

Involvement with peers: comparisons between young children with and without Down's syndrome

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Abstract

Background It has been well established that heterogeneous groups of young children with mild intellectual disability are at considerable risk of becoming socially isolated from their peers in school, home and community settings.

Method Matched groups of young children with and without Down's syndrome (DS) were compared in terms of the children's involvement with peers, maternal arranging and monitoring of peer play, and maternal beliefs about inclusion.

Results Despite aetiology-specific expectations for children with DS, no differences were found for a variety of measures of peer involvement focusing on the frequency of contacts and the characteristics of children's peer social networks. Maternal arranging of activities with peers was similarly related to peer involvement for both groups of children. Higher ratings of the benefits of inclusion were obtained from mothers of children with DS, but these maternal beliefs were unrelated to maternal arranging or peer involvement.

Conclusions Parental adaptations to the aetiology-specific behavioural patterns of children and the

general influence of children's experiences within a developmental framework are discussed in the context of interpreting aetiology-specific findings.

Keywords children, Down's syndrome, involvement, peers

Introduction

It has now been well established that heterogeneous groups of young children with mild intellectual disability (ID) are at considerable risk of becoming socially isolated from their peers in school, home and community settings (Guralnick 1999b). Comparisons involving chronological age and developmental level with matched groups of typically developing children have documented the restricted number of reciprocal friendships which are formed by children with ID (Guralnick & Groom 1988; Buysse 1993; Guralnick *et al.* 1996b), their less well-developed peer social networks and less frequent participation with peers (Guralnick 1997), and their lower levels of peer acceptance and social integration as found in inclusive pre-school programmes (Guralnick & Groom 1987; Guralnick *et al.* 1996a).

Despite these consistent patterns, there exists considerable individual variation in peer involvement within these heterogeneous groups of children with ID. To some extent, these individual differences are associated with specific child characteristics, especially the degree of behaviour problems

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(e.g. Guralnick *et al.* 1996a). Other child characteristics, such as receptive language or child temperament, are also associated with individual variations in specific forms of peer interactions and are also likely to influence overall involvement with peers (Guralnick & Groom 1985, 1990).

Beyond these child-specific characteristics, variations in peer involvement may relate to the extent to which parents actively foster their child's peer relationships and friendship development. Over the past decade, evidence has rapidly accumulated indicating the important role that parents play with respect to the quality of their children's relationships with peers and their overall involvement with peers (Parke & Ladd 1992; Parke *et al.* 1994; Guralnick & Neville 1997; Guralnick 1999a). In particular, direct parent actions such as arranging opportunities for their child to play with peers may be of considerable value (Ladd & Golter 1988; Ladd & Hart 1992). However, evidence suggests that parents of children with ID arrange play with peers less often than do parents of typically developing children, despite the fact that children with ID are far more dependent on the active arranging role of parents for involvement in peer play to occur than typically developing children (Guralnick 1997; Guralnick *et al.* 2002).

Parent perspectives of the value of early childhood inclusion for children with ID, particularly the possible contributions of typically developing children in these settings to their child's social interactions with peers, may also relate to children's involvement with peers (Guralnick *et al.* 1995). Whether or not parents actually have the opportunity to place their child in an inclusive programme, beliefs regarding possible benefits of inclusive settings related to children's social development may well reflect the importance that parents attach to expanding their child's social experiences with peers. Although connections between beliefs about the social aspects of inclusion and peer involvement have not been examined, parental beliefs in the importance of peer relations have been consistently associated with parent arranging of play experiences for their child and correspondingly increased levels of children's involvement with peers (e.g. Mize *et al.* 1995). For parents of children with ID, given the range of variations in parent perspectives regarding the contributions of inclusive settings to

their child's social development (Guralnick *et al.* 1995), beliefs about inclusion may well be related to children's level of involvement with peers. Both direct effects of beliefs on peer involvement and the effects of beliefs mediated by parent arranging are possible.

To date, for children with ID, research on peer involvement has focused almost exclusively on heterogeneous groups of children with correspondingly heterogeneous aetiologies; a factor that probably contributes to individual variation in many domains of peer involvement. In fact, numerous studies have identified important developmental patterns in which the likelihood of occurrence of these patterns is associated with membership in specific aetiological subgroups (Dykens 1999; Hodapp 1999). In other words, both child-specific behaviours and family patterns which emerge as a consequence of having a child with a specific aetiology may combine to create a unique ecology with implications for many aspects of child development and family functioning. As discussed below, the central issue examined in the present investigation is whether aetiological specificity can account for some of the variation found in peer involvement for children with ID. Related questions revolve around the role of parent actions in connection with arranging or monitoring peer activities, and parental beliefs about early childhood inclusion.

