

■ Supporting Peer Interactions of Children with Low Social Communication Skills

■ Soutenir les interactions entre les enfants ayant de faibles aptitudes à la communication sociale

Luigi Girolametto, PhD

Elaine Weitzman, MEd

Janice Greenberg, DSP

Abstract

This exploratory study investigated the frequency and type of verbal supports used by early childhood educators to facilitate the peer interactions of children who are reluctant to participate in peer interactions. Twelve early childhood educators identified children who were reluctant to engage in peer interaction (without concurrent disabilities) using a rating scale of communication behaviour. All 12 children were learning English as their second language (ESL) and differed from the children in the comparison group in terms of exposure to their native language and length of time in day care. Videotapes of dramatic play and block/construction play were coded for the educators' indirect verbal support strategies (e.g., mentioning a child's name, interpreting a child's words, offering praise for peer interaction) and direct verbal support strategies (e.g., telling a child what to say to a peer, inviting children to play together). The early childhood educators did not differentiate between the target and comparison children in terms of structural features of their input (MLU, frequency of utterances) or the number of verbal supports they used to facilitate interaction. Examination of the children's responses to the educators' supports did not reveal any significant differences. Although there were strong associations between the comparison children's interaction skills and educators' peer supports, there were no significant associations for the target children. The results support the importance of training early childhood educators to facilitate peer interactions and suggest that future research examining the effects of inservice education with children who have confirmed disabilities is warranted.

Abrégé

Cette étude préliminaire s'est penchée sur la fréquence et le type d'aide verbale utilisée par les éducatrices de la petite enfance pour faciliter l'interaction entre les pairs chez les enfants qui hésitent à échanger avec les autres. Douze éducatrices ont identifié des enfants ayant des réticences à interagir avec leurs pairs (sans qu'ils aient une autre incapacité). Elles ont utilisé une échelle d'évaluation de la communication. Les 12 enfants choisis apprenaient l'anglais comme langue seconde et différaient des enfants dans le groupe de comparaison au niveau de l'exposition à leur langue maternelle et à la durée de leur séjour en garderie. Des enregistrements vidéo de jeu théâtral et de jeu de construction ont permis de coder les stratégies de soutien verbal indirect des éducatrices (p. ex. : dire le nom de l'enfant, interpréter les mots de l'enfant, offrir des félicitations à un enfant pour son interaction avec des pairs) ainsi que les stratégies de soutien verbal direct (p. ex. : dire à un enfant quoi dire à un pair, inviter les enfants à jouer entre eux). Le comportement des éducatrices de la petite enfance n'a pas différé entre le groupe cible et le groupe de comparaison pour ce qui est des caractéristiques structurales de leurs interventions (longueur moyenne des productions verbales, fréquence des énoncés) ni du nombre de leur soutien verbal pour faciliter l'interaction. Un examen des réactions des enfants vis-à-vis du soutien des éducatrices n'a fait ressortir aucune différence significative. Bien qu'il y ait eu de fortes associations entre les aptitudes d'interaction des enfants du groupe de comparaison et le soutien des éducatrices, aucune association de la sorte n'est ressortie de manière marquée pour les enfants du groupe cible. Les résultats corroborent l'importance de former les éducatrices de la petite enfance pour qu'elles facilitent l'interaction entre pairs. Ils font aussi ressortir la nécessité d'approfondir la recherche sur les effets du perfectionnement pour les éducatrices qui travaillent avec des enfants atteints d'une incapacité.

Key Words: day care, peer interaction, children, inservice education, adult-child interaction

Luigi Girolametto, PhD
University of Toronto
Toronto, Ontario

Elaine Weitzman, MEd
The Hanen Centre
Toronto, Ontario

Janice Greenberg, DSP
The Hanen Centre
Toronto, Ontario

Learning to interact positively with peers is an important social skill acquired during early childhood (e.g., Howes, 1987; Odom, McConnell, & McEvoy, 1992). The ability to engage in positive peer interactions predicts future social competence, friendships, and emotional adjustment (NICHD, 2001). The development of peer interaction skills occurs early in a child's life. These skills emerge in the toddler years and by the time children are three years of age, they are expected to engage in social pretend play with their peers and negotiate conflicts skillfully and successfully (Howes, 1987). The purpose of the current study was to examine the role of early childhood educators in promoting positive peer interactions of children with low social communication skills during naturalistic small group activities. These children did not have any overt difficulties in cognitive, language, or motor development, but appeared reluctant to engage in social interactions with their peers in day care classrooms.

Variation in the development of peer interaction skills may be due to a number of factors, including the frequency of exposure to other children, the quality of the child care environment, the child's temperament (e.g., reluctance to interact), and the presence of disabilities (Brownell & Hazen, 1999; Guralnick, 1992; Howes & Matheson, 1992). For example, temperamentally fearful children have been found to show greater stress to full-time centre-based care, in which social play is ongoing and many opportunities for conflicts occur (Crockenberg, 2003; Watamura, Donzella, Alwin, & Cunnar, 2003). Children with difficulties in peer interaction skills may present with aimless wandering, solitary play, uninvolved in social activities, or at the other end of the spectrum, in conduct disorders, increased conflict, and the use of aggression in peer interactions (e.g., Brownell & Hazen, 1999; Crockenberg, 2003; Guralnick, 1992; Howes & Hamilton, 1993; NICHD, 2003). Consequently, facilitating the development of peer interaction skills is an agenda that is consistent with the curricula of many early childhood education settings (Kemple, David, & Hysmith, 1997) and an important focus of many speech and language interventions (e.g., Warr-Leeper, 2003).

