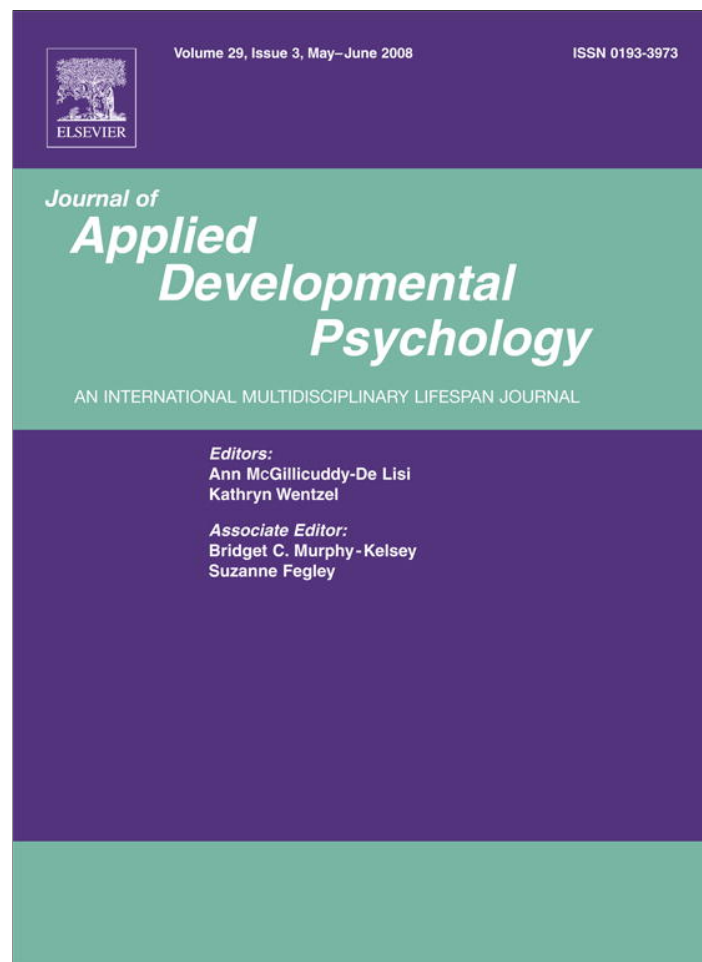


Provided for non-commercial research and education use.
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>

Contents lists available at [ScienceDirect](#)

Journal of Applied Developmental Psychology



Developmentally delayed children's influence attempts with mothers predict interactions with peers over time[☆]

Michael J. Guralnick^{*}, Robert T. Connor, Brian Neville, Mary A. Hammond

Center on Human Development and Disability, University of Washington, USA

ARTICLE INFO

Available online 26 February 2008

Keywords:

Peer interactions
Children with delays
Influence attempts with mothers

ABSTRACT

We examined whether influence attempts of 4–6 year-old children with mild developmental delays occurring when interacting with their mothers predicted children's interactions with peers two years later. Hierarchical regressions controlling for relevant child characteristics and a measure of direct parental actions to influence their children's peer interactions revealed a consistent association between influence attempts with mothers and four important aspects of children's peer relationships: successful social bids to peers, initiations to peers, extent of involvement with peers, and overall level of peer interactions. Results were consistent with social communicative processes likely to emerge during children's influence attempts with mothers, which are relevant to peer relationships. The fact that influence attempts with mothers were associated with peer interactions over a time period when peers occupy a more dominant role in children's social relationships supports the role of indirect family influences as a potential intervention strategy to further the peer competence of children with delays.

© 2008 Elsevier Inc. All rights reserved.

1. Introduction

Numerous studies have now documented the unusual, pervasive, and persistent peer interaction problems exhibited by young children with mild developmental delays (Guralnick, 1999). Among the difficulties evident when compared to appropriately matched groups of typically developing children are high levels of solitary play, correspondingly low levels of sustained group play, only limited efforts to initiate, organize, or otherwise influence social play, and low success rates in obtaining appropriate responses to those influence attempts that do occur (Guralnick, Connor, Hammond, Gottman, & Kinnish, 1996; Guralnick & Groom, 1987; Kopp, Baker, & Brown, 1992). Despite the developmental significance of children's peer relationships and the magnitude and scope of the peer interaction problems for children with delays, a surprisingly limited number of interventions have been carried out (see Guralnick, Connor, Neville, & Hammond, 2006). Of importance, most of these interventions have been teacher-mediated, sometimes enlisting the aid of other often typically developing children to implement primarily behaviorally-oriented strategies directly in the peer context. These efforts, usually carried out in early childhood or playgroup settings, although occasionally achieving promising immediate effects, have not produced reliable or robust generalized outcomes (e.g., Jenkins, Odom, & Speltz, 1989; Odom et al., 1999). Similar types of interventions for school-age children with mild disabilities have also met with limited success (Gresham, Sugai, & Horner, 2001).

One way to expand intervention options is to consider the roles parents can play in promoting their children's peer relationships. Considerable evidence from studies of typically developing children suggests that important family-peer linkages do exist, with parental influence operating through both direct and indirect paths (Ladd & Pettit, 2002). Direct influences are similar to teacher-mediated efforts and include active parental organizing of peer experiences for their child such as arranging playdates

[☆] This research was supported by a grant from the National Institute of Child Health and Human Development (R01 HD37429). Support from grant P30 HD02274 also facilitated our work.

^{*} Corresponding author. University of Washington, Box 357920, Seattle, WA 98195-7920, USA. Tel.: +1 206 543 2832; fax: +1 206 543 3417.
E-mail address: mjgural@u.washington.edu (M.J. Guralnick).

(e.g., Ladd & Golter, 1988; Ladd & Hart, 1992), as well as providing specific guidance or advice to enhance the adaptive qualities of children's peer relationships (e.g., Mize & Pettit, 1997; Russell & Finnie, 1990). These direct parent strategies have rarely been considered for children with delays, although preliminary evidence suggests that effectiveness will require some combination of parent arranging peer experiences for their child and implementing specific, well-organized, and highly skilled intervention techniques (Guralnick, Neville, Connor, & Hammond, 2003).

A number of indirect parental influences have been identified that also constitute important family-peer linkages and can potentially serve as a framework for intervention (Ladd & Pettit, 2002). One such influence can be found in the social communication patterns of interaction occurring routinely between parents and children in both social and instructional contexts. In these situations, parents often organize activities in which a greater balance in relation to mutual influence is achieved. That is, despite the obvious control that can be and generally is exerted by parents in these situations, parents also frequently promote and support their child's attempts to influence their own behavior. These influence attempts by children take the form of directives to alter behavior, and requests to seek information (Russell, Pettit, & Mize, 1998). Requests to gather information, in particular, make it more likely that children will maintain relevant social-communicative exchanges, an essential component of social competence when interacting with both adults and peers (Putallaz, 1987). Directives not only represent a level of assertiveness but also provide a means of organizing the interactive context. Together, increased use of these two forms of social communication constitute an important dimension of influence, thereby creating a more balanced or mutual pattern of social exchange between parents and children.