Children with Down's syndrome

Perhaps the most well studied aetiological subgroup is children with Down's syndrome (DS), with evidence supporting the existence of a distinct behavioural phenotype (Kasari & Hodapp 1996; Chapman & Hesketh 2000). With respect to peer involvement, the available studies suggest that young children with DS have considerable difficulty interacting with peers and creating a meaningful social network. Specifically, pre-school-age children with DS have relatively few peer contacts apart from siblings and friends of siblings, and only about one-fourth of these children participate in organized activities. Indeed, as many as one-third of children with DS appear to have no play contacts whatsoever (see Byrne *et al.* 1988). In addition, early descriptive work sensitized investigators to the potential for substantial social isolation that chil-

dren with DS may experience in inclusive settings (Sinson & Wetherick 1981). More systematic studies continue to indicate that peer involvement may well be substantially restricted for children with DS (Stoneman *et al.* 1988).

Degree of peer-related social competence is one important factor governing the level of peer involvement (Guralnick 1999a). Although direct comparisons with respect to peer interactions between children with and without DS have not been carried out, there are a number of child characteristics which suggest that children with DS may have unusual difficulties in this domain of development. Specifically, comparisons between groups of children with DS and developmentally matched groups of typically developing children reveal that young children with DS appear to exhibit an incongruous pattern of affect regulation in social referencing situations (Knieps *et al.* 1994). This pattern does not simply reflect the muted affect found in studies of young children with DS (e.g. Cicchetti & Sroufe 1976; Emde *et al.* 1978), which may well disappear as children become older, but rather, is a failure to appropriately match the affect of the interactive partner. Other difficulties in social referencing when presented with ambiguous events for children with DS have been reported, suggesting that the problem may stem from an inability to properly appraise specific circumstances surrounding that complex social situation (Kasari *et al.* 1995). Similarly, difficulties in initiating social play interactions with adults and limitations integrating social interactions and object play have been observed (e.g. Beeghly *et al.* 1989). These problematic behavioural patterns exhibited with adults may extend to the peer situation (see Guralnick 1996), thereby creating a tendency by peers to socially exclude children with DS.

An additional pattern relevant to peer involvement suggests that children with DS fail to adequately persist in tasks, especially when tasks become difficult (Wishart 1993; Ruskin *et al.* 1994). This apparent lack of task-oriented motivation, unusual affective difficulties and recently documented concerns in the processing of emotional expressions (Wishart & Pitcairn 2000) may well combine to substantially reduce the success of children with DS as they are faced with complex and dynamic social tasks in peer play situations, such as

maintaining play, resolving conflicts or gaining entry to peer groups. It is the case that children with DS clearly appear to have a strong social orientation as opposed to an orientation to objects (Mundy *et al.* 1988). Nevertheless, despite an apparent willingness to interact socially, failure to do so effectively on repeated occasions is likely to affect their ultimate level of peer involvement.

As noted, the behavioural patterns for children with DS described above were based on comparisons with developmentally matched typically developing children. These types of comparisons are extremely valuable, but can only indicate that potentially important developmental differences exist, but those differences may be shared by children with ID in general and perhaps with other aetiological subgroups as well. Consequently, at a minimum, to determine whether these patterns are specific to children with DS requires comparisons with heterogeneous groups of children with equivalent ID from which children with DS have been excluded (see Dykens 1995). The syndrome-specificity issue regarding behavioural patterns relevant to peer involvement for children with DS has been addressed in a small number of studies. When investigations have been carried out with matched groups of delayed children, focusing on many of the patterns described above, evidence is consistent with the specificity hypothesis for children with DS (Mundy *et al.* 1988; Kasari & Sigman 1997; Wishart & Pitcairn 2000). Moreover, those patterns appear to be stable and evident beyond the pre-school years (Kasari & Freeman 2001; Wishart & Pitcairn 2000). Of course, establishing the degree of specificity for children with DS will require far more comparative studies with both appropriately defined heterogeneous groups of children and with other aetiological subgroups (Dykens 1999).

Because these aetiology-specific child characteristics are expressed in social environments, they may not only evoke specific patterns of response from peers, but from family members as well (see Dykens 1995; Hodapp 1999). For example, the social orientation of children with DS may well encourage parents to focus on this area of development. Evidence does indicate, perhaps in response to their child's unusual affective interactions, that mothers of children with DS use fewer words referencing inner affective states than do mothers of typ-

ically developing children similar in adaptive functioning (Tingley *et al.* 1994). Clearly, the potential exists for parents to be influenced in their numerous parental roles as a consequence of their child's characteristics (Keogh *et al.* 2000). This may well include parent actions and beliefs related to their child's involvement with peers.