Peer interaction may be defined as a complex set of skills that integrates knowledge across a number of developmental areas, including play, social cognition, and language (Abbeduto & Short-Meyerson, 2002; Guralnick, 1992; Schuele, Rice, & Wilcox, 1995). Optimal development of peer interaction skills has its origins in early parent-child interactions as well as in sibling/peer interactions (Beckman & Lieber, 1992) and complementary theoretical perspectives account for its development. Social-interactionist perspectives of language acquisition explain the development of social communicative competence within a framework of early adult-child interactions (Bohannon & Bonvillian, 1997). Within these early adult-child interactions, children gain experiences negotiating turn-taking with supportive

partners, communicating shared knowledge, and playing games that switch roles (Bruner, 1975; Snow, 1981; Tomasello, Conti-Ramsden, & Ewert, 1990). In addition, these exchanges provide children with opportunities to acquire social-communication skills, such as how to initiate, respond, and contribute to ongoing topics. Complementary social-cognitive theories maintain that social competencies develop through multiple encounters with peers, under the supervision of adults. In these interactions, social strategies (e.g., access, negotiation, conflict resolution, compromise, discourse adjustments) are practised and consolidated during increasingly complex social pretend play (e.g., Beckman, 1992; Guralnick, 1992; Howes & Matheson, 1992). These early social experiences lay the foundation for more advanced social competencies that emerge in later preschool years, including (a) playing complementary pretend roles, (b) becoming aware of behavioural characteristics of group members, and (c) social perspective taking (Beckman & Lieber, 1992; Howes, 1987).

Increasingly, many children are cared for by nonparental adults in group care settings (e.g., day care centres, preschools) where they have increased contact with peers. Researchers generally agree that participation in peer groups such as these positively influence the development of peer interaction skills for typically developing children. For example, Aureli and Procacci (1992) reported that children with previous child care exposure spent more time with peers and talked more often during these interactions than children who were new to the child care setting. Further support is derived from findings that positive peer interactions in day care settings are associated with high levels of prosocial behaviour, less aggression, and well-developed skills in compromise, negotiation, affection, and reciprocity at three years of age (Howes & Matheson, 1992; NICHD, 2001). However, simple exposure to peers may be insufficient to ensure the development of peer interaction skills because this ignores the role of adult supervision and support. In large part, the facilitation of social competency may be attributed to responsive adults who model, coach, and reinforce peer interaction incidentally during daily activities (Kemple et al., 1997; Kontos & Keyes, 1999; NICHD, 2001).

Empirical observations indicate that educators mediate peer interactions approximately 2–16.5% of the time, depending on the setting, activity, and observational methodology used in these studies (e.g., File, 1994; Hundert, Mahoney, & Hopkins, 1993; Kemple et al., 1997; Schuele et al., 1995). Their mediation strategies tend to be of short duration and conducted "on the fly" during ongoing activities. Observations of typical children in preschool classrooms have yielded several types of mediation strategies used to support peer interaction, including (a) organizing the classroom to facilitate proximity and opportunities for peer interaction, (b) employing materials and activities that promote peer cooperation, and (c) using verbal supports to encourage

peer interaction (Kemple et al., 1997; Schuele et al., 1995). In the latter category, Kemple et al. found that educators' verbal supports reflected three levels of directiveness. Maximally directive supports elicited communication/behaviour from the children (e.g., *Tell Joanne to lend you her spoon*); moderately directive supports included statements suggesting assistance or joint play with a peer (e.g., *Arpita can help you tie your shoe; You use the cars with Jared*); and minimally directive supports included praise and comments that alerted children to objects, activities, or events they had in common (e.g., *David's mother has a new car too; That's good sharing*).

The purpose of the current study was to examine the verbal support strategies (both direct and indirect) used by early childhood educators to encourage peer interactions of preschoolers who are reluctant to interact with their peers. The theoretical and clinical implications of this line of inquiry include (a) a description of different subtypes of verbal supports used with these children, (b) the effect of verbal supports on the children's participation in interactions, (c) how verbal supports vary as a function of children's characteristics, and (d) the identification of specific areas of inservice education for child care staff. Speech-language pathologists are increasingly becoming involved in consultative roles and direct therapy in day cares and preschools. To be maximally effective in these new roles and contexts, clinicians need to understand better the communication and peer interaction dynamics in these settings.

This study addressed the following questions:

1. Do children who are reluctant to interact with their peers differ from the comparison children in terms of educators' ratings of communicative ability and conversational measures of language use?
2. Do early childhood educators differentiate between the two groups of children in terms of conversational measures of language use and the use of verbal supports to promote peer interaction?
3. Do the two groups of children differ in their responses to the educators' verbal supports for peer interaction? Which strategies are successful for inviting two or more children to interact?
4. Is variation in the children's peer interaction abilities associated with the early childhood educators' use of strategies to promote peer interaction?

Method

Participants

Early Childhood Educators. The participants in this study were 12 early childhood educators who worked in seven licensed day care centres in the metropolitan area of Toronto. All educators had completed high school as well as 2 years of postsecondary education at a community college resulting in a diploma in Early Childhood Education. The educators were female and had at least two years experience in child care settings. Descriptive

Table 1

Characteristics of the 12 Early Childhood Educators

Variable		
Age (in years)	M (SD)	39.9 (6.8)
	Min-Max	28-48
Years of Education	M (SD)	16.0 (1.9)
	Min-Max	14-20
Years of Experience	M (SD)	8.6 (3.4)
	Min-Max	3-13

Note: M = mean; SD = standard deviation; Min = minimum value; Max = maximum value.

data on their pretest characteristics can be found in Table 1. All educators worked in preschool classrooms that had an adult-child ratio of 1:8 as mandated by law in the Province of Ontario, Canada.

Children. Each educator was videotaped in interaction with a small group of four typically-developing children from her classroom. The group size was set at four children because previous research indicated that adult language input was adversely affected by larger group sizes (Pellegrino & Scopesi, 1990) and that young children were more interactive in small rather than large group settings (McCabe et al., 1996). Therefore, the findings of this study may only be generalizable to similar group sizes. Educators were asked to include one child in the group who was developing normally but who was reluctant to participate in peer interactions. This was confirmed by examining educators' ratings on items 12 and 13 (peer interaction items) of the Speech and Language Assessment Scale (SLAS) (Hadley & Rice, 1993). These children received ratings below 3 (i.e., below "normal for age") on these items and their status was verified by confirming that they addressed few utterances to their peers during videotaped play sessions. Because the items on the SLAS address social communication abilities with peers, this group will be referred to as children with low social communication skills. The remaining three children in the group were also developing normally but had no difficulties with

peer interaction according to the educators' ratings on the SLAS and observation of the videotaped interaction. Most of the children attended the day care centre on a full time basis (i.e., at least 40 hours per week) for at least 2 months prior to the study. The children ranged in age from 32-54 months. Summary data describing the characteristics of the children can be found in Table 2.

