

Interaction – it depends – a comparative study of interaction in preschools between children with intellectual disability and children with typical development

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(Received 1 September 2008; accepted 22 June 2009)

The aim of this study is to investigate differences and similarities in interaction of preschool children with and without intellectual disability. Observations of preschool children (COP) and questionnaires to which preschool staff responded were used to study differences and similarities in how the children interact. Similarities concerned children's engagement and context of play; differences involved how children initiated and adjusted their interaction. The study revealed that teachers decided what the interaction should be for children with intellectual disability more often than for children with typical development and were often physically closer to intellectually disabled children than to the children with typical development. The results also revealed that children with intellectual disability, compared to children with typical development, interacted more frequently during structured activities than during free play. In conclusion, how the interaction evolves depends on the classroom situation, the child, and the child's physical environment. In structured contexts there were fewer differences in interaction between children with and without intellectual disability.

Keywords: preschool; children with intellectual disability; typical developed children; interaction

Introduction

Early intervention in Sweden can be defined as intervention practices with children in need of special support from birth to the start of school. In some countries, for example, the United States, preschool is not a federally-funded service; rather, it is a form of early childhood intervention that states provide to children with disabilities or who are at risk for developmental delay (Björck-Åkesson and Granlund, in Odom et al. 2003).

In Sweden preschools are available to all children from one–five years of age. Preschool is offered until the child begins in the preschool class, at the age of six. Eighty-five percent of Swedish children ages one–five years attend preschool, including the majority of children with intellectual disability (Regeringens proposition

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2004/05). The Swedish preschool system combines education and caretaking, 'educare' (Regeringens proposition 2004/05). Attending preschool is perceived as one of the most important routes for securing inclusion for children with disability. The curriculum for Swedish preschool (Lpfö98: see Utbildningsdepartementet 1998) maintains that children 'who occasionally or on a more permanent basis need more support than others should receive this in relation to their needs and circumstances' (5). The curriculum as well as the physical environment of preschool children impacts how the children interact (Michelsén 2005).

The intention is that the general support system will provide effective and quality intervention in a preschool context for all children. If that were the case, few differences would emerge between children with and without disability in preschool interaction patterns.

Inclusion is defined as a system change within the school where the whole is comprised of different individuals. Inclusion, according to Ballard (1997):

involves all students in a community, with no expectations and irrespective of their intellectual, physical, sensory or other differences, having equal rights to access the culturally valued curriculum of their society as full-time valued of age-appropriate mainstream classrooms. (Ballard 1997, 244, in Nilholm 2006)

Several, primarily north American, studies that examine participation and interaction of children with intellectual disabilities in preschool show that they tend to interact less with peers and exhibit lower levels of complexity in engagement than their peers with typical development (Guralnick et al. 2006).

In Sweden, large within-group differences in engagement and interaction of children with disabilities attending preschools are reported (Almqvist 2006). The differences between children with and without disabilities may be explained by how interaction and engagement are measured (Almqvist 2006; Lillvist 2008). Larger differences have been noted in studies based on questionnaire data than on observations. In this study, child interaction data were collected through questionnaires as well as by observations of children both with and without intellectual disability.

Children with intellectual disability

The American Association on Intellectual and Developmental Disability (AAIDD; formerly The American Association of Mental Retardation, AAMR) emphasizes that mental retardation is not only intelligence measured by an intelligence quotient (IQ) but also adaptive behaviour such as social, practical, and academic skills (Switzky et al. 2003).

Instead of using diagnoses, Stein (2006) suggests that children with chronic conditions should be identified by the consequences of their functional limitations compared to children of the same age. Instead of labelling a child with the diagnosis of intellectually disabled, the researcher should examine the child's support needs. On the basis of the findings, it might be prescribed that the child be transferred to an environment that stimulates his/her interaction by providing access to children of different ages and by using appropriate adjusted materials. The suggested focus on functional limitations accords with the definition of adaptive behaviour. It stresses the importance of how the child uses his/her skills, such as communication, self-care,

self-direction, and social interaction, as opposed to the degree of delay compared to children with typical development.