Even if the behavioural characteristics of children with DS noted earlier turn out not to be specific to that subgroup, there are other reasons why parent actions and beliefs in the context of peer involvement for children with DS may differ in comparison to those of parents of children with heterogeneous ID. Although family functioning and even caregiver responsiveness have not been found to differ in comparisons with carefully matched groups of families of young delayed children with and without DS (Cahill & Glidden 1996; Mundy *et al.* 1988; see also Roach *et al.* 1998), having a child with DS may still create a different experience for families. In particular, the immediacy of the diagnosis, the substantial knowledge that exists about DS, the less stigmatizing quality of such a well-recognized syndrome, and even the well-established support groups specific to DS, can alter family experiences and enhance expectations of community participation (see Seltzer & Ryff 1994), including those related to peer involvement. Accordingly, specific behavioural characteristics of children with DS separately or in combination with parent experiences associated with that syndrome may generate parental actions or beliefs with respect to peer involvement which differ from heterogeneous groups of children with ID without DS.

In the present study, the author examines a number of interrelated issues. After first carefully matching children and families of young delayed children with and without DS following recommendations by Cahill & Glidden (1996), data were obtained from questionnaires and structured interviews from mothers to address questions comparing these two groups of children. Of primary interest was whether the level of peer involvement differed between the two groups of children. Differences in the social orientation of children with DS may confer an advantage in involvement with peers, although other child-specific patterns such as lower task motivation or the existence of incongruous affective interactions may create unusual difficulties

in maintaining involvement with peers. Accordingly, a range of peer involvement measures were obtained consisting of the extent of peer contacts, characteristics of playmates, the nature of the relationship between peers, including the identification of friendships, linkages which may exist within the child's peer social network and the level of participation in group activities with peers. The second issue concerns the actions parents of children with and without DS take to arrange play for their children with peers and to monitor that play. The presumed social orientation of children with DS may encourage those parents to be more active in arranging play, in particular, despite their child's likely peer competence difficulties. Moreover, parents of children with DS may be strongly encouraged to arrange and monitor play for their child through parent support networks, or as a consequence of the perceived greater acceptance levels accorded to children with DS. Thirdly, parent perspectives on early childhood inclusion were compared with special reference to peer acceptance in inclusive settings and the impact of typically developing children on their child's social development. Factors similar to those affecting parent actions may predispose parents of children with DS to express more positive beliefs with regard to early childhood inclusion than parents of children without DS. Finally, since peer involvement itself may well be influenced by parent actions and beliefs about early childhood inclusion, a series of analyses within each of the two groups was carried out to examine these patterns. Based on previous studies, a relationship between parent action (indexed by arranging) and peer involvement is to be expected. Of interest was whether this relationship may be partly caused by maternal beliefs regarding peer social development, as reflected by beliefs about the social benefits of inclusion.

Subjects and methods

Participants

Children were recruited from local school districts, pre-school and day-care programmes, and community agencies which provided services to young children with disabilities. Children who were legally blind, had major uncorrected hearing loss, had a

primary diagnosis associated with a physical disability, lived with the primary caregiver for less than 6 months or currently lived at home without a female caregiver were excluded from the sample. Non-English-speaking families also were excluded. The chronological age range for the children was established at 48–71 months.

The revised version of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI-R; Wechsler 1989) was administered individually to each child. Full-Scale IQ (FSIQ), as well as performance IQ (PIQ) and verbal IQ (VIQ) scores, were obtained. The revised version of the Test for Auditory Comprehension of Language (TACL-R; Carrow-Woolfolk 1985) also was administered individually to children (see below for test description). To be included in the sample, children were required to obtain a FSIQ score between 45 and 80, but were excluded if they obtained a PIQ or TACL-R score greater than 90. Diagnostic information was based on parent report. A total of 64 children whose mothers completed the questionnaire and interview phases of the study (see below) met both the inclusionary and exclusionary criteria for ID without a diagnosis of DS. Also based on parent report, an additional 21 children were identified as having DS. As discussed in the 'Procedure' section below, the children with DS were subsequently matched on a case-by-case basis to the other (non-DS) children with ID in the sample.

Demographic and child characteristic measures

Standard demographic information about the family (i.e. marital status, ethnicity, education, occupational status and income) was gathered. The Hollingshead Four-Factor Index of Social Status (Hollingshead 1975) was used to calculate a measure of family status (range = 8–66). Mothers were also asked to identify whether their child was enrolled in an inclusive or specialized pre-school programme. Information was obtained as to the nature and extent of the involvement of typically developing children in their child's pre-school programme to permit classification into either an inclusive programme (i.e. standard involvement or planned interactions with typical children) or specialized programme (i.e. contains only children with special needs and no planned exchanges with typical

children exist). Programmes identified as inclusive or having a reverse inclusion programme, and those containing planned experiences with typically developing children were all placed in the inclusion category (for definitions, see Guralnick 2001).