French, Kurdish, Mandarin, Sinhalese, Tamil, and Twi. The comparison children included 20 ESL children and 16 children who spoke English as their first language. The overall composition of the groups is as follows: one group contained one ESL child and three English-speaking children; four groups had two ESL children and two English-speaking children; five groups had three ESL children and one English-speaking child; and two groups had four ESL children. The native languages of the ESL children in the comparison group included: Arabic, Cantonese, Cree, Dari, Edo, Farsi, Filipino, French, Gujarati, Italian, Korean, Mandarin, Portuguese, Somali, and Spanish.

Table 2

Characteristics of the Children with Low Social Communication Skills and the Comparison Children

Variables	Children with Low Social Communication (n = 12)	Comparison Children (n = 36)
Age (months)		
M (SD)	39.9 (4.7)	41.7 (6.0)
Min-Max	34-50	32-54
Time in Day Care		
M (SD)	9.4 (6.6)	19.6 (10.9)
Min-Max	3-24	3-48
Gender		
Male	6	17
Female	6	19
Attendance		
Full-time	7	32
Part-time	5 ¹	4 ¹

Note: M = mean; SD = standard deviation; Min = minimum value; Max = maximum value.

¹ All part-time children with low social communication skills were in day care from 6 to 15 months, and were 35-50 months of age. The part-time comparison group children were in day care from 24 months and were 37-44 months of age.

Consistent with the multicultural population of Metropolitan Toronto, the majority of the children selected by the educators were from different cultural and linguistic backgrounds. All 12 of the children with low social communication skills were learning English as their second language (ESL). The native languages of these children included Arabic, Bengali, Cantonese, Fanti,

The second visit occurred one to two weeks later and immediately before the educators' participation in an inservice program. Therefore, this research portrays the interactions of educators and children prior to any inservice education on how to promote peer interaction skills. For information on the effects of participation in

Design and Procedure

The 12 early childhood educators worked in seven day care centres that were on a waiting list to receive an inservice program entitled *Learning Language and Loving It - The Hanen Program® for Early Childhood Educators* (Weitzman & Greenberg, 2002). A speech-language pathologist from The Hanen Centre contacted the supervisors of the day care centres to locate staff interested in participating in the study. The educators who agreed to participate completed a brief questionnaire that requested demographic information (e.g., age, training, years of experience). They were given copies of research information and consent forms to distribute to the parents of all the children in their classroom.

One to two weeks later, a research assistant visited each of the centres to meet the early childhood educators, collect all parent consent forms, and make appointments for filming adult-child interactions. The research assistant asked the educators to include one child who was reluctant to communicate and three children with average peer interaction skills in her group. The educators completed the Speech and Language Assessment Scale (Hadley & Rice, 1993) separately for each of the participating children in order to obtain a measure of their peer interaction skills and language development.

the program, see Girolametto, Weitzman, and Greenberg (2004). A portable digital camera with a directional microphone (Panasonic PV-DV601-K) was used to permit the research assistant to position herself so that the behaviours of the adults and children could be videotaped simultaneously. Only the children participating in the study were videotaped; The other children in the classroom played with similar materials in another room, or in a different area of the same classroom, or participated in outdoor play. The small groups were videotaped for 15 minutes in a dramatic play area and 15 minutes in the block play area. The order in which the two contexts were filmed was counterbalanced. The dramatic play took place in a kitchen centre and included a sink, refrigerator, table, chairs, clothing, dolls, food, and kitchen utensils. Typically, the early childhood educator and children sat at the table or stood at a kitchen appliance. The block play activity took place nearby on the floor. It included the following objects: various sizes of blocks, vehicles, and plastic animal figures.

Following each visit, the educators completed an informal questionnaire that asked them to rate their impressions of the representativeness of their interactions on a 5-point scale (1 = very typical; 3 = typical; 5 = not typical). All educators rated their amount of talk, rate of speech, and amount of playtime as typical (mean ratings = 2.8, 2.9, 2.7, respectively). Thus, these ratings provided some evidence that they believed their interactions to be similar to other, unobserved activities in the child care centre.

Dependent Measures

Transcription of the Videotapes. The middle ten minutes of the block play activity and the middle ten minutes of the dramatic play activity were transcribed using the Systematic Analysis of Language Transcripts (SALT) (Miller & Chapman, 1998) to yield a total of 20 minutes of transcription per small group. The first two minutes of each videotaped session were omitted to permit a brief warm-up period and the last three minutes were discarded to control for fatigue effects. Transcripts included the adult's utterances and a notation of which child the adult addressed. This was accomplished by noting whether the adult used a child's name, referred to a specific child's toy or activity, or responded to a specific child's question/comment. All other utterances were assigned to all four children in the group. Only the middle 10 minutes of the children's utterances (five minutes of dramatic play and five minutes of block play) were transcribed using the same procedure. This was done to cut down the amount of time required for transcription. Because there were four children in the group, each five-minute segment of child transcription took approximately two hours to transcribe.

Videotapes were randomly assigned to three research assistants for transcription. A transcription procedure

previously used by Johnston (2001) was adopted. Once transcribed, every transcript was verified by another member of the team who examined the prepared transcript and observed the accompanying videotape, noting disagreements on the transcripts. Each disagreement was subsequently discussed with the original transcriber and resolved in joint meetings during which the videotapes and transcripts were reviewed. Where the individuals reached a consensus, a change was entered on the transcripts. If there was a disagreement that could not be resolved, then the word or utterance was noted as unintelligible by typing an X for each unintelligible word. Similarly, disagreements concerning the addressee of the adult's utterance were resolved through discussion and observation of the videotape.

Agreement reliability was conducted on a random selection of 15% of the uncorrected transcripts (i.e., a total of 120 minutes of interaction) using the formula: $\text{number of agreements} / \text{the number agreements} + \text{disagreements} \times 100$. Agreement reliability was 97.8% for utterance boundaries, 97.0% for words, and 94.9% for addressee. These reliability figures reflected the extent to which the second individual agreed with the original transcription prior to making any corrections on the transcripts. SALT automatically calculated the following measures of adult language behaviour: talkativeness (number of utterances, number of words per minute) and complexity (mean length of utterance in morphemes, type token ratio). For the children, SALT was used to calculate the number of peer-directed and adult-directed utterances.

