanding of the affective components of social relationships.

Because autism is associated with significant impairments in social interaction, most children with autism are educated in self-contained special education classrooms. These settings provide few opportunities for social interaction. However, typically developing peers may play important roles in facilitating social interactions for children with autism. For example, O'Neill and Lord (as cited in Lord, 1993) reported that autistic children with normally developing siblings were more likely to produce spontaneous peer-directed language in their classrooms, suggesting that social experiences with siblings or peers may play a role in preparing children for interactions in other settings. Roeyers (1996) found that children with autism who had regular opportunities to interact with their typically developing peers made significant gains in social skills (especially the frequency of social initiations) when compared to matched children without this experience. Lee and Odom (1996) found a decrease in stereotypic behaviors for two children with autism associated with increased opportunities for social interaction with typically developing peers. When Sigman and Ruskin (1999) observed school-age children with autism and Down syndrome in their classrooms and on the school playground, they found that children with autism were as likely as children with other disabilities to receive initiations from typically developing peers, but were less likely than others to accept social bids. In addition, children with autism were significantly less likely to initiate interactions with typically developing peers than were children with Down syndrome. In fact, nearly half of the school-age children with autism in this study never initiated any interaction with a peer. These results are similar to those of Lord and Magill-Evans (1995), who found that autistic children and adolescents produced significantly fewer initiations to peers than did children with language disorders or typically developing children.

In sum, research on the social development of children with autistic spectrum disorders suggests that deficits in attention to faces (and, subsequently, joint attention) and orientation to social stimuli are early characteristics of children with autism. These difficulties are thought to result from an underlying disorder in interpersonal perception and communication which interferes with the child's ability to experience others as individuals who are important in the social environment. Thus, in the model of social competence discussed earlier, children with autistic spectrum disorders show deficits in foundation processes (including both emotion regulation and social understanding) and in social information processing which are critical for the development of socially competent behavior.

Physical and sensory disabilities

Children with chronic illness and physical disabilities.   Chronic illnesses lead to regular hospitalization or interfere with children's ability to function in their typical environment. Illnesses or physical disabilities that fall in this category include asthma, diabetes, cancer, and hemiplegia. Epidemiological studies suggest that between 10–20% of children in Western-developed countries have a chronic disorder, although only about 10% of children in this group have severe conditions. While each of these illnesses or disabilities is medically unique, their effects on children's social experiences are similar (Wallander & Varni, 1998).

Children with chronic disorders appear vulnerable to peer relationship problems, with the risk increasing for illnesses or disabilities that involve the central nervous system or motor skills (Wallander & Varni, 1998). Children with chronic illnesses may be at risk for peer relationship difficulties because opportunities for social interaction are limited by absenteeism from school, physical limitations, and parents' concerns (Zbikowski & Cohen, 1998). Based on the model of social development that was described earlier, it is reasonable to hypothesize that physical disabilities and chronic illnesses are likely to influence the development of children's social relationships when they interfere with opportunities to participate in supportive peer social networks.

Asthma is the most common chronic illness of childhood in Western countries; the 1990–1992 National Health Survey reported that 6.1% of U.S. children under 18 had asthma (Collins, 1997). Because asthma often limits children's physical activity, and requires long-term use of medications and regular medical care including hospitalization, this illness provides a model for examining the role of chronic illness in the development of children's social competence. In a study of 8–13-year-old children, Graetz and Schute (1995) found no significant differences in the peer relationships of children with asthma compared to healthy peers. Children with more frequent hospitalizations, however, were perceived as more sensitive and isolated, were less preferred as playmates, and reported themselves to be lonelier than their peers. Zbikowski and Cohen (1998) found no significant differences on measures of social acceptance or popularity for elementary age children with asthma when compared with their healthy peers. Older children with asthma (10–12 year olds) were not significantly different from their healthy age-mates on the number of mutual friendship nominations or parent-rated measures of social competence. In contrast, parents rated younger children with asthma (6–9 year olds) as less socially competent. Younger children with asthma had significantly fewer mutual friendship nominations than either children without asthma or older children with asthma. The authors suggested that differences between younger and older children with asthma may reflect increased restrictions on social activities of younger children. If parents of older children with asthma are more comfortable with their child's illness, children may have social opportunities that are similar to those of their healthy peers. In addition, older children with asthma may have developed a variety of coping strategies that are not available to younger children. These results are similar to those reported by Noll and his colleagues who found few differences from healthy peers on teacher-rated measures of social adjustment or acceptance for children with cancer or sickle cell disease (Noll, Ris, Davies, Bukowski, & Koontz, 1992).