For assessments of cognition and language, children were evaluated by psychologists with extensive experience working with young children with ID. As noted above, the WPPSI-R (Wechsler 1989) was administered individually to each child. Receptive language abilities were measured using the TACL-R (Carrow-Woolfolk 1985), a standardized individually administered test of receptive language skills for children aged 3 years through 9 years, 11 months. Each item consists of a word or sentence that is read by the examiner, and the child is shown an accompanying picture of three line drawings (the orally presented item and two distracters). The TACL-R yields four standardized scores: (1) word classes and relations; (2) grammatical morphemes; (3) elaborated sentences; and (4) a total score. Finally, the expressive components of the Preschool Language Scale (PLS; Zimmerman *et al.* 1979) was administered. Because of the lack of standardization, only raw scores were used (for verbal ability and articulation, range = 0–48 and 0–23, respectively).

To obtain an assessment of children's adaptive behaviour, the Vineland Adaptive Behaviour Scales (VABS; Sparrow *et al.* 1984) survey form was administered to each mother (or primary female caregiver) by trained interviewers. Standard scores were obtained for each of the four domains (i.e. communication, daily living skills, socialization and motor skills), as well as for the total adaptive behaviour score. Mothers also assessed their child's behaviour problems based on the Child Behaviour Checklist (CBCL; Achenbach & Edelbrock 1983). Mothers rated the frequency of different behaviour problems from a 118-item questionnaire using a three-point scale. Only the broad band internalizing and externalizing scales (*t*-scores), in conjunction with a total behaviour problem score, were used.

Procedure

Families who agreed to participate in the present study received a packet of materials in the mail containing questionnaires, rating scales and consent

forms. Included in the packet were questionnaires related to their child's peer involvement, parent arranging and monitoring, and beliefs about early childhood inclusion. Two separate appointments with the mothers were arranged to administer the VABS and to gather interview data (see below).

The 21 children identified as having DS were then matched on a case-by-case basis to 21 other children with ID (but without DS) who met all criteria (from the total pool of 64 children). Most children identified without DS had no diagnosis (only five had a genetic aetiology). Following the work of Cahill & Glidden (1996), matching was based on the following criteria: (1) pre-school placement (i.e. inclusive or specialized); (2) gender; (3) child chronological age (within 6 months); (4) WPPSI-R FSIQ (within 10 points); (5) mother's chronological age (within 10 years); and (6) family status (within 10 points). A computer program was written to seek out matches meeting all six criteria on a case-by-case basis. If more than one match was obtained, the child with ID with an IQ score closest to that of the child with DS was selected.

Table 1 presents the results of the matching process. As shown, all family demographic measures matched well as did the WPPSI-R scores. However, differences remained on measures related to language and behavioural problems. As expected, children with DS exhibited more language problems, as evaluated by the PLS verbal ability scale ($P < 0.01$). The TACL-R word class and relations score approached significance ($P < 0.06$). Children with DS also scored lower on the internalizing scale ($P < 0.05$).

Questionnaire and interviews

Peer involvement

The questionnaire sent to mothers generated essential information about their child's peer involvement that was then clarified and amplified through a follow-up home visit interview (for details, see Guralnick 1997). Peer involvement information focused on the extent to which a child had regular (at least once every 2 weeks) contact with other children (exclusive of siblings) in their home and community (maximum of three children). Specific areas of interest included whether or not a child

had a regular playmate, the number of playmates, time spent together, the frequency of contacts and where the children played (i.e. at the child's or peer's home). Information about the characteristics of the child's playmates was also obtained with respect to gender, chronological age and whether the child's playmate had a disability. To determine the depth of the relationships, information was gathered with respect to the length of time children had been familiar with one another, a rating of the quality of the relationship and whether best friends could be identified. In addition, whether children met or were enrolled currently in the same pre-school or day-care programme yielded further information as to the social linkages in children's involvement with peers. Finally, mothers were asked if their child participated in general group activities which involved other children. This consisted of regular participation in non-pre-school or non-day-care group activities with peers, including routinely scheduled play groups, swimming lessons or religious activities.

Arranging and monitoring

The arranging and monitoring questionnaire consisted of a series of questions in which mothers were given five mutually exclusive options for each question (for details, see Table 3). First, mothers were asked to indicate how often in a typical month they were responsible for arranging for their child to play with another child (range = four or more times per week to less than once per month). Next, if mothers reported that they did have one of their child's playmates at their home in the past month, they were asked to evaluate their own degree of involvement in the play activities of the children (i.e. monitoring). First, mothers were asked to note the percentage of time that they were in the same room with the children or could see them (range = all of the time to never). Secondly, if applicable, when children were playing where mothers could not see them, they were asked how frequently they checked on the children (range = very often, defined as every 2–3 min, to one time or less in an hour). Finally, mothers were asked how frequently they decided on games or other activities for the children (range = all of the time to never).