With respect to family-peer linkages, these more mutual patterns of parent-child interaction are highly characteristic of the patterns found in the peer context (Hartup, 1996). Accordingly, a balanced series of exchanges may serve as a template for the transfer of children's interaction patterns from the parent to the peer context. More specifically, it has been suggested that mutual parent-child interactions provide children with more extensive opportunities to learn interpersonal skills related to negotiation, turn-taking, and initiating play, among others, and that this social knowledge and these influence strategies are applied during interactions with peers (Lindsey, Mize, & Pettit, 1997; Mize & Pettit, 1997). Indeed, for typically developing children, consistent findings indicate that children's influence attempts in the parent context do correspond to more socially competent play and to higher social status with peers (Black & Logan, 1995; Martinez, 1987; Putallaz, 1987).

Indirect family-peer linkages for children with developmental delays have not been extensively investigated, although available evidence suggests that similar types of linkages may well exist (Guralnick et al., 2003). In fact, recent research involving young children with delays has found a strong concurrent association between the frequency of children's influence attempts with mothers in the form of directives and requests, and higher levels of children's success and involvement with peers (Guralnick, Neville, Hammond, & Connor, 2007b). This indirect family-peer linkage for children with delays suggests a potentially important intervention pathway for addressing the peer-related social difficulties noted earlier. That is, intervention strategies designed to encourage children's influence attempts during parent-child interactions, such as those that can be orchestrated with script-like features (Nelson, 1981) and carried out within typical family routines (Fiese, Wilder, & Bickham, 2000), may prove to be of considerable benefit to children when they interact with their peers.

However, before investing in this intervention approach for young children with delays, it is important to establish that children's influence attempts with parents are not only associated concurrently with their peer relationships, but also that they predict peer interactions over time. This constitutes a much stronger test of the indirect family-peer linkage hypothesis and its potential for promoting the peer interactions of children with developmental delays. This is particularly the case when the time period extends across the transition from preschool or kindergarten programs to the early elementary period. It is during this time that relationships with peers begin to occupy a more prominent role in children's lives (Rubin, Coplan, Chen, Buskirk, & Wojslawowicz, 2005), including children with delays (Guralnick, Neville, Hammond, & Connor, 2007a). As such, the development of children's peer relationships may be influenced far more by specific and extensive experiences with peers, diluting or even overriding parental influences (see Vandell, 2000). Alternatively, early parent-child mutual interaction patterns indexed by children's influence attempts in the form of directives and requests may continue to exert their effects over time and predict important aspects of children's peer interactions.

Accordingly, to examine this issue, the influence attempts of children with mild developmental delays in the form of directives and requests to mothers were obtained from transcripts of videotaped records during both unstructured (free-play) and structured (teaching task) situations at the time when children were enrolled in either preschool or kindergarten programs. Two years later, during the elementary period, a series of peer interaction measures were obtained derived from analyses of videotapes of children's participation in small playgroups involving unfamiliar peers. The unfamiliar playgroup situation was similar initially to a peer group entry task in order to challenge children with delays to both initiate interactions and to communicate in a relevant manner in order to be successful (see Putallaz & Wasserman, 1990). The mother-child free-play and teaching tasks were repeated two years later to once again obtain a measure of children's influence attempts in order to assess their stability.

Based on this information, a series of hierarchical regression analyses predicting children's peer interactions during the elementary period from their early influence attempts with mothers for the two types of tasks was conducted. These regressions were carried out first controlling for child characteristics, including chronological age, intellectual level, language, and behavior problems, as well as possible direct parental effects related to arranging play opportunities for their child. Three aspects of children's interactions with peers were predicted: (1) successful bids, (2) initiations, and (3) extent of solitary play. The success of social bids indicates the relevance of those bids to the social context, the level of initiations reflects a degree of assertiveness as well as the extent to which children are interested in their peers, and solitary play serves as an index of children's involvement with their peers. A composite measure representing children's general level of participation with peers was also analyzed to further evaluate the predictive relationship between children's influence attempts with mothers and their interactions with peers.

2. Method

2.1. Participants

Young children with mild developmental delays were recruited through contact with local school districts in a large metropolitan community. Participating school districts distributed announcements describing an opportunity to participate in a larger research project intended to promote children's peer relationships. Information was sent to all parents whose children had an Individualized Education Program (IEP) and who attended an inclusive (mainstreamed) preschool or kindergarten. Parents interested in participating in the study contacted project staff who directly initiated a screening and identification process. To be included in this sample a child had to meet the following criteria: (1) be between 48 and 78 months of age, (2) have a current IEP, (3) be experiencing difficulties in peer-related social competence as expressed by parent concerns in a structured phone interview, (4) have a primary female caregiver (minimum of a 6-month relationship, as mothers were our primary informants); and (5) obtain a Full Scale IQ (FSIQ) score between 50 and 80 on the Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R; Wechsler, 1989).

A number of exclusionary criteria also were established. Based on the Child Behavior Checklist (CBCL; Achenbach, 1991) completed by the mother (or other female caregiver) for each child (see below), children who scored in the clinical range were excluded from the study to minimize disruptions in the peer playgroups (a *T*-score above 70 was established for children with developmental delays). A phone screening interview for mothers eliminated six children described as exhibiting major behavior problems. Two children were excluded because they obtained a *T*-score of 70 or above on the CBCL. Similarly, exclusion occurred if mothers scored at or above the 95th percentile on the Parent Domain of the Parenting Stress Index (Abidin, 1995). Three participants were excluded based on this criterion. Finally, children were excluded if English was not their primary language or if they had significant sensory or motor problems. No children were excluded on this basis. Over the course of a 7-year period, 63 children and families meeting our criteria were successfully recruited to participate. Table 1 presents demographics of participating children and their families at time 1 as well as other child characteristic and family measures.

2.2. Child and family characteristics measures

Children were evaluated by psychologists with extensive prior experience working with young children with developmental delays. The following child measures were included. (1) The Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R; Wechsler, 1989) was administered and used to obtain Full Scale IQ (FSIQ) scores. Older children at time 2 were assessed with the Wechsler Intelligence Scale for Children-Third Edition – WISC-III (Wechsler, 1991); (2) The Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984) were administered to mothers, with the total score used in this analysis; (3) The Test for Auditory Comprehension of Language-Revised (TACL-R; Carrow-Woolfolk, 1985) was administered and the total score was included in this analysis; (4) The Expressive One Word Picture Vocabulary Test-Revised (EOWPVT-R; Gardner, 1990) was administered to children.