Coding. All utterances of the early childhood educators were examined to determine if they included a verbal support for peer interaction. The coding system was an adaptation of two previously published protocols for examining the adults' use of peer referrals (Kemple et al., 1997) and children's responses to peer referrals (Schuele et al., 1995). There were seven codes that were collapsed into four subtypes of verbal support strategies (i.e., *Restricts*, *Indirect Referrals*, *Promotes Communication*, and *Peer Referrals*).

Restricts included:

Rule [RC] - adult mentions a rule governing peer interaction (e.g., "We have to share our toys").

Indirect Referrals included:

Praise [P] - adult gives positive verbal reinforcement for engaging peer interaction (e.g., "That was nice of you to help Sara make her pizza").

Alerts [ASI] - adult alerts peers to situational information but does not explicitly invite children to interact (e.g., "Aravind has green pizza for everybody").

Facilitates Communication included:

Interpret [INT] - adult rephrases or restates a child's utterance to another child (e.g., "Sam said he would like some pizza").

Promotes Communication [PC] - adult prompts children to talk to each other (e.g., "Ask Sima if you can play with it").

Peer Referrals included:

Invite [INV] - adult invites children to interact together (e.g., "Bin, please set the table with Nica").

Referral to Peer [RP] -adult tells children to help each other (e.g., "Zak, Millar needs some help").

Children's responses to the educators' verbal supports were coded as *Uptake* (child follows the adult's suggestion to initiate interaction with a peer) or *Override* (child ignores or rejects the adult's suggestion). The peer's response was coded as *Acknowledge* (child responds in a conversationally appropriate manner to the *Uptake*) or *No Response* (the child does not respond to the *Uptake*).

Before using the coding system, three research assistants were trained to use the codes to a level of 90% agreement using five 10-minute videotaped interactions that were not part of the current study. The research assistants then coded the interactions by reading the transcript and observing the videotape simultaneously. Interrater reliability for the peer coding system was determined by having the first author assign ratings to 20% of the data (i.e., 16 videotaped interactions selected at random). Reliability was calculated using the formula: number of agreements / (the number agreements + disagreements) x 100 (Sackett, 1978). Interrater reliability was 95% for block play (n = 162) and 89% for dramatic play (n = 122). Reliability for the individual peer support codes ranged from 87% to 100%. Interrater reliability for children's codes was 91% for blocks (n = 243) and 90% for drama (n = 210). Reliability for the individual codes was 90% for *Uptake*, 92% for *Override*, 95% for *Acknowledge*, and 78% for *No Response*. The lower agreement for *No Response* occurred when children were obscured (e.g., their backs were turned to the camera) and the coders disagreed about whether the behaviour should be coded or not.

Table 3

Language and Peer Interaction Skills of the Children

Context/Variable		Children with Low Social Communication N = 12	Comparison Children N = 36	Significance
Educators' Ratings¹				
Peer Rating	M (SD)	1.5 (0.6)	3.2 (0.9)	***
	Min-Max	1-2	3-5	
Expressive Rating	M (SD)	1.8 (0.7)	3.2 (0.8)	***
	Min-Max	1-3	2-5	
Receptive Rating	M (SD)	2.0 (0.7)	3.3 (0.8)	***
	Min-Max	1-3	2-5	
Conversational Measures²				
MLU	M (SD)	2.6 (1.2)	3.2 (0.7)	ns
	Min-Max	0-4.3	1.5-4.9	
# Total Utterances	M (SD)	25.8 (18.8)	44.3 (23.4)	*
	Min-Max	0-54	4-105	
# Utterances to Teacher	M (SD)	18.3 (15.5)	31.6 (20.7)	*
	Min-Max	0-44	3-81	
# Utterances to Peers	M (SD)	7.4 (6.5)	12.8 (11.3)	ns
	Min-Max	0-20	0-39	

Note: M = mean; SD = standard deviation; Min = minimum value; Max = maximum value.

¹ Ratings derived from the Speech Language Assessment Scale (SLAS) completed by early childhood educators for each child (1 = very low for age; 3 = normal for age; 5 = very high for age).

² Derived from transcriptions of 10 minutes of adult-child conversation during drama and block play.

* p < .05; **p < .01; ***p < .001; ns = not significant

Results

Nonparametric statistics were used for all comparisons because the data were not normally distributed and the sample size was small. Furthermore, because this study was exploratory, a conservative approach to data analysis was appropriate for providing results that could guide hypotheses for subsequent studies. The two-tailed probability level was set at .05. Because there were no differences between the two contexts, the block play and dramatic play were collapsed.

Children's Language and Peer Interaction Measures

The first set of analyses examined whether the two groups of children differed from each other in terms of descriptive characteristics. As can be seen in Table 2 the preschoolers were between 32 and 54 months of age. Most attended full-time care and there was approximately the same number of boys and girls in each group. When these data were submitted to statistical analyses, the two groups of children did not differ significantly in age, gender distribution, or full-time/part-time attendance at day care. However, they differed significantly on the length of time in months that they were in a day care setting. The comparison group was in day care for a significantly longer period of time (20 months) as compared to the children with low social communication skills (9 months), Mann-Whitney $U = 92$, $p = .003$. A series of subanalyses was conducted to compare the 12 children with low social communication to the 20 ESL children in the comparison group. There were no significant differences between these two groups of ESL children for age, gender, or full/part-time attendance. However, in comparison to the 20 ESL children in the comparison group, the 12 children with low social communication skills were exposed to their native language for significantly more hours per day, Mann-Whitney $U = 58.0$, $p = .015$, and had been in day care for significantly less time, Mann-Whitney $U = 32.5$, $p = .001$. On average, the children with low social communication were exposed to their first language for seven hours per day versus five hours per day for the comparison ESL children. In addition,

the children with low social communication skills had been in day care for an average of 9 months versus 22 months for the comparison ESL children. The impact of these differences must be kept in mind when interpreting the findings of this study.