How the child functions is exhibited in his/her adaptive behaviour and includes the child's ability to adjust to the natural and social demands of their environment (Switzky et al. 2003). An important everyday environment for Swedish children is preschool. The preschool context is where adaptive behaviour must be displayed. Aspects of adaptive behaviour of children with intellectual disability include social interaction skills, communication and use of language.

Communication and interaction

Bloom and Lahey (1978) and Prutting (1982) examine language and argue that language is a mode to engage in social interaction. Communication, the authors argue, is a method for achieving social interaction in everyday contexts. Everyday contexts in preschool involve both child-adult interaction and peer-to-peer interaction. Adults are often physically close to the child with disability; as a consequence the child interacts more frequently with adults than with peers (Guralnick et al. 2006; Guralnick and Groom 1985; Farmer 1997; Eriksson 2006).

In Sweden, many children with intellectual disabilities use augmentative, manual signs, referred to as supported sign language. This may hamper peer interaction because children with typical development seldom use supported sign language. Peers rarely understand the signs or spoken utterances of the child with intellectual disability, and this failure may cause a communication breakdown. Guralnick et al. (2006) postulate that this is one reason why it may be difficult for children with intellectual disabilities to establish social relations with other children. An additional factor may be that the pace of play is quicker and more flexible among typically developed children. For example, they may make sudden and impulsive changes in their interactions: at one moment building a hospital with *Legø* blocks, and at the next moment sharing experiences about pets that are ill. Children with intellectual disability are generally unable to sustain the pace of their peers.

A third factor is that many typically developing children have difficulties anticipating the reactions of children with intellectual disabilities (Ytterhus 2003). On the one hand, this may lead to impugning lower social status for children with intellectual disabilities than their peers (Kemp and Carter 2002). On the other hand, children with intellectual disabilities may be well accepted by peers, and perhaps, the authors suggest, 'social acceptance is the most that can be expected' (Kemp and Carter 2002, 410).

In summary, children with intellectual disabilities, compared with their typically developed peers, appear to be less engaged in complex play and have more difficulties establishing relationships, especially maintaining and initiating social contact with peers. They spend more time on communication with teachers than with typically developing peers. Even if a child with intellectual disability is included 'geographically', that is, attends the preschool closest to his/her home, it is not evident that the child is included in everyday preschool activities. This issue has not been investigated in preschool settings in Sweden.

Early studies demonstrate that degree and type of disability are not strongly correlated with the child's social competence and participation (Granlund et al. 2003; Eriksson 2006; Almqvist 2006; Lillvist 2008). But Eriksson (2006), examining the

participation in school activities of children both with and without disabilities, found 'no statistically significant differences between the groups in interaction with peers' (218). Lillvist (2008), Granlund et al. (2003), and Almqvist (2006) used different statistical analyses to investigate whether children with and without disability might be classified in separate cluster groups characterized by specific patterns of interaction and participation. However, this was not supported by their findings. Children with disabilities were found in all groups, with the exception of one group that included children with profound and/or multiple disabilities. One possible explanation for the lack of pronounced differences between children with and without disability in these studies is that as individuals, they are characterized by individual differences in many aspects of functioning that impact social interaction, including cognitive ability (Simeonsson 2006). If children are grouped based on social interaction, type and degree of disability cannot solely explain individual differences in interaction. Difficulties can only be expected in the specific areas of functioning that are strongly impacted by the disability, in this case intellectual disability.

Aim and research questions

The aim of this study was to compare interaction in preschool for 10 children with intellectual disability and 10 children with typical development.

The research questions were:

- (1) Do children with intellectual disability interact differently with preschool staff and peers compared to their non-disabled peers?
- (2) How do preschool teachers experience interaction with children with intellectual disability and children with typical development?
- (3) To what degree is there agreement between the teachers' ratings of interactions and the observations of interactions?

Method

Participants

From an earlier study with 570 preschool groups, all preschools (164 groups), including children with intellectual disability, were asked to participate in the study. The first preschools that consented to participate were chosen

Seven boys and three girls with intellectual disability participated in the study as a target group; mean age was 4.8 years. Six boys and four girls with typical development constituted the control group, mean age of 4.7 years.