Table 1

Descriptive statistics regarding child and family characteristics at time 1 observations

	<i>M</i> or %	<i>SD</i>
<i>Child demographics</i>		
Age (months)	63.52	7.65
Gender (% male)	71.4	
Ethnicity (% Anglo American) ^a	73.0	
Birth order (% firstborn)	33.3	
<i>Child measures</i>		
Full Scale IQ ^b	66.43	9.43
Adaptive Behavior ^c	69.46	8.63
TACL-R ^d	68.38	15.73
EOWPVT-R ^e	77.87	12.73
CBCL total behavior problems ^f	58.21	6.61
<i>Family demographics</i>		
Social status ^g	51.46	13.01
Mother's age (years)	37.06	5.05
Marital status (% partnered)	92.1	

Note. *N* = 63.

^a African American = 1.6%, Hispanic American = 4.8%, Asian American = 6.3%, Native American, 1.6%, Biracial = 12.7%.

^b Wechsler Preschool and Primary Scale of Intelligence-Revised.

^c Vineland Adaptive Behavior Scales, total standard score.

^d Test for Auditory Comprehension of Language-Revised, total score.

^e Expressive One Word Picture Vocabulary Test-Revised, standard score.

^f Child Behavior Checklist, *T*-scores.

^g Hollingshead Four Factor Index of Social Status.

The obtained raw score was converted to a standard score which was used for analysis; and (5) The *Child Behavior Checklist* (CBCL; Achenbach, 1991) was administered to mothers who rated the frequency of different behavior problems from a 118 item questionnaire using a 3-point scale. Only the total score was used for analysis.

Standard demographic information about the family was also gathered via self-reports from mothers. Of note, 61 of 63 were the biological mothers of the children in the study. The *Hollingshead Four Factor Index of Social Status* (Hollingshead, 1975) was used to calculate a measure of family social status (range 8–66). Factors included in the calculation were level of education, marital status, gender, and occupation (see Table 1).

2.3. Parent arranging

An *Arranging* questionnaire was administered consisting of a single item in which mothers were asked to indicate how often in a typical month they were responsible for arranging for their child to play with another child (rating scale: 1 = less than once/month; 2 = less than once/week; 3 = 1–2 times/week; 4 = 2–3 times/week; 5 = 4 or more times/week).

2.4. Procedure

Following recruitment procedures outlined above, families whose children met all inclusionary criteria then received a packet of materials in the mail containing the various scales and questionnaires (including measures not part of the present study), and were scheduled for testing. Mothers were also scheduled to bring their children to the laboratory for observations of both mother–child and child–child interactions for a period of one week on two separate occasions (time 1 and time 2). Specifically, observations occurred once at the beginning of the study when children were enrolled in preschool or kindergarten (time 1) and again two years later when virtually all children were enrolled in first and second grade (time 2). The mother–child sessions were conducted on Monday and Tuesday of that week in which free-play (20 min each) and teaching task (15 min each) sessions were scheduled each day. On Wednesday, Thursday, and Friday, children participated in playgroup sessions (30 min of free-play each) with unfamiliar peers (see descriptions of tasks and settings below). To examine the predictive relationships between children's influence attempts with mothers and their peer interactions, our analyses focused on the time 1 mother–child free-play and teaching tasks (see Guralnick et al., 2007b) and the time 2 peer playgroups.

2.5. Laboratory observations of mother–child interactions

The child and mother were brought to the parent–child laboratory for mother–child free-play task (FPT) and teaching task (TT) observations. This laboratory contained three main experimental suites for video taping and behavioral testing. Control rooms in each of the studios were equipped with two video cameras capable of pan-tilt and zoom plus four microphones. From the camera control station the operator could preview the images using split screen technology and make the necessary adjustments for the best view. A special effects generator was used to select which camera image was sent to the video cassette recorders. A time code character generator displayed time in minutes, seconds and frame count, with additional fields to display number sequences for subject number and date.

For the FPT, the playroom in the laboratory was minimally furnished but contained a variety of toys, including those that could be used for pretend play (Sesame Street play set, stuffed animals, cars, dolls), and construction (blocks) as well as board games, coloring books, and puzzles. After entering the laboratory suite, the mother was informed that “Now we'd like to watch him/her playing with you. Play however you would like for the next 20 min. Feel free to use any of these toys, or if there are things you like to play that do not include these toys, you can do that as well. Just try to play as you normally would. I'll be back in 20 min with another activity for you.” As noted, the interaction was videotaped with two cameras using split screen technology from behind one-way mirrors. If bathroom breaks were needed, the timer was paused and resumed after the dyad returned. After 20 min, the research assistant returned to the room and helped the mother and child return the toys to their places and prepare for the teaching task.

After a break, the mother and child were asked to build with Tinkertoys in the teaching task (TT). The goal was to present the children with a challenge for which they would need help from their mothers so that her ability to organize and instruct could be observed. Tinkertoy building was selected for this observation because the task can vary from quite complex to quite simple depending on the abilities of the child and the level of support provided by the mother. Constructed models and picture models were presented and the child's task was to build one just like it. The Tinkertoys and the first model were placed on the floor and the child was given the following instructions: “Now I would like you to play with some Tinkertoys. First let's dump them on the floor. [The model is presented] This is a model of what I'd like you to make with them. I'd like you to make another one that looks just like this one.” The mother was then given the following instructions: “Your job is to provide whatever help [your child] needs to be able to build it. When [your child] finishes with this one, I'll bring in another one.” At time 1, children were presented first with a constructed model with a simple design (such as a swing set), which they used to build their own construction. Once this was completed, a second more complicated constructed model was presented. If the child completed both of these in less than 15 min, the paper instructions from the Tinkertoy set were provided and the child was asked to select a model and build it. The same procedure occurred at time 2 except that the dyad was asked to make a duplicate of the model presented on the paper instruction rather than the constructed model. Two views of the paper model were shown; one in which the pieces were separated and one when completely connected. All children, regardless of their abilities, needed assistance with the task.

2.6. Laboratory observations of child–child interactions at time 2

Observations of the peer play interactions of children with delays were carried out within a laboratory playroom in a different building designed to be similar to a typical playroom. To record play interactions, the room was equipped with two video cameras operated by remote control, a radio telemetry microphone for the child with a delay, and an overhead microphone. A control panel with mixers balanced the auditory signals and allowed use of split screen technology for video input. Child–child interactions were observed in playgroups (quartets) with three unfamiliar, typically developing peers.