The first question asked by this study was whether the two groups of children differed significantly from each other in terms of their peer interaction skills and language

Table 4

Means and Standard Deviations for Measures of Early Childhood Educators' Talkativeness and Verbal Support for Peer Interaction

Context/Variable		Children with Low Social Communication (n = 12)	Comparison Children ² (n = 36)	Significance
Talkativeness				
# Utterances ¹	M (SD)	69.8 (32.9)	88.3 (23.0)	ns
	Min-Max	26-130	59-126	
MLU (morphemes)	M (SD)	4.4 (0.7)	4.6 (0.4)	ns
	Min-Max	3.6-5.7	4.0-5.3	
Verbal Supports for Peer Interaction				
# Total Supports	M (SD)	7.8 (5.1)	8.8 (4.9)	ns
	Min-Max	0-17	2-17	
# Restricts	M (SD)	0.3 (0.6)	0.3 (0.5)	ns
	Min-Max	0-2	0-1	
# Facilitates Communication	M (SD)	1.1 (1.2)	1.5 (1.3)	ns
	Min-Max	0-4	0-4	
# Peer Referrals	M (SD)	1.6 (1.7)	2.2 (2.1)	ns
	Min-Max	0-4	0-7	
# Indirect Referrals	M (SD)	5.0 (3.1)	5.0 (3.1)	ns
	Min-Max	0-10	0-9	

Note: M = mean; SD = standard deviation; Min = minimum value; Max = maximum value; ns = not significant.

¹ Number of conversational utterances does not include the number of peer referrals.

² Values entered for the comparison group are the average number of utterances or codes addressed to the three comparison children in the group.

Table 5

Summary Data for Children's Responses to Early Childhood Educators' Verbal Supports

Context/Variable		Children with Low	Comparison	Significance
		Social Communication	Children ¹	
		N = 12	N = 36	
# Uptakes	M (SD)	1.5 (2.6)	1.1 (1.1)	ns
	Min-Max	0-9	0-4	
# Overrides	M (SD)	6.4 (4.9)	6.9 (3.7)	ns
	Min-Max	0-16	2-13	
# Acknowledges	M (SD)	0.1 (0.3)	0.6 (0.8)	*
	Min-Max	0-1	0-3	
# No Response	M (SD)	0.5 (0.7)	0.9 (1.0)	ns
	Min-Max	0-2	0-2	

Note: M = mean; SD = standard deviation; Min = minimum value; Max = maximum value; ns = not significant.

¹ Values for the comparison children reflect the average of the three children in the group.

ability. Table 3 summarizes the data for the educators' ratings of the children's communication abilities as well as objective measures of language productivity derived from the videotaped interactions. As can be seen in Table 3, the educators assigned mean ratings of 3.2, 3.2, and 3.3 for peer interaction, expressive language and receptive language, respectively, indicating typical development for the children in the comparison group. In contrast, the children with low social communication skills received lower ratings of 1.5, 1.8, and 2.0 for these three areas, indicating below average skills. These ratings significantly differentiated the two groups of children. Specifically, the children with low social communication skills received significantly lower ratings for peer interaction, expressive language, and receptive language, Mann-Whitney $U_s = 28, 29, \text{ and } 48.5, p_s = .001$, respectively.

Next, the children's communication ability was examined in terms of their productivity during the small group interactions (i.e., MLU (morphemes), total number of utterances, and amount of talk directed to their educators and peers). As can be seen in Table 3, the children with low social communication skills had lower mean values for all four variables. These children used significantly fewer utterances than the other children in the group, Mann-Whitney $U = 116.5, p = .018$. In addition, they directed significantly fewer utterances to their educators than did the comparison group, Mann-Whitney $U = 118.5, p = .032$. An examination of Table 4 also reveals

that the children with low social communication skills also had a lower mean frequency of utterances that were directed toward their peers and a lower MLU than the comparison children. However, these differences did not achieve statistical significance. It should be noted that there was a great deal of variability in the children's productivity measures. One child with low social communication skills did not use any utterances during the entire transcribed video segments and therefore had no MLU calculation. The potential impact of this silence on the educator's strategies must be kept in mind when interpreting the next set of analyses.

Educators' Language Input. The second question asked whether the structural features of the educators' language input to the two groups of children differed significantly. For these analyses, a series of Wilcoxon paired tests was used to compare the educators' number of utterances and MLU (morphemes) because these variables were repeated measures for the same adults. These analyses did not reveal any significant differences between the two groups of children in terms of the number of utterances their educators addressed to them or the length (in morphemes) of the educators' utterances. Table 4 indicates that the educators addressed a mean of 70 utterances to the children with low social communication skills and 88 utterances to the comparison group (averaged over three children). The MLU values of the educators were similar to both groups of children (i.e., 4.4 and 4.6 for the two groups).

Table 6

Spearman rank correlations between early childhood educators' peer supports and children's peer interaction and language measures

	Childhood Peer Interaction Measures					
	# Peer-directed Utterances		# Uptakes		SLAS Peer Rating	
	Children (Low S-C)	Comparison Children ¹	Children Low (S-C)	Comparison Children ¹	Children (Low S-C)	Comparison Children ¹
# Verbal Supports	(n=12)	(n=12)	(n=12)	(n=12)	(n=12)	(n=12)
Restricts	-.24	.32	.10	.32	.22	-.14
Facilitates Communication	.53	.80**	.07	.71**	-.07	.08
Peer Referrals	.23	.59*	.05	.77**	.27	.14
Indirect Referrals	-.05	.55	.18	.53	.16	-.01

Note: Low S-C = low social communication skills.

¹ The data used in these analyses included average values for the three comparison children in each group and the average number of educators' supports directed to the three comparison children.

* p < .05; **p < .01.

The third question asked whether the number and type of verbal supports for peer interaction significantly differentiated the two groups of children. For these analyses the number of codes addressed specifically to the child with low social communication skills was compared to the average number used with the remaining three children in the group. A series of Wilcoxon paired tests were conducted for the total number of verbal supports the educators used as well as the subtypes of verbal supports (i.e., *Restrict*, *Facilitate Communication*, *Peer Referrals*, and *Indirect Referrals*). There were no significant differences in the frequency of verbal supports or for the frequency of subtypes used by the early childhood educators with the two groups of children. Thus, although the two groups of children received significantly different ratings for peer interaction and used a significantly different number of adult-directed utterances, the educators did not differentiate between the two groups of children in terms of the verbal supports they provided to promote peer interaction. An examination of the data on Table 4 indicates that

educators used a mean of 8-9 supports per 20 minutes of interaction. Most of their supports were indirect referrals, which mentioned objects, events, or actions that the children had in common, praised children for interacting together, or alerted the children to what another child was doing. Table 4 also indicates that the least used category was *Restricts*, which may not have been necessary given the specific play tasks used in this study and the small number of children in each group.