Table 1 Characteristics of the sample by group

Characteristic	Developmental delay (n = 21)		Down's syndrome (n = 21)	
	Mean or percentage	SD	Mean or percentage	SD
<i>Family demographics</i>				
Child's age (months)	55.33	5.53	56.14	6.07
Child's gender (percentage male)	61.9		61.9	
Child's ethnicity (percentage Caucasian)	80.0		95.0	
Mother's age (years)	34.35	4.82	34.95	6.51
Mother's education (years)	14.30	1.63	14.90	1.77
Marital status (percentage partnered)	95.0		95.0	
Family status*	43.15	15.38	49.70	12.68
<i>Programme type (%)</i>				
Inclusive	23.8		23.8	
Specialized	76.2		76.2	
<i>Child developmental characteristics</i>				
Wechsler Preschool and Primary Scale of Intelligence – Revised:				
Full-Scale IQ	53.26	6.03	53.00	4.13
Performance IQ	54.35	5.55	52.06	2.93
Verbal IQ	60.05	7.01	61.58	5.09
Test for Auditory Comprehension of Language – Revised:				
Total Scale	62.75	12.09	56.89	15.08
Word Class and Relations	67.45	18.74	52.16	29.70
Grammatical Morphemes	66.20	14.82	62.42	14.98
Elaborated Sentences	71.95	8.34	70.37	8.21
Preschool Language Scale:				
Verbal Ability	13.94	4.98	9.06	5.47
Articulation	8.22	5.65	6.29	6.18
Vineland Adaptive Behavior Scales:				
Total Adaptive Behaviour	63.71	13.72	60.43	6.90
Communication	68.52	13.71	62.95	8.51
Daily Living Skills	64.90	14.14	64.76	8.83
Socialization	78.19	11.76	77.29	10.37
Motor Skills	62.00	16.46	58.48	11.08
Child Behavior Checklist:				
Total Behavior Problems	61.38	10.06	57.33	11.16
Externalizing	57.38	11.49	52.43	12.04
Internalizing	63.00	7.59	56.10	11.22

*Hollingshead Four-Factor Index of Social Status.

Beliefs about inclusion

A variation of the scale developed by Bailey & Winton (1987) was used to evaluate mothers' beliefs about early childhood inclusion (referred to as mainstreaming; see Guralnick 1994). A cover letter described what was meant by 'mainstreaming'

and it asked mothers to assume that, when a child with special needs was mentioned, the needs were similar to those of their own child. The scale consists of 27 statements divided into two major sections: (1) possible benefits; and (2) possible drawbacks. Each section was further divided to focus on children with or without special needs. In

the present study, only questions concerning the child with special needs are analysed.

Mothers were asked to rate each of the statements on a five-point Likert-type scale ranging from (1) 'definitely not a benefit (or drawback)' to (5) 'definitely a benefit (or drawback)'. For the eight statements focusing on benefits to children with special needs, higher ratings indicated agreement with the potential benefits. Similarly, for the nine statements addressing possible drawbacks, higher ratings indicated agreement with the potential drawbacks. Internal consistency was high for this sample, with Cronbach's alpha averaging 0.81 across the two segments of the scale for each of the two groups.

Results

Comparisons between the two groups of children were carried out separately for each dependent variable within the three sets of measures (i.e. peer involvement, arranging and monitoring, and beliefs about inclusion). The chi-square statistic was used for dichotomous variables, the Mann-Whitney *U*-test for ordinal variables and two-tailed *t*-tests for continuous variables. Power analyses indicated that the sample size of 21 in each group was sufficient to detect large effect sizes at a power of 0.80. Although children with and without DS differed in some language and behaviour measures (see Table 1), these were not correlated with any of the dependent variables. Moreover, preliminary analyses were conducted within each group comparing boys and girls, and comparing inclusive and specialized programmes. No significant differences were obtained for any dependent variable ($P > 0.05$). Consequently, no adjustments in the analyses were necessary.

Peer involvement

Comparisons for each of the separate peer involvement measures between children with and without DS revealed no significant differences ($P > 0.05$). As indicated in Table 2, the values for virtually all measures were highly similar. Of note, mothers reported that nearly all children did have at least one regular playmate (average number ≈ 2). The

average time spent with each playmate was 8–14 h per week, and children usually played together one or two times per week. Children played about two-thirds of the time at their home, but a smaller percentage played at both homes.

Furthermore, as seen in Table 2, most children had at least one boy and one girl playmate, and slightly less than one-third of children had at least one playmate with a disability. The vast majority of playmates were similar in age to the children in the study, although much more variability was found for children with DS, especially at the higher age range. Related analyses indicated that both groups were also comparable in terms of the percentage of playmates who were relatives (developmental delay = 68.8%; DS = 62.5%).

Children had reasonably long relationships (≈ 2 –4 years on average) and mothers rated the quality of their children's relationships with playmates as high. However, less than half of the children had one best friend. Only about 10% of children in both groups met their playmates in their pre-school or day-care programme. However, there was a trend for a greater proportion of children with DS to have identified playmates currently in the same pre-school or day care. Finally, slightly more than half of children in each group participated in outside organized group activities involving peers.