Typically developing children participating in the playgroups were recruited by distributing study announcements to local daycare centers and schools. A brief telephone screen of interested parents was conducted during which the inclusion criteria for the children were described. At time 2, typically developing children were required to be between the ages of 70 and 96 months of age at the time of the playgroups. To assure that the children were developing typically, the communication domain of the Vineland Adaptive Behavior Scales was administered to mothers on the phone and mothers also completed the CBCL. To participate, children needed to obtain a standard score of 90 or above on the communication domain, a *T*-score of 66 or below on the CBCL, have no known developmental, sensory, motor, or behavioral problems, and have English as a primary language. Typically developing children were then assigned to playgroups on an availability basis but matched for gender with the child with a delay. None of the typically developing peers at time 2 had prior contact with the children with delays. The average age of peers at time 2 was 82.61 months, similar to that of the children with delays. The ethnicity distribution for the peers was as follows: 73.4% Anglo American; 16.3% Biracial/ethnic; 6.5% Asian American; 2.7% African American; .5% Hispanic American; .5% Native American.

Although all four children were unfamiliar with one another prior to the playgroups, the three typically developing children were introduced to one another and allowed to play together for 30 min one day prior to the first session. The purpose of this procedure was to further challenge the child with a delay by approximating a peer group entry task. The successive three one-hour periods allowed the child with delay opportunities to become integrated within the group and permitted detailed observations of those interactions.

Playgroups were supervised by an experienced teacher in early childhood education. Children participated in a number of activities within each one-hour session typical of young children's programs, including circle time, music, and snack. During the 30-minute free-play period, which was videotaped, the children had access to the extensive array of toys, games, and equipment found in the playroom. During the free-play period, teacher interactions were limited to providing assistance to ensure the children's safety.

2.7. Mother–child interaction coding schemes

Social communicative interactions occurring between mothers and children were coded for each of the two FPT and TT sessions at each time period. Before coding was carried out, all sessions were transcribed verbatim from the videotaped observations. Turns were first identified, consisting of utterances produced in sequence by one participant, which continued until the participant signaled that a response was expected or was interrupted by the other participant (see Garvey, 1986; Sacks, Schegloff, & Jefferson, 1978). If the participant paused as if expecting a response (for 5 s), and the other participant made no verbal or nonverbal response, the next participant's utterance was considered the beginning of a new turn. "No response" was recorded for the intervening participant turn. Both verbal and nonverbal social communications were transcribed. A nonverbal utterance was defined as a distinct communicative act that may be an initiation of an activity (e.g., handing an object to the other participant) or a response to a request or directive (e.g., responding nonverbally to a question). The absence of a response to a request or directive was coded as a separate turn. Therefore, the coding scheme was based on a series of alternating turns between mother and child, although only the child's turns focusing on their influence attempts with mothers were examined in this study. Rules regarding the use of vocalizations, gestures, and other forms of communication (e.g., turn boundaries defined by the 5 s pause) were provided to transcribers.

Following the general system outlined by Black and Logan (1995), each utterance (verbal and nonverbal) in each turn was then coded in terms of its social communicative function as either a statement (conveying information about facts, activities, feelings, or interest), a request (posing a question to obtain information), or a directive (seeking to obtain a behavioral response). Detailed definitions can be found in Guralnick et al. (2007b). Turns were typically relatively brief, but as many as nine social communications could be coded in any turn. These categories were mutually exclusive and exhaustive.

2.7.1. Reliability

Reliability was first calculated for transcription of mother–child interactions. Two transcribers independently prepared transcripts for 20% of the FPT and TT sessions. Interrater reliability, in terms of percent agreement, was calculated for words, punctuation, and turn boundaries. Agreement was high in all instances: 87% for words (range 77% to 95%); 86% for punctuation (range 80% to 96%); and 84% for turns (range 72% to 95%).

For the social communication codes, coders were initially trained using pre-coded reliability tapes. Pilot tapes were then coded until coders achieved Cohen's kappa of .70 or greater with an experienced coder. Training averaged approximately two months. Interrater reliability was then obtained on 20% of the FPT and TT sessions. Cohen's kappa was computed between the head coder and each of the other coders for the social communication codes for the full matrix. A mean kappa of .76 for social communication was obtained for the FPT and a mean kappa of .74 for the TT. Intraclass correlation coefficients were also calculated for each of the main social communication codes (statements, directives, requests) at both time points. These correlations were uniformly high, ranging from .87–.99 ($M = .96$).

2.8. Child-peer play coding schemes

Only the play interactions of the child with a delay were coded. The 30-minute playgroup observations were coded using two well-established schemes: (a) the Play Observation Scale (POS) and (b) the Individual Social Behavior Scale (ISBS).

Using the revised version of the Play Observation Scale (Rubin, 2001), coders recorded the quality of social participation and levels of cognitive play during each 10-second interval. This scale consists of 10 mutually exclusive and exhaustive social participation categories with the cognitive play measures (e.g., dramatic play) nested within the main social participation categories of solitary, parallel, and group play (see Rubin, 2001, for detailed definitions of the measures). Variations of this scale have been applied effectively to children with disabilities similar to those in this study for playgroups (e.g., Guralnick et al., 1996). Evidence with respect to convergent and discriminant validity suggests that the scale of social participation constitutes a useful index of a more general construct of peer competence (Provost & LaFreniere, 1991).

Videotapes were sent to the University of Maryland where trained staff coded all sessions. Training for POS coding was extensive and initially took place utilizing playgroup tapes from a separate study. For pre-study reliability for the full variable matrix, including cognitive play categories nested within the social participation categories, all raters reached the minimum criterion and obtained an overall Cohen's kappa of .77. After training was completed, interrater reliability on approximately 20% of randomly selected playgroup sessions was calculated between pairs of coders and produced an overall kappa of .70. Intercoder differences were resolved through review and discussion.

Each videotape was reviewed a second time by our research group to examine specific peer-related social behaviors of the child with a delay. For this purpose, the Individual Social Behavior Scale, based on the work of White and Watts (1973) and adapted in a manner similar to Doyle, Connolly, and Rivest (1980) and to Guralnick and Groom (1985, 1987) was used. A version of this scale has been applied successfully to preschool-age children with delays and to typically developing children as they interacted in playgroups similar to those described in this study (Guralnick et al., 1996).