The questionnaires and the interviews were answered by 20 preschool staff.

Six of the teachers had known the targeted child and the comparison child for less than six months; four had known them more than one year. Sixteen of the personnel were trained preschool teachers, two were child minders and two had no education in child care. There were 3–5.75 personnel (mean 3.9) in one group of 14–28 children (mean 18.5). The mean time spent in preschool for the children with intellectual disability was 4.7 hours per day and for the children with typical development 6.2 hours per day.

As shown in Table 1, many of the children in the target group had additional limitations besides intellectual disability.

Table 1. Estimation of the children's functioning, Abilities Index (Simeonsson and Bailey 1984).

	Child with disability	Child with typical development
Hearing problem	2	0
Vision problem	10	0
Intellectual functioning	9	0
Intentional communication	4	0
Tonus	4	0
Behaviour and social skills	2	0
Overall health	2	0
Structural status	0	0

Note: All children are included in all analyses.

The most common additional limitation as rated on the Ability index is in the area of communication. The 10 typically developed children had no disability. Seven of the children with intellectual disability had been diagnosed with Down's syndrome and all used augmentative manual signs. One of the children had three limitations and another child had two limitations in addition to intellectual disability.

Procedures and ethical considerations

Letters of consent and a description of the study were sent to 164 preschool departments in two counties. The first nine preschools which responded to the first author and expressed interest in participating in the study were contacted. One of the preschools had two children with intellectual disabilities, so nine preschools were sufficient to enroll 10 children in a target group and 10 children in a control group. Letters were then sent to the 10 parents of children with an intellectual disability (target group) and the 10 parents of children without disability (control group). Selection of children in the control group was done by the preschool teachers. They were requested to choose a child of the same age and gender as the targeted child. In one case that was not possible, and a girl was chosen instead of a boy.

The letter described the purpose of the study and provided information concerning research ethical considerations: participation was based solely on the parents' willingness; parents could leave the study when they wished, the children's anonymity would be protected, and the material would not be used for purposes other than research.

Instruments

To study the children's interaction six different questionnaires, one observational tool, and an Ability Index were used (Simeonsson and Bailey 1984).

Questionnaires:

- (1) Environment in preschool (Simeonsson et al. 1999). A questionnaire with 18 items; for example, 'There are plenty of varying toys' and 'There is plenty of space for indoor and/or outdoor activities'. Four response alternatives were used: 1 = do not agree, 2 = partly agree, 3 = agree, 4 = completely agree.

- (2) The teacher's perception about the child's interaction is a questionnaire with 19 items (Granlund and Olsson 1998); for example, 'the child understands what I mean', 'I answer the child's communication', 'I understand what the child means'. Five response alternatives were used: 1 = seldom, 2 = fairly seldom, 3 = 50% of the time, 4 = fairly often and 5 = often. The 10 first statements concern how the child interacts with the teacher and the following nine statements relate to the teacher's interaction with the child.
- (3) Interaction with other children (Granlund and Olsson 1998) is a questionnaire with 16 items in which the teacher rates peer interaction; for example, the child initiates an interaction, other children respond to the child. Five response alternatives were used: 1 = seldom, 2 = fairly seldom, 3 = 50% of the time, 4 = fairly often, and 5 = often. The first 11 statements concern how the child interacts with other children; the following five statements concern how peers interact with the child.
- (4) Activity (Simeonsson et al. 1999) is a questionnaire with 41 items relevant to how available activities are and how frequently the child participates in the activity. Samples from these items are 'Playing alone', 'playing with toys', and 'singing'. Three response alternatives were used: 0 = not available/do not participate, 1 = minimal availability/participates seldom, 2 = partly availability/participates occasionally, and 3 = total availability/participates frequently.
- (5) Child Behaviour Questionnaire CheckList (Achenbach and Rescoria 2000) is a questionnaire with 25 items with a three-point scale: (1) don't agree, (2) partly agree, (3) agree often. Examples from the items are: cries a lot, can't concentrate, obstinate, low interest in things around him/her.
- (6) Engages in different activities (Child Engagement Questionnaire [CEQ], McWilliam 1991) is a questionnaire with 24 items with a four-point rating scale, ranging from (1) almost never happens, (2) happens sometimes, (3) happens often, or (4) happens all the time; for example, the child uses new words, and the child adjusts to different situations.
- (7) The Abilities Index (Simeonsson and Bailey 1984) was used for each child in order to survey what type and degree of limitation the child exhibited. The Abilities Index provides a profile of the child's abilities across nine major areas: intentional communication, behaviour and social skills, intellectual functioning, tonicity (muscle tone), limbs (use of arms, legs, and hands), vision, audition, health, and structural status. The instrument contains a scale from 1 (normal ability) to 6 (extreme or profound lack of ability).