Arranging and monitoring

The rating scale options for mothers for the arranging and monitoring items are listed at the bottom of Table 3. As was the case for peer involvement, no differences for any of the variables were obtained between the two groups ($P > 0.05$). Mothers arranged play approximately once per week and were quite active in monitoring their child's activities through watching, checking and suggesting activities when children were playing at their house.

Beliefs about inclusion

Abbreviated versions of the eight statements on the questionnaire requesting mothers' ratings of possible benefits to their child from participating in an inclusive programme are found in the top portion of Table 4. Significant differences between the groups were found for six of the eight items. In all

Table 2 Peer involvement for the two developmental status groups: N.B. numbers vary slightly because of missing data

Peer involvement	Developmental delay (n = 21)		Down's syndrome (n = 21)	
	Mean or percentage	SD	Mean or percentage	SD
<i>Extent of regular contact</i>				
Have individual playmate (percentage 'yes')	85.7		100.0	
Number of playmates (if 'yes')	2.00	0.84	2.14	0.85
Time spent with playmate (rating*)	2.22	1.21	1.88	1.02
Frequency of play with peers (rating [†])	2.89	1.91	3.20	1.15
Peer plays at your home (%)	68.7		66.4	
Play at both homes (%)	43.7		61.1	
<i>Characteristics of playmates</i>				
Gender (%):				
male	68.7		87.5	
female	62.5		68.5	
Playmate with disability (at least one) (%)	23.5		38.9	
Age of playmates (months)	52.08	13.36	74.19	32.14
<i>Relationship</i>				
Time known playmate (rating [‡])	4.09	0.82	3.46	1.14
Quality (rating [§])	3.06	0.41	2.99	0.39
Number of best friends	0.50	0.52	0.39	0.61
At least one best friend (%)	50.0		33.3	
<i>Linkage</i>				
Met in pre-school/day care (%)	5.9		11.1	
In same pre-school/day care (percentage 'yes')	11.8		44.4	
<i>Group activities</i>				
Participation (%)	61.9		57.1	

*Time spent with playmates: (1) 1–7 h week; (2) 8–14 h week; (3) 15–21 h week; and (4) > 21 h week.

[†]Frequency of play with peers: (1) less than once a month; (2) less than once a week; (3) one or two times a week; (4) two to three times a week; and (5) four or more times a week.

[‡]Time known playmate: (1) < 1 year; (2) 1–2 years; (3) 2–3 years; (4) 3–4 years; (5) 4–5 years; and (6) 5–6 years.

[§]Quality: (1) just tolerate; (2) neutral; (3) like a lot; and (4) best friends.

instances, mothers of children with DS endorsed higher ratings: (1) learn more [$t_{(40)} = 2.99$, $P < 0.01$]; (2) try harder [$t_{(40)} = 3.68$, $P < 0.01$]; (3) feel better about self [$t_{(40)} = 2.81$, $P < 0.01$]; (4) more variety in activities [$t_{(40)} = 2.15$, $P < 0.05$]; (5) promote acceptance (in community) [$t_{(40)} = 2.35$, $P < 0.05$]; and (6) prepare for real world [$t_{(40)} = 2.87$, $P < 0.01$].

No significant differences were found for the ratings of possible drawbacks (see bottom portion of Table 4). Overall, mothers endorsed modest but noticeable concerns with respect for most aspects of inclusion (the average was midway between 'not sure' and 'possibly a drawback').

Interrelationships among variables

Correlations among the three types of dependent variables (i.e. peer involvement, arranging and monitoring, and beliefs about inclusion) were analysed separately for the two groups. Three scores were selected representing each of the three types of dependent variables. For maternal beliefs about inclusion, only scores from the benefits scale were used as they represented the positive perspective on the social and related aspects of participation with typically developing children. The beliefs score was calculated by averaging the eight benefits about inclusion items (Cronbach's $\alpha = 0.83$). Arranging

Activity	Developmental delay (n = 21)		Down's syndrome (n = 21)	
	Mean	SD	Mean	SD
<i>Arranging</i>				
Arranges play*	2.25	1.70	2.67	1.20
<i>Monitoring</i>				
Watches children [†]	3.40	0.70	3.71	0.83
Checks on children [‡]	3.90	0.99	3.77	0.93
Suggests activities [§]	3.00	0.82	2.57	0.51

*Rating: (1) less than once a month; (2) less than once a week; (3) one or two times a week; (4) two to three times a week; and (5) four or more times a week.

[†]Rating: (1) never; (2) little of the time; (3) half the time; (4) most of the time; and (5) all the time.

[‡]Rating: (1) once per hour or less; (2) two times per hour; (3) every 10–20 min; (4) every 5–10 min; and (5) every 2–3 min/always.

[§]Rating: (1) never; (2) little of the time; (3) half the time; (4) most of the time; and (5) all the time.