Children's Interaction Measures. The fourth research question asked whether the two groups of children differed in the number of responses to their educators' verbal supports. In keeping with the educators' ratings of peer interaction and language skills, it was hypothesized that the comparison group children would use higher frequencies of all four response codes (i.e., *Uptakes*, *Overrides*, *Acknowledges*, *No Responses*). For these analyses, the number of codes assigned to the children with low social communication skills was compared to the average number of codes used by the other three children in the group. Table 5 indicated the

number of responses that children made to the adult's peer supports. In general, most peer supports were ignored by the children, with only 1.0 – 1.5 receiving a response. Because the children used few *Uptakes*, the number of peer acknowledgements was also quite small. The number of *Uptakes* and *Overrides* was submitted to a series of Mann-Whitney *U* tests. There were no significant differences between the two groups of children for these two measures, suggesting that all children in the group responded to (or ignored) their educators with similar frequencies. Next, the number of responses to the children's invitations to interact (i.e., *Uptakes* followed by *Acknowledges* and *No Responses*) was examined. These analyses yielded a significant difference between the two groups for *Acknowledges*, Mann-Whitney $U = 147.5, p = .046$. An examination of the posttest data in Table 5 reveals that this value was marginally higher in the comparison group than in the group of children with low social communication skills. However, the frequencies were very small and this may be a spurious finding. The difference in the number of *No Responses* in each group was not significant.

Relationship between the Educators' and Children's Measures. The final research question posed by this study concerned the relationship between educators' peer supports and children's peer interaction skills (i.e., SLAS peer rating, number of peer-directed utterances, number of *Uptakes*). It was hypothesized that variation in the educators' peer supports would be associated with variation in children's characteristics. For the correlational analyses between the children with low social communication skills and educators, only the educators' supports directed specifically to these children were used. Because there were three comparison children in each group, the mean number of supports directed to these three children was correlated with the mean values for their peer interaction measures. A series of Spearman rank correlation procedures was used with a two-tailed alpha level of .05. The results of these analyses are presented in Table 6. Overall, the data for the children with low social communication skills yielded no significant correlations between any of the adults' peer support strategies and the three measures of children's peer interaction. In contrast, for the comparison children, the adults' use of *Facilitates Communication* was significantly correlated with the frequency of the children's peer-directed utterances, $r(11) = .80, p = .002$ and their use of *Uptakes*, $r(11) = .71, p = .010$. Similarly, the educators' use of *Peer Referrals* was significantly correlated with the comparison group's frequency of peer-directed utterances, $r(11) = .59, p = .044$ and use of *Uptakes*, $r(11) = .77, p = .003$. Thus, the more often adults used these two support strategies with the comparison children, the more frequently the children directed utterances to their peers and followed the educators' suggestions to engage in peer interaction. The sizes of these correlations were moderate to large, accounting for between 35 to 64% of the variance. There were no

significant correlations between *Restricts* or *Indirect Referrals* and the child language measures, nor were there any significant correlations for support strategies and the educators' ratings of peer interaction on the SLAS.

Discussion

The results of this study indicate that the children who were socially reluctant to interact were significantly different from their peers not only in terms of educators' ratings but also in terms of their talkativeness. They used fewer utterances and a smaller number of adult-directed utterances than the other children in the group. It is surprising that the two groups of children did not differ significantly from each other in terms of the number of peer-directed utterances. However, the amount of variation in number of peer-directed utterances was high, suggesting that this variable may not have reached significance due to the lack of power (i.e., small number of subjects) in the present study.

The early childhood educators in this study did not differentiate between the two groups of children in terms of the number of utterances or the MLU of the utterances they addressed to the two groups of children. Furthermore, there were no differences in terms of their verbal support strategies to promote peer interaction. This is concerning from two points of view. First, social interactionist theories of language acquisition posit that participation in adult-child conversations may facilitate language development by providing more occasions to practice language forms and receive feedback on communicative attempts (Bohannon & Bonvillian, 1997). The children with low social communication skills in this study did not receive any more child-directed utterances than others in the group. Second, social cognitive theories maintain that increased peer interaction provides opportunities within which children may learn and practice the necessary skills to negotiate social interactions successfully with peers (Guralnick, 2001; NICHD, 2001). The results of this study suggest that children who may need more support to participate in peer interactions do not receive any additional support over and above what other children in the group receive. This pattern of results strongly suggests that inservice education designed to promote peer interactions for vulnerable children should focus on providing a variety of supports during naturalistic interactions in the presence of their peers. A closer examination of the data for the educators' verbal supports indicates that the most frequently used strategy was indirect verbal supports that alert children to things they have in common or to what other children in the group are doing. In contrast, more directive strategies, such as prompting children to speak or directing children to play with each other, were used less often. This is inconsistent with File's (1994) observations that, as a group, educators tend to prefer direct versus indirect verbal support strategies to facilitate interaction among

children. For example, in her study, the educators frequently directed children to communicate (i.e., prompted the children what to say) and invited children to interact together. From the present data, it is not clear whether the indirect strategies were effective for the age group included in this study. Indirect strategies did not explicitly invite the children to participate and may have been difficult for these children to understand. Future research is needed to determine the appropriateness of direct and indirect peer support strategies for different age groups of children.