Child Observation in Preschool (COP)

The COP is based on a series of snapshots (every child-pair is observed during five seconds) of children's behaviour across a period of 12 sweeps for each child-pair. Each snapshot cannot give a full account of a child's behaviour but, combined, they provide a picture of how children spend their time in preschool 'as well as information about individual differences among children' (Farran 2003, 1). The observation sheet consists of 11 different behaviours with a total of 61 coding alternatives. Examples of the variables are: verbal, to whom is the child verbal? (this includes supported signs); type of interaction: social, alone, onlooker; type of activity in which the child is engaged: fantasy, including pretence, social, or doing nothing.

These are rated according to degree of involvement; that is, high, medium, or low and teacher's communication and type of communication (answering children, no communication at all, praise, or encouraging were also rated).

This study used 45 codes out of 61 (73%) codes which are applicable to the preschool venue in Sweden. In two of the COP series, two independent observers collected reliable data. Agreement between observers was determined by dividing the number of codes with the number of disagreements. Reliabilities across the categories were 92%. The codes' lowest agreement was for 'emotion' (74%). This variable was excluded. There were some codes in the variable 'Material' that failed to fit observed activities such as 'Science and Math'. These codes also were excluded.

In the variables 'Verbal', 'Verbal to whom', and 'Proximity', an index was constructed so that all adults (preschool teacher, assistant and combinations of preschool teacher and assistant) constituted one group. In the variable 'Engagement', the codes 'High and Rather high' were combined into one index, as were the codes 'Low and Rather low'. Cronbach's Alpha Index was calculated and showed coefficients of 0.81–0.90.

COP has not been commonly used in preschool education research. Lillvist (2008) used COP to make observations of social competence in preschools. Culp and Farran (1989) used the Manual for Observation of Play in Preschools (MOPP), which is similar to COP, to observe 283 children in preschool classrooms. In both studies two observers participated to establish inter-rater agreement. Reliabilities across the categories were 80% in both studies.

To investigate reliability (internal consistency) of the questionnaires, Cronbach's Alpha Index was calculated for all questionnaires. The alpha coefficient for internal consistency varied from α 0.96 interaction with other children, α 0.93 the teacher's perception about the child's interaction, engagement (α 0.90), Child Behaviour Questionnaire (α 0.88), frequency of participation in activities (α 0.94), availability to activities (α 0.85) to α 0.74 for environment in preschool. Other studies (Almqvist 2006; Lillvist 2008) have used the same questionnaires and also reported high internal consistency.

Concerning the Abilities Index, Bailey et al. (1993) tested its inter-rater agreement between parents-teachers, parents-specialists, and teachers-specialists and reported that the exact agreement between the groups was 67.2%. The lowest agreements were found in social skills, inappropriate behaviour, intellectual functioning and communication (agreement 39–43%). If liberal agreement criteria were used, allowing for differences of one scale step, agreement was over 80%. Granlund and Roll-Pettersson translated the Abilities Index into Swedish (see Simeonsson and Bailey 1984) and presented a conservative inter-rater agreement of 72% between parents-special educators, and a stability of test-retest for special educators of (0.90%).

Procedure and data analysis

COP and the questionnaires were analyzed with an independent T-test at the 0.5% significance level. In the COP manual an adjustment has been made: verbal is broader than spoken words alone, which means that supported signs are defined as verbal.