Table 3 Ratings for arranging and monitoring play activities: N.B. numbers vary slightly because of missing data. The monitoring data are based on the percentage of children who had playmates at their home in past month (developmentally delayed = 60%; Down's syndrome = 85%)

Beliefs*	Developmental delay (n = 21)		Down's syndrome (n = 21)	
	Mean	SD	Mean	SD
<i>Benefits to child with special needs</i>				
Learn more	4.00	1.12	4.80	0.41
Try harder	3.30	0.80	4.10	0.55
Feel better about self	3.05	0.89	3.90	1.02
More variety in activities	3.90	1.17	4.55	0.69
Promote acceptance	4.15	0.88	4.70	0.57
Prepare for real world	4.05	1.29	4.85	0.37
Families learn more about normal	3.60	0.94	4.00	0.86
Families interact	4.05	1.00	4.00	1.03
<i>Drawbacks to child with special needs</i>				
Not enough special help	3.80	0.89	3.79	0.92
Not enough special services	3.40	1.43	3.63	1.16
Rejection by teachers	3.00	1.17	3.53	1.26
Rejection by children	3.75	0.91	3.32	1.16
Less qualified teachers	3.80	0.70	4.16	0.83
Families feel ignored	3.20	1.20	3.00	1.15
Families not share concerns	3.60	1.10	3.32	0.95
Families upset by differences	3.25	1.12	2.74	1.15
Families upset by rejection	3.70	0.98	3.63	1.21

*Rating for benefits: (1) definitely not a benefit; and (5) definitely a benefit. Rating for drawbacks: (1) definitely not a drawback, (5) definitely a drawback.

Table 4 Beliefs about inclusion

Table 5 Correlations Among Measures for Each Group

	Maternal beliefs	Maternal arranging	Peer involvement
Maternal beliefs		0.17	-0.31
Maternal arranging	0.46*		0.43*
Peer involvement	0.25	0.50*	

Note.

Above diagonal: Down's syndrome.

Below diagonal: Developmental delay.

* $P < 0.05$.

play was selected as the index of mothers' actions because this variable has been found to be related to other measures in previous work (Guralnick *et al.* 2002b). To index peer involvement, the number of playmates and the frequency of play with playmates were selected. These measures were strongly associated with each other ($r = 0.59$, $P < 0.001$) and were combined by averaging the z -scores for the two measures. Each of the three indexes was entered into the correlation matrix in Table 5.

As can be seen, the correlations between maternal arranging and peer involvement were significant ($P < 0.05$) for both groups. There were also low-to-moderate correlations between these variables and maternal beliefs (benefits of mainstreaming). In order to examine the possibility that the relationship between maternal arranging and peer involvement might be partly a result of the influence of maternal beliefs, partial correlations were computed, controlling for the effects of maternal beliefs, for each group separately.

For the group with developmental delay, the zero-order correlation between maternal arranging and peer involvement was 0.50 ($P < 0.05$), accounting for 25% of the variance in this relationship. The partial correlation between these two variables, controlling for maternal beliefs, is 0.45 ($P = 0.05$), indicating that the majority (20%) of the explained variance was caused by the direct influence of maternal arranging on peer involvement, while the remaining 5% is the result of the impact of maternal beliefs on these variables.

For the group with DS, the zero-order correlation between maternal arranging and peer involvement was 0.43 ($P < 0.05$), accounting for 18% of the vari-

ance in this relationship. The partial correlation between these two variables, controlling for maternal beliefs, was 0.51 ($P < 0.05$), accounting for more of the variance (26%) in this relationship than the zero-order correlation. This result suggests that maternal belief acts as a suppressor or masking variable which is not uncommon when the control variable is positively related to the independent variable and negatively related to the dependent variable. However, once again, there is little impact of maternal beliefs.

Discussion

The primary purpose of the present investigation was to determine if levels and characteristics of peer involvement differed between young children with and without DS. Using a variety of measures including the extent of regular contact with peers, the characteristics of and relationship between children's playmates, linkages between playmates in different settings, and participation with peers in community groups, no differences were detected. This finding occurred despite considerable evidence suggesting that children with and without DS exhibit different behavioural patterns relevant to peer involvement and are likely to experience different social ecologies created by families. Of note, children with and without DS were carefully matched on a case-by-case basis. This process was successful, with differences between the groups remaining only for some language and behaviour problem measures. Both of these differences, when controlling for intellectual level, were to be expected (Gath & Gumley 1986; Dykens & Kasari 1997; Miller 1999), but neither was associated with peer involvement in this study.