Observers continuously recorded the occurrence of individual social behaviors defined by 25 categories. Categories were designed to record the social interactions of the child with a delay as directed to peers (e.g., seeks attention, leads peer, expresses hostility) as well as to record the social behaviors of the child in response to directed activities of peers (e.g., follows lead of peer). Through the application of this scale, the frequencies of positive and of negative social behaviors directed to peers and in response to peers were identified. In addition, where appropriate, each of the child's individual social behaviors was classified as to whether it was an initiation. A child-initiated event is one in which no prior verbal or nonverbal interaction occurred for at least 3 s. Nine of the 25 categories were also judged as either successful or unsuccessful, with definitions specific to each social behavior category. The ISBS coding manual with detailed definitions and coding rules can be obtained by contacting the first author.

Coders were free to review any segment of the tape as often as needed. The coding protocol was divided into 30-second intervals following the time codes superimposed on the tape. Although coding was continuous, these divisions provided a structure for the coding task and served as a framework for establishing reliability within the event-based system. Coders were considered to be in agreement if codes matched within a specified 10-second interval using the "best fit" matching method (Hollenbeck, 1978). A reliability manual describing this method is available from the first author. In addition to the 25 ISBS categories, a "no interaction" event was included to complete the possible options within each 30-second interval.

Prior to coding, four coders were trained for a period of 10–12 weeks on the ISBS. Videotapes of pilot or related playgroups were used for training and final pretesting of reliability assessments. For pre-study reliability, calculated in this manner, all coders achieved the minimum average criterion of agreement for individual social behaviors necessary for participation of 75% (overall kappa = .70) on two consecutive 30 min tapes. Mean reliabilities for playgroup observations at time 2 carried out during the course of the study on 20% of the total were as follows: individual social behaviors, kappa = .74 (range = .65 to .89), M agreement = 80% (range = 73–89), agreement on successful/unsuccessful, M = 90% (range = 80–100), and agreement on initiations, M = 84% (range = 43–100). To minimize observer drift, weekly coding meetings were held and interobserver disagreements were resolved by discussion.

2.9. Overall Peer Interaction composite at time 2

Ten measures at time 2 were selected from the POS and ISBS codes to provide a broad representation of children's peer-related social interactions in the form of an Overall Peer Interaction composite (see Guralnick et al., 1996). Measures selected from the POS were: solitary play (playing alone), parallel play (playing next to another child), group play (playing with another child), and peer conversation (talking, questioning but not playing). Measures selected from the ISBS were the frequencies of successful social bids and initiations, as well as the composite measures of positive behavior directed to peer (leads peer positive-direct and indirect, uses peer as resource, joins peer, seeks peer's attention, seeks peer's agreement; alpha = .81); negative behavior directed to peer (leads peer negative-direct and indirect, expresses hostility, takes unoffered object; alpha = .63); positive behavior responsive to peer (follows peer's social bids to gain attention, to lead positively-direct or indirect, to use as a resource, and to seek agreement; alpha = .76); and positive non-responsive behavior to peer (fails to follow peer's social bids for same categories in prior measure; alpha = .70). Intraclass correlation coefficients were calculated for each of these ten measures to index interrater reliability and were high in all instances, M = .95 (range .90–.99). A principal components analysis indicated that a single factor accounted for 55% of the joint variance (alpha = .90) with all measures loading positively except for solitary play. The positive correlation between negative and positive interactions reflects the fact that children with delays exhibit high levels of conflicts with peers (see Guralnick, Hammond, Connor, & Neville, 2006). The Overall Peer Interaction composite measure was computed by converting each component measure to a scaled score ranging from 0–100 and averaging the ten scaled measures (POS solitary play was reversed).

3. Results

3.1. Descriptive data for children's influence attempts, mother arranging play, and children's peer interactions

Children's influence attempts with mothers consisting of the combination of requests and directives in the FPT and the TT were summed across the two sessions for each task at each time point. For the FPT, the mean number of influence attempts at time 1 was 78.33 ($SD = 40.03$) and 84.29 ($SD = 39.79$) at time 2. For the TT, the mean number of influence attempts was 54.84 ($SD = 32.33$) at time 1 and 56.05 ($SD = 34.38$) at time 2. Changes over time were not significant for either task ($p > .05$). However, stability coefficients were significant for both the FPT, $r = .38$, $p < .01$, and the TT, $r = .51$, $p < .001$, suggesting moderate levels of consistency for children's influence attempts with mothers over time. The overall proportion of influence attempts to total social communications (including statements) was also calculated. For the FPT, the proportion was .71 ($SD = .08$) at time 1 and .69 ($SD = .09$) at time 2. For the TT, corresponding proportions were .62 ($SD = .08$) at time 1 and .61 ($SD = .08$) at time 2. Once again, there were no significant changes over time ($p > .05$). The mother arranging play variable had a mean rating scale value of 2.00 ($SD = .92$) at time 1 and was also moderately stable over time, $r = .54$, $p < .001$.

Dependent variables consisted of the following peer interaction measures obtained from observations of the time 2 playgroups: (1) frequency of successful bids ($M = 50.95$, $SD = 41.53$); (2) frequency of initiations ($M = 20.69$, $SD = 18.24$), (3) frequency of solitary play ($M = 195.13$, $SD = 127.61$); and (4) the Overall Peer Interaction composite ($M = 31.69$, $SD = 17.30$). Square root transformations were used in the analyses to normalize the distributions.

3.2. Hierarchical regression analyses

Four hierarchical multiple regression analyses were carried out for each task to determine the predictive relationship between children's influence attempts with mothers at time 1 and children's peer interactions at time 2. For this series of regressions, it was necessary to control for a number of potentially confounding variables. In order to control for the fact that approximately half the children were enrolled in an intervention to promote their peer interactions following time 1 assessments (Guralnick, Connor et al., 2006), a dummy-coded variable for condition (experimental = 0 vs. control = 1) was entered first in the analysis. This variable accounted for virtually no variance and is not considered further. To control for child characteristics at time 1, children's chronological age, FSIQ, TACL-R, EOWPVT-R, and CBCL total behavior problem scores were entered as Step 1. In the next step, the time 1 measure of direct parent action (mother arranging play) with respect to fostering their child's peer interactions was entered. In the final step, the frequency of children's influence attempts with mothers at time 1 (requests and directives) was entered.