A Mann-Whitney test was conducted for the questionnaires to analyze within-group variance in the sample, using the two groups in the study. A considerable

within-group variance was found in the group of children with intellectual disability. One of the children had profound intellectual disability as well as additional disabilities, and another child had a mild disability. This created an extensive variation in the COP observations, especially in the codes 'to whom' (Std. Dev. 2.50) and 'type of interaction' (Std. Dev. 0.94). Because of the within-group variance, the Mann-Whitney test was not used in the analyses of observational data.

Each child-targeted child as well as control child was observed with the manual Child Observation in Preschool [COP] (Farran 2003). The observations focused on four different activities: (1) circle-time, a structured activity with many children at the same place at the same time; (2) free play, a setting with none or very little structure from the teachers and with opportunities for interaction and inclusion, where children chose their own activities; (3) mealtime, consisting of interaction and communication in a structured setting; and (4) outdoor-activities, such as sandbox and swinging.

Limitations

The study describes the interactions of only 20 children, strongly limiting the general conclusions. The observations from interaction take place in preschool settings and do not reveal if and how interactions differ from other settings. Analyses have not been conducted to separate unstructured time from structured time. Therefore, the study can only give a description based on the observations.

Results

The results will be presented in relation to the research questions stated above.

The analysis of the COP data with the help of independent t-test gave the following results (see Table 2):

In summary, 33 out of 45 codes were similar (85%), that is, no differences were found between children with and without intellectual disability. Findings indicated no differences between the groups either in engagement or in the variables material and setting. The results indicated that children with intellectual disability interacted in the same contexts as their peers.

However, in the variable 'Verbal' significant differences were found, indicating that the children with intellectual disabilities communicated less and especially less often with peers. The variable 'Proximity' showed that children with intellectual disability were more often in closer proximity to a teacher than children in the control group. The results from the variable 'Teachers communication to the child' and 'Type of teachers' communication to the child' indicated that the teachers communicated and initiated more often with children with intellectual disabilities, especially asking questions.

Differences were found in how children with disabilities relate to teachers and to typically developed peers, but there were few differences between the target child and the control child regarding engagement in activities and contexts for interaction. Children with disabilities were less verbal and especially less verbal to other children; their type of activity was also less social and collaborative. They were more frequently in close proximity to teachers than their peers. These results, in conjunction with the findings that the teachers communicated more frequently

Table 2. Results from COOP independent T-test ($p < 0.5$).

	Child	Mean	Std. dev.	T-value	Si
Verbal					
Is verbal	Target child	2.50	2.17	-5.48	.00
	Control child	7.10	1.52		
Not verbal	Target child	5.90	3.31	3.27	.00
	Control child	2.10	1.60		
Verbal to whom					
Children	Target child	.70	.94	-5.52	.00
	Control child	4.30	1.83		
No one	Target child	5.40	3.37	2.43	.03
	Control child	2.40	1.95		
Teachers communication with the child					
No communication	Target child	3.90	2.68	3.14	.01
	Control child	7.30	2.11		
Initiating children	Target child	5.90	1.97	4.26	.00
	Control child	2.0	1.58		
Type of teachers communication					
Question	Target child	2.0	1.17	2.58	.02
	Control child	1.10	1.24		
No communication	Target child	4.20	2.57	-3.09	.01
	Control child	7.40	2.01		
Proximity					
To teacher	Target child	10.20	1.93	2.53	.02
	Control child	7.80	2.30		
To children	Target child	.70	.67	-2.40	.03
	Control child	2.70	2.54		
Type of interaction					
Collaboration	Target child	1.10	.99	-3.19	.00
	Control child	3.60	2.27		
Type of activity					
Social	Target child	1.40	1.26	-6.30	.00
	Control child	5.30	1.50		
Disruptive	Target child	2.30	2.16	2.50	.02
	Control child	.50	.70		
Doing nothing	Target child	5.00	2.35	3.56	.03
	Control child	2.00	1.25		

Note: All children are included in all analyses.

with the targeted child, probably had an impact on the child's possible opportunities for interaction with other children and participation in activities involving peers.