The pattern of correlations between the educators' verbal supports and the abilities of the children with low social communication skills indicated that none of the peer support strategies were consistently associated with this age group. In contrast, the educators' use of two of the four strategies (i.e., *Facilitates Communication* and *Peer Referrals*) was more strongly associated with measures of peer interaction and language skills for the comparison children in the group, suggesting that the verbal supports used with these children are more closely related to their abilities than the input addressed to the children with low social communication skills. The size of the correlations observed accounted for a large proportion of the variance (i.e., between 35 – 64%), indicating a robust pattern of findings. If this interpretation is corroborated by future research, it may indicate that group-directed input may be well matched to those children in the group who are highly interactive and have good language skills. Although the findings are correlational and not causal, it is clear that the processes related to the educators' input to young children are important components of children's success in the arena of peer interaction skills. Further research is needed to ascertain the specific direction of influence for each age group, the impact of peer support strategies on future language development, and the levels of adult support that are necessary for optimal peer interaction development to occur.

All the children who were identified as having low social communication skills in this study were learning English as a second language. It is not possible to determine why these 12 children were particularly vulnerable. However, the data indicate that their status as ESL learners may have contributed to the findings. As a group, they had a significantly greater exposure to their first language at home and had been in day care for less time than the comparison ESL children, which suggests that their native languages may have been dominant at the time of videotaping. Thus, one potential explanation for their vulnerability may be that their English skills were less well developed than their peers (both ESL and native English speakers), placing them at some disadvantage in peer interactions (Hanson, 2001). As Guralnick (1992) has pointed out, adequate language skills are an important prerequisite to peer-related social competence. This disadvantage is substantiated by the data indicating that these children were less talkative

overall than the other children in the group. Moreover, their educators rated these children's receptive and expressive language abilities as significantly lower than the comparison ESL children. Because these children did not have identified disabilities, it is possible that their language and peer interaction skills would have normalized over time with additional exposure to English and the culture of day care. This hypothesis would have to be substantiated by future longitudinal research using a different cohort of children. A second explanation is that, in comparison to their peers, these children may have different learning characteristics that were not directly tapped by this study. For example, important predictors of ESL children's progress include such factors as cognitive style (analytic, gestalt), language mixing in the home, recognition of the value of the child's first language in the day care centre, and support for English language learning in the home (Hoff, 2001; Ramirez Kaiser, 2002). Future studies employing extensive ethnographic interviews with the children's families may be able to determine the impact of these and other important family variables on the rate of English language acquisition and peer interaction skills. Finally, a third explanation focuses on the cultural context for evaluating social competence. One's view of appropriate development in peer interaction skills is dependent on subtle cultural and linguistic perspectives that may not be consistent with the perspectives of the family (Hanson, 2001). Consequently, the educators' perceptions of the children's interactive and communicative ability may have led to an erroneous assumption that these children were less capable than their peers. The finding that these children did not differ from their peers in terms of the number of utterances they addressed to other children or the number of times they responded to their educators' verbal supports corroborates this interpretation. The impact of ESL on children's participation in adult and peer conversations is not well understood and merits further research focusing not only on peer interaction skills but also on how early childhood educators perceive language-learning progress in children learning English as a second language.

Several limitations must be noted in interpreting the findings of this study. First, all educators in this study had diplomas in early childhood education, elected to participate in the research study, and were supported in this endeavour by their supervisors. Thus, the results of this study may not be generalizable to early childhood educators with different educational backgrounds or institutional supports. For example, a supervisor may have influenced the results through hiring practices or continuing education/training opportunities. A second limitation of the present study is that a small number of early childhood educators were observed in a group situation that had a restricted number of children and a specific set of toys. Replication involving more educators, larger groups of children, and diverse activities is needed to construct a complete picture of the effects of peer

support strategies on children who are reluctant to engage in peer interactions. A third limitation is the length of the interactions. Although the educators believed that the activities were representative of their daily interactions with children, longer observations of adult-child interactions may reveal different patterns of age-related findings or patterns of associations between adult and child talk. A fourth limitation is that this study focused only on verbal peer support strategies. It is possible that the educators in this study used other means to encourage peer support that were not observed by the methodology used. For example, during unobserved contexts, they may have arranged their classrooms or selected activities that promoted peer interaction of all children. Moreover, the role of supportive presence in the activities that were filmed was not tapped by this study. The educators' ability to support interactions by their nonverbal presence may have had an important impact on peer-directed talk.

Taken together, the results of this exploratory study suggest that inservice education focusing on strategies to facilitate peer interaction is critical. The results of this study indicate that when children have difficulties with peer interaction, early childhood educators do not increase verbal supports to encourage peer interaction, suggesting that day care staff may benefit from inservice education in this area. Information on how to support peer interactions is important because (a) children without disabilities may be at risk for difficulties in peer competencies due to social or environmental reasons and (b) children with suspected or confirmed disabilities may be integrated into day care centres (Howes & Hamilton, 1993; Kemple et al., 1997). The peer support strategies examined in this study have several important advantages: they are naturalistic, may be integrated into ongoing classroom activities, and utilize the staffing complement currently available in early child care centres.

Author's Note

Luigi Girolametto, Department of Speech-Language Pathology, University of Toronto; Janice Greenberg and Elaine Weitzman, The Hanen Centre.

This study was sponsored by a grant from the Social Sciences and Humanities Research Council of Canada and the Canadian Language and Literacy Network. We thank Maureen O'Keefe, research officer, for her guidance, patience and help in every step of this project, from recruitment to data collection and data transcription. We gratefully acknowledge the assistance of Christina de Rivera, Heather Flowers, and Nadia Abisaleh for transcription and coding of the videotaped adult-child interactions and Tara Davies for careful editing of the manuscript. Above all, we are deeply appreciative of the participation of the child care supervisors, the early childhood educators, and the children's families.

Correspondence concerning this article should be addressed to Luigi Girolametto, Graduate Department of Speech-Language Pathology, University of Toronto, 500 University Avenue, Room 160, Toronto, ON, Canada M5G 1V7. E-mail: l.girolametto@utoronto.ca.