The results of the four regressions for the free-play task are presented in Table 2. In Step 1, child characteristics contributed significant variance for successful bids, solitary play, and the Overall Peer Interaction composite. The association with specific child characteristics was limited, however, with significant standardized Beta weights obtained only for FSIQ (successful bids; Beta = .33, $p < .05$) and chronological age (solitary play; $\beta = -.40$, $p < .01$). FSIQ approached significance for the Overall Peer Interaction composite ($\beta = .30$, $p < .10$). The mother arranging play variable entered in Step 2, did not account for significant variance for any

Table 2

Summary of hierarchical multiple regression analyses predicting the four peer interaction variables for the free-play task

Variables	ΔR^2	<i>df</i>	ΔF
<i>Successful bids</i>			
Step 1 – Child characteristics ^a	.21	5, 56	2.92*
Step 2 – Mother arranges play	.01	1, 55	.97
Step 3 – Child influence attempts	.13	1, 54	10.81**
<i>Initiations</i>			
Step 1 – Child characteristics ^a	.02	5, 56	.27
Step 2 – Mother arranges play	.00	1, 55	.12
Step 3 – Child influence attempts	.07	1, 54	4.54*
<i>Solitary play</i>			
Step 1 – Child characteristics ^a	.18	5, 56	2.45*
Step 2 – Mother arranges play	.00	1, 55	.03
Step 3 – Child influence attempts	.05	1, 54	3.75
<i>Overall Peer Interaction composite</i>			
Step 1 – Child characteristics ^a	.19	5, 56	2.61*
Step 2 – Mother arranges play	.02	1, 55	1.32
Step 3 – Child influence attempts	.07	1, 54	5.16*

* $p < .05$. ** $p < .01$.

^a Includes chronological age, FSIQ, TACL-R, EOWPVT-R, and CBCL total behavior problems.

Table 3

Summary of hierarchical multiple regression analyses predicting the four peer interaction variables for the teaching task

Variables	ΔR^2	df	ΔF
<i>Successful bids</i>			
Step 1 – Child characteristics ^a	.20	5, 55	2.78*
Step 2 – Mother arranges play	.01	1, 54	.90
Step 3 – Child influence attempts	.09	1, 53	7.04*
<i>Initiations</i>			
Step 1 – Child characteristics ^a	.02	5, 55	.27
Step 2 – Mother arranges play	.00	1, 54	.13
Step 3 – Child influence attempts	.09	1, 53	5.76*
<i>Solitary play</i>			
Step 1 – Child characteristics ^a	.18	5, 55	2.41*
Step 2 – Mother arranges play	.00	1, 54	.04
Step 3 – Child influence attempts	.03	1, 53	1.81
<i>Overall Peer Interaction composite</i>			
Step 1 – Child characteristics ^a	.18	5, 55	2.49*
Step 2 – Mother arranges play	.02	1, 54	1.24
Step 3 – Child influence attempts	.06	1, 53	4.60*

* $p < .05$.^a Includes chronological age, FSIQ, TACL-R, EOWPVT-R, and CBCL total behavior problems.

measure. In contrast, as seen in Table 2, children's attempts to influence their mothers at time 1 significantly predicted three of the four peer interaction measures obtained two years later, and approached significance for the fourth variable (solitary play, $p < .10$). Beta weights were .36, $p < .01$, for successful bids, .27, $p < .05$ for initiations, and .26, $p < .05$ for the Overall Peer Interaction composite. The most variance accounted for by children's influence attempts was obtained for the successful bids measure ($\Delta R^2 = .13$).

Similar findings were obtained when the regressions were repeated for the teaching task (see Table 3). Significant effects for child characteristics were obtained for three of the four dependent variables (with the exception of initiations). The association with individual child characteristic measures was again limited, with significant Beta weights obtained for FSIQ (successful bids, $\beta = .33$, $p < .05$) and chronological age (solitary play, $\beta = -.40$, $p < .01$). FSIQ also approached significance for the Overall Peer Interaction composite, $\beta = .30$, $p < .10$. No significant effects were obtained for the mother arranging play measure in Step 2. However, as indicated in Table 3, children's influence attempts with mothers significantly predicted the peer measures of successful bids ($\beta = .31$, $p < .05$), initiations ($\beta = .32$, $p < .05$), and the Overall Peer Interaction composite ($\beta = .26$, $p < .05$). The largest amount of variance accounted for by children's influence attempts was for the successful bids and initiations measures ($\Delta R^2 = .09$ for both).

4. Discussion

The results of this study reveal that influence attempts of 4–6 year-old children with developmental delays during mother–child interactions predicted important dimensions of their peer interactions two years later. As revealed by the regression analyses, this family–peer linkage was evident for influence attempts during both a free–play and a teaching task with the mother, even after taking into account children's characteristics, including chronological age, behavior problems, and cognitive and language levels, as well as the children's participation in a program to promote children's peer interactions. An important aspect of direct parent action, the extent to which mothers arranged playdates for their child, was also controlled in the analyses.

This finding emerged despite the increasing involvement and influence of children with their peers as commonly occurs when children make the transition from the early childhood to the early elementary years. Not only was the association between children's influence attempts with mothers and their interactions with peers evident two years later, but children's attempts to influence their mother were also moderately stable over that time period. This suggests a developmental process in which mutual forms of social interaction occurring in the mother–child context continue over time and may create opportunities for children to practice social skills related to appropriately initiating interactions and establishing play as well as dealing with ambiguities or conflicts. This continuing use of child directives and requests to mothers is likely to both increase assertiveness and enhance the relevance of social communications to ongoing discourse. When faced with interacting with peers, interactions mainly characterized by more mutual forms of social exchange, the potential for transferring this generalized social knowledge from the mother–child to the peer context is evident (Lindsey et al., 1997; Mize & Pettit, 1997). Our findings indicate that this pattern of children's influence attempts with mothers predicts important dimensions of children's peer interactions including the level of initiations, the success of those initiations, the extent to which children remain involved with their peers, and their overall participation in child–child social interactions.

From a clinical or intervention perspective, these findings suggest that a focus on family–peer linkages may help address the substantial peer interaction problems evident for children with developmental delays. Strategies designed to encourage children to influence parents during various family routines and activities may well yield important benefits that transfer to the peer context.

Such strategies can help expand and refine even existing comprehensive intervention programs (Guralnick, Connor et al., 2006). These early and ongoing interventions may be especially effective since so many opportunities to encourage these forms of social communication present themselves in typical family situations. The parent–child context also has the advantage of being under parental control in contrast to the more unpredictable peer contexts. The challenge will be to engage parents effectively in the intervention as it will be essential to develop family friendly materials that are easily implemented within family routines. As suggested earlier, the use of scripts relevant to family activities can be particularly valuable in organizing social and instructional activities to encourage children to be more directive and to promote information-seeking. Of note, these types of interventions carried out within the framework of family-peer linkages are entirely consistent with strategies intended to reduce parental directives and to enhance responsiveness to children's initiations that are generally part of effective interventions to promote children's language and communication (e.g., Girolametto & Weitzman, 2006). However, the family-peer linkage framework recommended here focuses on the design of specific strategies to promote children's influence attempts in the parent–child context most likely to enhance their interactions with peers. Certainly there is ample room for growth given our findings that children's influence attempts with mothers did not increase significantly over the two-year period. Future research will determine whether children's peer interactions can be influenced by well-designed and well-implemented interventions suggested by our family-peer linkage findings and framework.