How do preschool teachers experience interaction with children with intellectual disability and children with typical development?

The responses to the questionnaire concerning teachers' perceptions of the child's interaction revealed that teachers experienced that peer interaction differed between groups, but not the teachers' perception of how she interacted with the child. In Table 3,

Table 3. Questionnaire. Preschool teachers' perception of the child's interaction. Group statistics, independent T-test ($p < .05$).

	Child	Mean	Std.dev	T-value	sig.
The child ends interaction in a proper way	Target child	1.70	1.05	5.34	.00
	Control child	4.20	1.03		
The child adjusts his/her tempo	Target child	2.30	1.49	1.70	.01
	Control child	4.00	1.50		
I (the teacher) decide what to interact about	Target child	4.40	.84	3.04	.08
	Control child	3.00	.91		
I understand what the child means	Target child	4.10	.32	2.60	.02
	Control child	4.80	.32		

Note: All children are included in all analyses.

significant differences between the groups regarding how the teacher perceives peer interactions are displayed.

In the questionnaire 'Interaction with other children', results from the Mann-Whitney test show that the target group had a lower Mean Rank in all the 16 statements: the lowest is 5.65 (the child understands what other children say), the highest is 8.20 (the child refuses to do something). Corresponding Mean Rank for typical developed children is 15.35 and 12.80. The questionnaire about availability of activity and frequency of participation in activities revealed no differences between the two groups.

The child's behaviour showed a significant difference between the groups on three of the 14 variables: 'avoids eye contact' ($p = .045$), 'is disturbed by changes in daily routines' ($p = .009$) and 'can't concentrate' ($p = .050$). Children with disabilities have more limitations in these variables.

To what degree is there an agreement between the ratings in the questionnaire about interaction from preschool teachers and the observations?

According to teachers' self-rated experience, no significant differences were found regarding how they rated their interaction with a child with an intellectual disability and a child without an intellectual disability. However, observations revealed significant differences in how teachers interacted with the children. The teacher initiated contact more frequently, asked more questions, and communicated more often with the child with an intellectual disability than with the control child. Children with disabilities interacted more with adults than the typically developing children. Concerning how the child interacted with peers, similar discrepancies were noted between observations and questionnaires. Children with disabilities were more passive in peer interaction and initiated fewer social contacts when observed, compared to what questionnaire data revealed.

Discussion

The results of this study reveal that children with an intellectual disability interact in the same contexts in preschool as their peers but they initiate fewer peer interactions and interact more frequently with teachers. The results indicate that the Swedish

preschool system for all children, in which attending preschool is an important generic intervention for children with intellectual disability, succeeds to a limited degree in minimizing the functional consequences for children with intellectual disability. Children with intellectual disability are as engaged as other children and included in preschool activities. However, special interventions, individually tailored for each child, seem to be necessary to facilitate peer interaction within the preschool context.

The codes that are similar to both groups are mostly from the categories area, that is, circle time, table, doll corner, kitchen and outdoors; material, for example, reading material, game/toys, drama and nothing; and engagement (high, moderate and low). When children are outdoors, seated at a table, or occupied in circle time, they are involved in activities in which they are required to participate. Communication is usually conducted by a teacher in such situations. The teacher decides what the discussion will be about and children do not have to initiate interaction. In structured activities such as these, the differences between the groups are less than in activities where children have to be more ongoing and take initiatives. Differences between the groups were found in categories that are important for interaction; for example, verbal, verbal to whom, type of interaction and teacher's communication. As in earlier studies (Guralnick, Connor, and Hammond 2006; Guralnick and Groom 1985; Farmer 1997; Eriksson 2006), the results showed that children with intellectual disability had shortcomings in taking initiatives and interacting with peers; they interacted more with adults than with peers; or they did not communicate with anyone.