References

- Abbeduto, L., & Short-Meyerson, K. (2002). Linguistic influences on social interaction. In H. Goldstein, L. Kaczmarek & K. English (Eds.), *Promoting social interaction* (pp. 27-54). Baltimore, MD: Paul Brookes.
- Aureli, T., & Procacci, M. (1992). Day-care experience and children's social development. *Early Child Development and Care*, 83, 45-54.
- Beckman, P., & Lieber, J. (1992). Parent-child social relationships and peer social competence of preschool children with disabilities. In S. Odom, S. McConnell & M. McEvoy (Eds.), *Social competence of young children with disabilities* (pp. 65-92). Baltimore: Paul Brookes.
- Bohannon, J., & Bonvillian, J. (1997). Theoretical approaches to language acquisition. In J. Berko Gleason (Ed.), *The development of language* (4th ed., pp. 259-316). Needham Heights, MA: Allyn & Bacon.
- Brownell, C., & Hazen, N. (1999). Early peer interaction: A research agenda. *Early Education and Development*, 10, 403-413.
- Bruner, J. (1975). From communication to language: A psychological perspective. *Cognition*, 3(3), 255-287.
- Crockenberg, S. (2003). Rescuing the baby from the bathwater: How gender and temperament (may) influence how child care affects child development. *Child Development*, 74(4), 1034-1038.
- File, N. (1994). Children's play, teacher-child interactions, and teacher beliefs in integrated early childhood programs. *Early Childhood Research Quarterly*, 9, 223-240.
- Girolametto, L., Weitzman, E., & Greenberg, J. (2004). The effects of verbal support strategies on small group peer interactions. *Language, Speech, and Hearing Services in the Schools*, 35, 256-270.
- Guralnick, M. (2001). *Early childhood inclusion*. Baltimore, MD: Paul H. Brookes.
- Guralnick, M. J. (1992). A hierarchical model for understanding children's peer-related social competence. In S. Odom, S. McConnell & M. McEvoy (Eds.), *Social competence of young children with disabilities* (pp. 37-61). Baltimore: Paul Brookes.
- Hadley, P. A., & Rice, M. L. (1993). Parental judgments of preschoolers' speech and language development: A resource for assessment and IEP planning. *Topics in Speech and Language*, 14(4), 278-288.
- Hanson, M. (2001). The impact of cultural and linguistic diversity in inclusive preschool environments. In M. Guralnick (Ed.), *Early childhood inclusion: Focus on change* (pp. 413-431). Baltimore, MD: Paul Brookes.
- Hoff, E. (2001). *Language development*. Belmont, CA: Wadsworth.
- Howes, C. (1987). Social competence with peers in young children: Developmental sequences. *Developmental Review*, 7, 252-272.
- Howes, C., & Hamilton, C. (1993). The changing experience of child care: Changes in teachers and in teacher-child relationships and children's competence with peers. *Early Childhood Research Quarterly*, 8, 15-32.
- Howes, C., & Matheson, C. (1992). Sequences in the development of competent play with peers: social and social pretend play. *Developmental Psychology*, 28(5), 961-974.
- Hundert, J., Mahoney, G., & Hopkins, B. (1993). The relationship between the peer interaction of children with disabilities in integrated preschools and resource and classroom teacher behaviors. *Topics in Early Childhood Special Education*, 13(3), 328-343.
- Johnston, J. (2001). An alternative MLU calculation: Magnitude and variability of effects. *Journal of Speech, Language, and Hearing Research*, 44, 156-164.
- Kemple, K., David, G., & Hysmith, C. (1997). Teachers' interventions in preschool and kindergarten children's peer interactions. *Journal of Research in Childhood Education*, 12(1), 34-47.
- Kontos, S., & Keyes, L. (1999). An ecobehavioral analysis of early childhood classrooms. *Early Childhood Research Quarterly*, 14(1), 35-50.
- McCabe, J. R., Jenkins, J. R., Mills, P. E., Dale, P. S., Cole, K. N., & Pepler, L. (1996). Effects of play group variables on language use by preschool children with disabilities. *Journal of Early Intervention*, 20(4), 329-340.
- Miller, J. F., & Chapman, R. S. (1998). *Systematic analysis of language transcripts* (Version 5.0). Madison: University of Wisconsin-Madison.
- NICHD Early Child Care Research Network (2001). Child care and children's peer interaction at 24 and 36 months: The NICHD study of early child care. *Child Development*, 72(5), 1478-1500.
- NICHD Early Child Care Research Network (2003). Does amount of time spent in child care predict socioemotional adjustment during the transition to Kindergarten? *Child Development*, 74(4), 976-1005.
- Odom, S. L., McConnell, S. R., & McEvoy, M. A. (1992). Peer-related social competence and its significance for young children with disabilities. In S. Odom, S. McConnell & M. McEvoy (Eds.), *Social competence of young children with disabilities* (pp. 3-35). Baltimore: Paul Brookes.
- Pellegrino, M. L. M., & Scopesi, A. (1990). Structure and function of baby talk in a day-care centre. *Journal of Child Language*, 17, 101-113.
- Ramirez Kaiser, H. (2002). Bilingual language development and language disorders. In D. Battle (Ed.), *Communication disorders in multicultural populations* (pp. 205-232). Boston: Butterworth-Heinemann.

Sackett, C. P. (1978). *Observing Behavior* (Vol. 2). Baltimore, MD: University Park Press.

Schuele, C. M., Rice, M. L., & Wilcox, K. A. (1995). Redirects: A strategy to increase peer initiations. *Journal of Speech and Hearing Research*, 38(6), 1319-1333.

Snow, C. E. (1981). Social interaction and language acquisition. In P. S. Dale & D. Ingram (Eds.), *Child language: An international perspective* (pp. 195-213). Baltimore: University Park Press.

Tomasello, M., Conti-Ramsden, G., & Ewert, B. (1990). Young children's conversations with their mothers and fathers: Differences in breakdown and repair. *Journal of Child Language*, 17(1), 115-130.

Warr-Leeper, G. (2003). The effects of EDE-mediated facilitation on linguistic and social communication in children at risk for social failure. In L. Girolametto & E. Weitzman (Eds.), *Enhancing caregiver language facilitation in child care settings* (pp. 7.1 - 7.15). Toronto, ON: The Hanen Centre.

Watamura, S., Donzella, B., Alwin, J., & Cunnar, M. (2003). Morning-to-afternoon increases in cortisol concentrations for infants and toddlers at child care: Age differences and behavioral correlates. *Child Development*, 74, 1006-1020.

Weitzman, E., & Greenberg, J. (2002). *Learning language and loving it: A guide to promoting children's social, language, and literacy development in early childhood settings* (Second ed.). Toronto, ON: The Hanen Centre.

Received: November 10, 2003

Accepted: July 2, 2004