Strategies derived from the family-peer linkage model to foster the peer interactions of children with delays in this study should be complemented by more direct child-focused approaches carried out in the peer context. Parental coaching and related instructional techniques can certainly be effective (e.g., Finnie & Russell, 1988), but need to be adapted to the unique characteristics of children with delays. Similarly, educators and resource professionals working in classroom settings have at their disposal a variety of techniques that may be effective at some level for individual children in the peer context (e.g., Odom et al., 1999). In all likelihood, each of the many components of a comprehensive intervention will produce relatively small effects, but cumulatively have a powerful impact (see Guralnick, Connor, et al., 2006). A model suggesting additive benefits of individual intervention components is also consistent with our understanding of how broader effects of early intervention are achieved (Guralnick, 1998, 2005).

Our findings, controlling for important child characteristics and direct family influences, provide presumptive evidence for this specific family-peer linkage. However, other unmeasured child characteristics, such as social motivation, may be the driving force in both contexts. Similarly, more direct parent–child interaction patterns other than arranging playdates, which was controlled in the present study, that were not measured here may account for all or some of the associations. For example, parents who encourage children's influence attempts may also be more active as social coaches in the peer context. Further studies will likely reveal a highly interrelated set of relevant family and child factors that interact in various ways to influence children's peer relationships (Ladd & Pettit, 2002). Nevertheless, the family-peer linkage obtained in this study, relating children's influence attempts to mothers with various aspects of their peer interactions for children with delays, were consistent with developmental processes that were conceptually well-grounded and compatible with numerous related findings based on work with typically developing children. Intervention science will be needed to evaluate these proposed causal mechanisms for children with and without developmental delays (Guralnick, 2006).

Children's cognitive and language levels were inconsistently related to the four peer interaction measures and accounted for only a small proportion of the variance. These modest relationships are compatible with findings from other samples (e.g., Guralnick & Groom, 1987), and reflect contemporary models of child social competence suggesting the significant role of numerous social-information and related processes (Crick & Dodge, 1994; Guralnick, 1999; Rubin et al., 2005). The absence of an association between children's behavior problems and the peer interaction measures in this study may be related to our exclusion of children with significant behavior problems from the sample. Approximately 25% of children with delays can be expected to reach the standard clinical cutoff point for behavioral problems (Baker, Blacher, Crnic, & Edelbrock, 2002). Other sample-related factors that may have affected the generalizability of our findings include the commonly obtained disproportionate representation of boys in our sample. With an insufficient number of girls in our sample, we were unable to examine possible sex differences. Our sample was also relatively homogeneous with respect to ethnicity and SES, and parents experiencing unusually high levels of maternal stress were also excluded. Future work with more heterogeneous samples is certainly needed to extend our findings.

In summary, our results are compatible with models of family-peer linkage suggesting that children's influence attempts with mothers in both social and instructional tasks create opportunities for social interaction processes to emerge that can foster the peer interactions of young children with mild developmental delays. This relationship is not overridden by peer experience occurring during the transition from the early childhood to the early elementary school period. That this predictive relationship was obtained over a two-year period further suggests the potential for promoting more mutual forms of parent–child exchange beginning during early childhood as a means of addressing the substantial peer interaction difficulties of children with mild developmental delays. Our findings also suggest that additional work focusing on other direct and indirect family-peer linkages for children with delays may well uncover other mechanisms that are of both theoretical and practical significance.

Acknowledgments

The authors wish to thank the many coders and other staff who participated in this project. Thanks also to the families for helping us to better understand factors influencing the peer relationships of young children with developmental delays.