Reduced opportunities to participate in social activities put children with chronic illness at greater risk for social isolation. Overall, however, the social development and competence of children with chronic illnesses does not appear to be substantially different from that of their healthy peers. Results are more equivocal for children with physical disabilities. In studies examining the social adjustment of a cohort of children with hemiplegia enrolled in mainstream primary schools in London, Yude and Goodman (1999) found that 9–11-year-old children with hemiplegia were less popular, more likely to be rejected, had fewer friends, and were more often victimized than were their classmates without disabilities (although approximately one third of the children with hemiplegia had no apparent peer relationship difficulties). Not surprisingly, children attributed their social difficulties to physical factors. Even when motor difficulties were mild, children with hemiplegia were often marginalized within the school environment. Although this type of exclusion clearly put these children at risk for problems in social relationships, the most powerful predictors of peer relationship problems when children were 9–11 years old were teachers' reports of conduct problems and/or hyperactivity, together with low IQ, measured soon after school entry (age 6 or 7). Yude and Goodman (1999) suggested that at least some of the peer relationship problems faced by children with hemiplegia may be related to significant neurological deficits that affect learning and behavior. These results are similar to those of Zurmohle and his colleagues who found that children with spina bifida were at increased risk for social adjustment problems. Interestingly, they found that children with spina bifida who attended a school for children with disabilities, even though it was "an IQ-appropriate setting" had a higher rate of social adjustment problems than children with spina bifida who were enrolled in mainstream schools (Zurmohle, Homann, Schroeter, Rothgerber, Hommel, & Ermert, 1998). Thus, the results of these studies suggest that both child-specific factors (especially learning and behavior problems) and factors in the social environment are related to social development and social adjustment of children with mild physical disabilities.

Children with visual impairments. Vision impairments that are severe enough to significantly interfere with children's daily activities are relatively rare. Some children with visual impairments have no useful vision while other children have partial vision but require assistance with daily activities. Globally, the prevalence of severe visual impairments (the child is legally or totally blind) is slightly less than 1 of every 1,000 children (WHO, 1999).

In the model of social competence described earlier, the ability to encode and interpret social cues is a critical component of socially competent behavior. Many of the skills that are essential for effectively encoding and interpreting social cues are nonverbal and are based on the ability to observe and interpret the behaviors of others (Rosenblum, 1997). Self-monitoring, another component of socially competent behavior, also requires encoding and interpreting both verbal and nonverbal responses to one's own behaviors (Erwin, 1993). Children who have significant visual impairments may experience difficulties in social relationships because they are unaware of subtle social cues that provide information about others' feelings, and because they may not know how others respond to their own behaviors. In addition, shared understanding of play activities, social rules, and social conventions are components of socially competent behavior that can be affected by a child's inability to observe social interactions and play (McAlpine & Moore, 1995),

There is relatively little research on the social development of children with visual impairments (Warren, 1994), in part because this is an uncommon disability and recruitment of study participants is challenging. In the majority of studies that are discussed below, substantial numbers of participants with visual impairments had additional disabilities that made social interaction even more problematic.