Assuming that such relevant behavioural patterns do in fact distinguish children with DS from heterogeneous groups of children with ID, it is important to consider why differences in peer involvement failed to emerge in the present study. Perhaps the most likely explanation for the absence of group differences in peer involvement relates to parent behaviours. As discussed earlier, peer involvement is the product of aetiology-specific behaviours and related experiences. What may have occurred is that parents effectively adapted their approaches and strategies to their child's behav-

journal patterns to facilitate involvement with peers. In other words, parents from both groups may have been sufficiently skilful in adjusting to variations in children's characteristics, including those which were aetiology specific, to promote peer involvement. Considerable adjustment capabilities are evident for parents of typically developing children (Guralnick & Neville 1997).

It is the case that parents of children with and without DS are similar on measures of family functioning when matching is carried out similar to that in the present study (Cahill & Glidden 1996). Because important aspects of family functioning are associated with children's social development with peers (Guralnick & Neville 1997; Hauser-Cram *et al.* 1999; Guralnick *et al.* unpublished observations), these similarities may suggest similar abilities to organize and support their child's peer interactions, and to appropriately foster peer involvement. Consequently, differences in children's behaviour which are aetiology specific may not be of sufficient magnitude to perturb the family interaction patterns governing peer involvement (see Guralnick 1998).

If such adjustments occurred, then they were not reflected in differences in parent arranging and monitoring in the present study. Rather, if parents are making adjustments, they may be taking the form of specific teaching and coaching strategies to promote positive peer interactions similar to those commonly used by parents of typically developing children (e.g. Finnie & Russell 1988). Adjustments by parents of children with DS in other contexts have been well documented (Landry *et al.* 1994; Roach *et al.* 1998). However, observational studies of parenting strategies which can foster peer involvement for children with ID remain an important area for future research. Evidence from research on goal-directed behaviours of children with DS suggests that parents will be faced with special challenges to enhance their child's independent peer interaction skills (Landry *et al.* 1998). Moreover, observational studies comparing the peer-related social competence of children with and without DS without adult participation have not been carried out, nor have studies focused on social task persistence during peer play, the integration of social interactions with peers and object play, or affective patterns in the peer context. Such studies are essential to determine whether children with

DS display aetiology-specific developmental patterns with peers. Unstructured situations such as peer play may be unusually sensitive to the aetiology-specific behavioural patterns of children with DS (Landry *et al.* 1994, 1998).

Maternal beliefs about early childhood inclusion were examined as another possible influence on children's peer involvement. Mothers of children with DS did express more positive views with respect to the benefits of inclusion, including promoting acceptance in community settings. These findings suggest a willingness to encourage greater participation of children with DS in inclusive settings, although relatively few families have the opportunity to do so in many communities (Guralnick 2001). In fact, only about one of four families of children with DS enrolled their child in an inclusive setting in this sample (see also Guralnick *et al.* 1995), a factor likely to limit involvement with the larger community of potential peers. Nevertheless, for children with DS, beliefs about early childhood inclusion were not correlated with peer involvement or arranging in the present study. Arranging and peer involvement were correlated with one another, but similarly for both groups of children. Maternal beliefs did not mediate this relationship. It is possible that beliefs about inclusion may not have been a good index of mothers' interest in encouraging peer participation for their child. More direct measures may prove to be of value in subsequent work.

The present study also underscores the complexities in interpreting research on aetiological specificity for certain types of variables and contexts (see Dykens *et al.* 2000). In particular, the concept of aetiological specificity is best placed in a larger developmental framework, with a clear recognition of the potential for specific behavioural patterns to be substantially altered by children's experiences. By acknowledging this interactive relationship, it encourages investigators to examine how and which aetiology-specific behavioural patterns affect and are affected by experience. Whether certain aetiology-specific patterns do in fact 'set the stage' for difficulties in different developmental domains and contexts, as Dykens (1995) suggests, can be understood through a search for relevant processes and mechanisms in longitudinal investigations. Such an approach will help to determine whether a behavioural pattern is a fundamental feature of

development, and perhaps even resistant to change, despite exposure to environments and parent actions which differ widely. Similarly, different aetiology-specific characteristics may interact with one another, perhaps even in opposite ways (e.g. experiencing affective relationship difficulties but being highly socially oriented). Efforts to understand the transformations of these patterns over time are needed to bring the knowledge of aetiology-specific findings firmly within contemporary developmental theory and research.

Finally, sample size and sample characteristics are factors which must be considered in interpreting findings in the present study. The relatively small sample size is of concern, and differences may exist between the groups which were not detectable. However, as indicated in Tables 2–4, the highly similar results for virtually all measures suggest that this may be a robust finding. Since this investigation is one of only a small number of studies with appropriate matching of child and family characteristics which compare children with and without DS, and the first to consider peer involvement, replications and extensions are certainly essential. Similarly, sample characteristics for children without DS were based on the present author's matching criteria. Other rationales for establishing matching criteria, such as those based on expressive language, would yield a different sample and perhaps different outcomes. Results of research focusing on aetiological specificity will also vary with the nature of the heterogeneous samples of children with developmental delay. Consequently, a long-term research programme is required to determine the invariance of these patterns with multiple samples.

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