References

- Abidin, R. R. (1995). *Parenting stress index*, 3rd ed. Odessa, FL: Psychological Assessment Resources, Inc.
- Achenbach, T. M. (1991). *Manual for the child behavior checklist/4–18 and 1991 profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Baker, B. L., Blacher, J., Crnic, K. A., & Edelbrock, C. (2002). Behavior problems and parenting stress in families of three-year-old children with and without developmental delays. *American Journal on Mental Retardation*, 107, 433–444.
- Black, B., & Logan, A. (1995). Links between communication patterns in mother–child, father–child, and child–peer interactions and children's social status. *Child Development*, 66, 255–271.
- Carrow-Woolfolk, E. (1985). *Manual for the Test for Auditory Comprehension of Language-Revised*. Allen, TX: DLM Teaching Resources.
- Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin*, 115, 74–101.
- Doyle, A., Connolly, J., & Rivest, L. (1980). The effect of playmate familiarity on the social interactions of young children. *Child Development*, 51, 217–223.
- Fiese, B. H., Wilder, J., & Bickham, N. L. (2000). The family context in developmental psychopathology. In A. J. Sameroff, M. Lewis, & S. M. Miller (Eds.), *Handbook of developmental psychopathology*. (2nd. ed., pp. 115–136). New York: Kluwer Academic/Plenum Publishers.
- Finnie, V., & Russell, A. (1988). Preschool children's social status and their mothers' behavior and knowledge in the supervisory role. *Developmental Psychology*, 24, 789–801.
- Gardner, M. F. (1990). *Expressive One Word Picture Vocabulary Test-Revised*. Novato, CA: Academic Therapy Publications.
- Garvey, C. (1986). Peer relations and the growth of communication. In E. C. Mueller, & C. R. Cooper (Eds.), *Process and outcome in peer relationships* (pp. 329–345). San Diego: Academic Press.
- Girolametto, L., & Weitzman, E. (2006). Facilitating language skills: Inservice education for early childhood educators and preschool teachers. *Infants and Young Children*, 19, 36–49.
- Gresham, F. M., Sugai, G., & Horner, R. H. (2001). Interpreting outcomes of social skills training for students with high-incidence disabilities. *Exceptional Children*, 67, 331–344.
- Guralnick, M. J. (1998). The effectiveness of early intervention for vulnerable children: A developmental perspective. *American Journal on Mental Retardation*, 102, 319–345.
- Guralnick, M. J. (1999). Family and child influences on the peer-related social competence of young children with developmental delays. *Mental Retardation and Developmental Disabilities Research Reviews*, 5, 21–29.
- Guralnick, M. J. (2005). Early intervention for children with intellectual disabilities: Current knowledge and future prospects. *Journal of Applied Research in Intellectual Disabilities*, 18, 313–324.
- Guralnick, M. J. (2006). Family influences on early development: Integrating the science of normative development, risk and disability, and intervention. In K. McCartney, & D. Phillips (Eds.), *Blackwell handbook of early childhood development* (pp. 44–61). Oxford, UK: Blackwell Publishers.
- Guralnick, M. J., Connor, R., Hammond, M., Gottman, J. M., & Kinnish, K. (1996). Immediate effects of mainstreamed settings on the social interactions and social integration of preschool children. *American Journal on Mental Retardation*, 100, 359–377.
- Guralnick, M. J., Connor, R. T., Neville, B., & Hammond, M. A. (2006). Promoting the peer-related social development of young children with mild developmental delays: Effectiveness of a comprehensive intervention. *American Journal on Mental Retardation*, 111, 336–356.
- Guralnick, M. J., & Groom, J. M. (1985). Correlates of peer related social competence in developmentally delayed preschool children. *American Journal of Mental Deficiency*, 90, 140–150.
- Guralnick, M. J., & Groom, J. M. (1987). The peer relations of mildly delayed and nonhandicapped preschool children in mainstreamed playgroups. *Child Development*, 58, 1556–1572.
- Guralnick, M. J., Hammond, M. A., Connor, R. T., & Neville, B. (2006). Stability, change, and correlates of the peer relationships of young children with mild developmental delays. *Child Development*, 77, 312–324.
- Guralnick, M. J., Neville, B., Connor, R. T., & Hammond, M. A. (2003). Family factors associated with the peer social competence of young mildly delayed children. *American Journal on Mental Retardation*, 108, 272–287.
- Guralnick, M. J., Neville, B., Hammond, M. A., & Connor, R. T. (2007a). The friendships of young children with developmental delays: A longitudinal analysis. *Journal of Applied Developmental Psychology*, 28, 64–79.
- Guralnick, M. J., Neville, B., Hammond, M. A., & Connor, R. T. (2007b). Linkages between mildly delayed children's social interactions with mothers and peers. *Child Development*, 78, 459–473.
- Hartup, W. W. (1996). The company they keep: Friendships and their developmental significance. *Child Development*, 67, 1–13.
- Hollenbeck, A. R. (1978). Problems of reliability in observational research. In G. P. Sackett (Ed.), *Observing behavior: Vol. 2. Data collection and analysis methods* (pp. 79–98). Baltimore: University Park Press.
- Hollingshead, A. B. (1975). Four factor index of social status. New Haven: Yale University, Department of Sociology.
- Jenkins, J. R., Odom, S. L., & Speltz, M. L. (1989). Effects of social integration on preschool children with handicaps. *Exceptional Children*, 55, 420–428.
- Kopp, C. B., Baker, B. L., & Brown, K. W. (1992). Social skills and their correlates: Preschoolers with developmental delays. *American Journal on Mental Retardation*, 96, 357–366.
- Ladd, G. W., & Golter, B. S. (1988). Parents' management of preschooler's peer relations: Is it related to children's social competence? *Developmental Psychology*, 14, 109–117.
- Ladd, G. W., & Hart, C. H. (1992). Creating informal play opportunities: Are parents' and preschoolers' initiations related to children's competence with peers? *Developmental Psychology*, 28, 1179–1187.
- Ladd, G. W., & Pettit, G. S. (2002). Parenting and the development of children's peer relationships. In M. H. Bornstein (Ed.), *Handbook of parenting: Vol. 5. Practical issues in parenting*. (2nd. ed., pp. 269–304). Mahwah, NJ: Lawrence Erlbaum.
- Lindsey, E. W., Mize, J., & Pettit, G. S. (1997). Mutuality in parent–child play: Consequences for children's peer competence. *Journal of Social and Personal Relationships*, 14, 523–538.
- Martinez, M. A. (1987). Dialogues among children and between children and their mothers. *Child Development*, 58, 1035–1043.
- Mize, J., & Pettit, G. S. (1997). Mothers' social coaching, mother–child relationship style, and children's peer competence: Is the medium the message? *Child Development*, 68, 312–332.
- Nelson, K. (1981). Social cognition in a script framework. In J. H. Flavell, & L. Ross (Eds.), *Social cognitive development: Frontiers and possible futures* (pp. 335–364). Hillsdale, NJ: Lawrence Erlbaum.
- Odom, S. L., McConnell, S. R., McEvoy, M. A., Peterson, C., Ostrosky, M., Chandler, L. K., Spicuzza, R. J., Skellenger, A., Creighton, M., & Favazza, P. C. (1999). Relative effects of interventions supporting the social competence of young children with disabilities. *Topics in Early Childhood Special Education*, 19, 75–91.
- Provost, M. A., & LaFreniere, P. J. (1991). Social participation and peer competence in preschool children: Evidence for discriminant and convergent validity. *Child Study Journal*, 21, 57–72.
- Putallaz, M. (1987). Maternal behavior and children's sociometric status. *Child Development*, 58, 324–340.
- Putallaz, M., & Wasserman, A. (1990). Children's entry behavior. In S. R. Asher, & J. D. Coie (Eds.), *Peer rejection in childhood* (pp. 60–89). Cambridge: Cambridge University Press.
- Rubin, K. H. (2001). *The play observation scale*. The Center for Children, Relationships and Culture, University of Maryland, College Park: Author.
- Rubin, K. H., Coplan, R. J., Chen, X., Buskirk, A., & Wojslawowicz, J. (2005). Peer relationships in childhood. In M. Bornstein, & M. Lamb (Eds.), *Developmental science: An advanced textbook* (pp. 469–512), 5th ed. Hillsdale, NJ: Erlbaum.
- Russell, A., & Finnie, V. (1990). Preschool children's social status and maternal instructions to assist group entry. *Developmental Psychology*, 26, 603–611.

- Russell, A., Pettit, G. S., & Mize, J. (1998). Horizontal qualities in parent–child relationships: Parallels with and possible consequences for children's peer relationships. *Developmental Review, 18*, 313–352.
- Sacks, H., Schegloff, E. A., & Jefferson, G. (1978). A simplest systematics for the organization of turn-taking of conversation. In J. Schenkein (Ed.), *Studies in the organization of conversational interaction* (pp. 7–57). New York: Academic Press.
- Sparrow, S. S., Balla, D. A., & Cicchetti, D. V. (1984). *Vineland Adaptive Behavior Scales*. Circle Pines, MN: American Guidance Service.
- Vandell, D. L. (2000). Parents, peer groups, and other socializing influences. *Developmental Psychology, 36*, 699–710.
- Wechsler, D. (1989). *Wechsler Preschool and Primary Scale of Intelligence-Revised*. San Antonio: The Psychological Corporation.
- Wechsler, D. (1991). *Wechsler Intelligence Scale for Children*, 3rd ed. San Antonio: The Psychological Corporation.
- White, B. L., & Watts, J. C. (1973). *Experience and environment, vol. 1*. (pp.)Englewood Cliffs, NJ: Prentice-Hall.