Several studies examining the social development of children and adolescents with visual impairments describe lower rates of social interaction with peers, more frequent interactions with adults, and more participation in solitary activities than are typical for same-age peers without disabilities (Skellenger, Rosenblum, & Jager, 1997). Children with some useful vision (i.e., children who were visual learners) typically engaged in significantly more interaction with peers than did children who were blind (i.e., tactile learners), although rates of interaction were lower than found for children without disabilities.

In a recent study, Hatton and her colleagues found that preschool children with visual function of 20/800 or worse performed at lower levels on personal-social tasks than children with vision function in the range of 20/70 to 20/500 (Hatton, Bailey, Burchinal, & Ferrell, 1997). They suggested that functional vision of 20/500 or better may be the level necessary for making eye contact and recognizing nonverbal social cues, both of which facilitate responsive interactions with others.

Finally, visual impairments may make it difficult for a child to participate in some activities with peers. For example, many sports require visual skills such as throwing or hitting a ball. It is hardly surprising that young children with visual impairments have reported that their inability to participate in activities such as these interferes with the development of social relationships with sighted peers (MacCuspie, cited in Rosenblum, 1997).

If a child's play partner provides information about the social environment in ways that are accessible to the child with a visual impairment (e.g., by providing verbal cues), it makes it somewhat easier for the child to participate in the social activity (Sacks, 1992). In order for this to occur, however, the child's partner needs to understand the importance of providing additional information and support. This is a task that is developmentally difficult for many children, without specific intervention from adults. Thus, it is hardly surprising that typically developing children often think that it takes an extra effort to be friends with a child with a visual impairment (MacCuspie, cited in Rosenblum, 1997).

These results suggest that children and adolescents with visual impairments are more isolated from peer interaction, have more frequent contacts with adults, and participate in more solitary activity than do their sighted peers. Functional vision that is sufficient for making eye contact and recognizing nonverbal social cues appears to be associated with higher rates of interactions with peers. Children with visual impairments whose vision is not sufficient for recognizing nonverbal behaviors typically have deficits in encoding social cues, as well as in monitoring their own behaviors and interpreting others' responses to them, that interfere with socially competent behavior.

Future directions

There is ample evidence that children with cognitive delays have social skills that are delayed when compared with typically developing peers. The model of social competence in children with disabilities, described by Guralnick (1999), suggests that deficits in cognitive skills will be associated with deficits in other areas important for social development, including shared understanding of social situations, and encoding and responding to social stimuli. Evidence from studies of children with autistic spectrum disorders, in particular, points to the important role of theory-of-mind skills (including joint attention and understanding of others' intentions and desires) in the development of social understanding.

The results of recent studies suggest that characteristics of the social setting, including the availability of typically developing peers as play partners and support from adults, are important in the development of children's social skills. More frequent interactions, and higher levels of social skills, have been reported for preschool, elementary school, and high school students with disabilities when they participate in activities that include peers without disabilities. Greater social benefits may result when the environment is most similar to that found for children without disabilities. These results suggest that although children with disabilities have delayed social skills, the development of these skills can be enhanced for many children when they participate in activities with typically developing peers, and are supported in their interactions by parents and teachers. Research is only beginning to examine the role of adults and peers, as well as child and setting characteristics, in the social development of children with disabilities.

Models of social competence, such as those proposed by Dodge and his colleagues (Crick & Dodge, 1994; Dodge et al., 1986) and Guralnick (1999) provide a beginning point to understand the ways in which disability interferes with children's participation in social settings. Research that examines specific cognitive processes, such as the work on theory-of-mind skills in children with autism or role understanding in children with mild mental retardation/learning disabilities, are beginning steps toward understanding the ways in which child specific competencies affect social relationships. Understanding which characteristics of the social context are important in supporting social interactions of children with disabilities is also an important focus of research. Finally, there is evidence that typically developing children may reap benefits from interactions with peers with disabilities (Diamond & Innes, 2001). Research that examines the ways in which these interactions foster the development of socially desirable characteristics (such as altruism) in children without disabilities provides an important focus for future research.

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