The results from COP show that children with intellectual disabilities rarely take initiative to interact with other children and that children with intellectual disabilities are more socially included during structured activities, but less included in free play and other unstructured activities. Eriksson (2006) reports that students with disabilities interact more with teachers than with peers and also seem to participate more during structured activities. One reason for this pattern may be that children with disabilities are more accustomed to interact with adults than with peers and that structured time yields more opportunities to interact with teachers. Another reason may be that teachers adapt their interaction more than peers do. Therefore, demands on the child with an intellectual disability are lower when interacting with adults than with peers. The fact that the teachers have more frequent communication with the target child probably impacts the child's opportunities for interaction with other children and his/her participation in activities that involve peers. The risk is that the child with disability is accumulating experience interacting with teachers, at the cost of interacting with peers.

Though the results of this study do not designate activities as structured and unstructured, our findings repeat those of other researchers who maintain that children with disabilities interact more during structured times and have difficulties with relationship with peers in unstructured play (Eriksson 2006; Guralnick et al. 2006; Janson 1996; Granlund et al. 2003). The authors point out that interaction with peers during free activities is important relevant to social participation, but interaction with teachers is important for participation in structured activities.

The results from COP do not show significant differences between the groups on engagement. However, Lillvist (2008) found that children with established disabilities were more often rated as low in their engagement than non-disabled children.

Eriksson (2006) found that 'Children excluded from activities were not just less engaged. They often had less social support, especially from other peers' (14). One possible explanation of the different results could be that Lillvist observed only free play (unstructured time), while this study observed children during circle time and meal time (structured time). Together, the studies stress the importance of environmental variables, but also the need for teachers to focus their own interaction on children with disabilities during unstructured activities, perhaps to the extent that it will reduce the probability for peer interaction for these children. In total, the results underscore the importance of teachers designing interventions that aim specifically at supporting the participation of children with disabilities in unstructured activities with peers.

Conclusions

The environment, especially the teacher's attitudes and behaviours, can support the child with disability by giving him/her more opportunities for interaction with peers, give him/her feedback, and interpret his/her attempts to interact. If the child's ability to interact is weak, the environment becomes even more important. The teacher has to find new ways, such as Augmentative and Alternative Communication (AAC) to support the child's interaction attempts as well as support the child with interaction limitations in interaction with his/her peers. When a child needs signs to support his/her verbal communication, the environment should implement signs in all situations in order to make interaction successful, and they should invite other children to participate in the communication. Taking initiatives and maintaining daily interactions is difficult for many users of alternative forms of communication (Light 1989). For example, taking initiatives is important in free play, but when circle time is over, many children have already decided what they will do during free play. By contrast, children with disability may not have done so. When they enter a play they may not understand what the play is about or its rules, which further impedes their ability to take initiatives. The environment needs to support the child's communication in daily activities and create situations that support the child in initiating and maintaining communication with peers.

The curriculum for preschools (Utbildningsdepartementet 1998) stipulates that preschools have to take special consideration of children with special needs. This entails that activities be designed that are appropriate for the individual child. This study indicates that the teachers perceive themselves as adjusting their interactions and communications to the needs of the individual child, independent of whether the child is in special need of support or not. The observations reveal that, on the contrary, teachers relate differently toward children with disabilities. The adaptations used by teachers, such as initiating interaction with a child and being in close proximity may reduce the probability for spontaneous peer interaction for the child with disability. Teachers should be cognizant of their own interaction behaviour and how it impacts the probability that children with intellectual disability will interact with peers.

Many of the children with intellectual disabilities in this study needed supported signs for communication, and in too many cases the child had access to supported signs only during special activities, such as circle time or singing and with a certain teacher.

To conclude, the degree of participation depends on the situation, the child, and the environment. Central to these factors is the issue of interaction. Preschool teachers must engage more explicitly to adapt the environment by using supported signs and by promoting situations that facilitate peer interaction. They should support children with disabilities to enter play situations and also encourage all children in the group to participate in a variety of play activities. If children with disabilities are identified by the consequences of their functional limitations compared to children at the same age, as Simeonsson suggests (2006), it could mean that the environment should be designed to fit children based on the judgements of their functional abilities rather than their disability status. Most children look for peers to play and exchange experiences with (Ytterhus 2003). Given the findings of these studies, the challenge would be for the environment to offer and stimulate an 'interaction area' that involves all children.

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