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Family-peer linkages for children with intellectual disability and children with learning disabilities

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ABSTRACT

Family interactions are potential contexts for children with intellectual and learning disabilities to develop skillful social behaviors needed to relate effectively with peers. This study examined problem solving interactions within families of elementary school-age children (7–11 years) with intellectual disability (n = 37), specific learning disabilities (n = 48), and without disabilities (n = 22). After accounting for group differences in children's behaviors and peer acceptance, across all groups, mothers' behaviors that encouraged egalitarian problem solving predicted more engaged and skillful problem solving by the children. However, mothers' controlling, directive behaviors predicted fewer of these behaviors by the children. Fathers' behaviors had mixed associations with the children's actions, possibly because they were reactive to children's unengaged and negative behaviors. For the children, greater involvement, more facilitative behaviors, and less negativity with their families were associated with greater acceptance from their peers, supporting family-peer linkages for children at risk for peer rejection.

1. Introduction

Interactions among family members can prepare children for interpersonal functioning outside of the family, including relationships with peers (Ladd & Pettit, 2002). Extensive research on parenting practices indicates that when parents display warmth, engagement, and support for the child's autonomy, the children are more likely to develop positive friendships and experience acceptance from their peers (Ladd & Pettit, 2002). In contrast, negative parent-child interactions are associated with children's negative peer experiences (e.g., MacKinnon-Lewis, Rabiner, & Starnes, 1999). However, relatively little is known about whether family interactions can help to improve peer functioning for children who have functional limitations that place them at high risk for peer rejection. The purpose of the present study is to investigate whether and how family problem-solving interactions are associated with peer adjustment for two groups of children who often experience peer rejection; children with intellectual disability, and children with specific learning disabilities.

Social rejection by peers is a critical problem for promoting the full integration of children with intellectual disability and children with learning disabilities in school and recreational settings (Estell et al., 2008; Son, Parish, & Peterson, 2012). For children with intellectual disability, their functional limitations in social communication and peer relationship skills constrain positive engagement with peers (Kasari, 2016). For example, children with intellectual disability display ineffective and isolating social play behaviors as early as pre-school (Guralnick, 1999). Later, elementary school-age children with intellectual disability make critical errors in understanding and responding to peer problem situations (Leffert, Siperstein, & Widaman, 2010). Research on children with learning disabilities also has identified a wide array of social skills deficits that impede social problem solving and effective engagement with peers (Wiener, 2004). Similar to children with intellectual disability, these limitations include both social-cognitive errors such as misunderstanding social behaviors and failure to recognize the consequences of their own actions (Fink, Begeer, Peterson, Slaughter, & de Rosnay, 2015), and social communication problems such as difficulties generating conversation and communicating clearly enough to be understood (McCabe & Meller, 2004). In addition to functional limitations, children with learning disabilities often display behavioral excesses and poor emotional regulation skills in the form of disruptive and aggressive behaviors that alienate peers (Metsala, Galway, Ishaik, & Barton, 2017). It is important to help these children succeed socially because social skills are as important as cognitive skills for influencing the well-being and adjustment of people with disabilities (Kasari, 2016).

Competent social behaviors are particularly relevant for children's peer adjustment during elementary school because peer relationships become increasingly complex at this time (Coie, Dodge, & Kupersmidt,

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1990). During this developmental period, children become more aware of the thoughts and feelings of their peers, which affects their ability to create and maintain friendships (Selman, 1980). The elementary school years are also a time when the number of close friend selections increases steadily (Epstein, 1986), and friendship choices are more likely to be reciprocated (Schneider, 2000). However, this is also a developmental period of heightened intergroup biases and selective peer rejection, which can exacerbate insecurities about peer acceptance (Adler & Adler, 1995). For children with intellectual disability and learning disabilities, developmental delays in acquiring the cooperative and competent social behaviors needed for reciprocal friendships, possibly along with disruptiveness or aggression, put them at risk for neglect or rejection by their peers during and beyond the elementary school-age years.

1.1. Family-peer linkages in problem solving

In this study we examine family problem solving as a context for the development of children's interpersonal skills relevant to their peer relationships. In order to problem solve effectively, family members must regulate hostility, disclose openly, support and validate each other, and generate new ideas and solutions to family problems (Alexander, Waldron, Robbins, & Neeb, 2013). These behaviors can reduce family stress and build closeness, which, in turn, contribute to the growth and well-being of family members (Cox & Paley, 1997). Additionally, family problem solving interactions likely give children opportunities to learn and practice responsive communication skills and group negotiation strategies. In this way, they are indirect mechanisms for family-peer linkages, which occur when children learn patterns of relating and social skills in the family and bring these skills to their interactions with peers (Ladd, Profilet, & Hart, 1992).

In a review of research with typically developing samples, Putallaz and Heflin (1990) proposed that parenting behaviors influence the peer status of children through parent-child interactions that are either symmetrical or complementary. Symmetry occurs when parents model social behaviors that are imitated by children. Effective problem solving behaviors by parents might model emotional responses for the child, foster emotional regulation, and teach emotional encoding and decoding. This process accounts for similarity in the affective quality of parents' and children's behaviors. Complementarity occurs when parents' behaviors evoke coordinated responses from children, which is most relevant to influence attempts and autonomy-granting. Russell, Pettit, and Mize (1998) proposed that these parent-child interactions can be vertical or horizontal. Vertical parenting occurs when parents exert greater control than the child, such as when they give commands and directives that the child is expected to follow. Vertical parenting is prominent with young children, but in situations such as family problem solving, extensive reliance on vertical patterns might prohibit egalitarian disagreement and sharing, two skills that are important for children's peer relationships. In contrast, horizontal interactions are mutual and egalitarian, such as when parents evoke autonomous child behaviors by displaying autonomy-giving behaviors toward the child. Horizontal autonomy-giving elicits initiative and self-confident responding from children. Also, because horizontal interactions with parents resemble peer circumstances, children can learn and practice the types of social skills they can use with peers. Research supporting these processes comes from studies of typically developing children, but the processes are likely applicable to children at risk for peer-related problems as well.

1.2. Family problem solving and children with intellectual disability and learning disabilities

Previous studies of problem solving interactions among families of school-age children with intellectual disability have focused on how the presence of the child with disability affects the family interaction process. The findings suggested that these families experience unique challenges, but generally adapt to their circumstances without resorting to negative or ineffective styles of relating. Costigan, Floyd, Harter, and McClintock (1997) examined families of 6–18 year-old children with intellectual disability as compared to families with typically developing children, and concluded that there was evidence of both disruption and resilience in family problem solving interactions. The children with intellectual disability had difficulty actively and effectively engaging in the discussion, and their mothers and fathers adapted to the children's needs by being more directive than other parents. However, the parents and the siblings engaged in active problem solving, used effective communication skills, and showed low rates of negative exchanges, all of which were similar to the families with typically developing children. Similarly, a separate examination of reciprocal exchanges in these families (Floyd, Harter, & Costigan, 2004) found that the parents used lower-limit controls (e.g., questions, directives) to engage the children with intellectual disability in the family discussions, and the parents and the siblings discussed and resolved problems while avoiding negative exchanges, similar to comparison families with typically developing children and children with chronic illnesses. Thus, despite adaptations, normative styles of effective family interaction process were maintained.

Research with children with intellectual disability also has begun to address how family patterns of problem solving might influence the social skills and peer adjustment of the children. Building on the notion of complementary patterns of parent-child interactions that are elicited by horizontal versus vertical parenting, Guralnick, Neville, Hammond, and Connor (2007) showed that mothers who used horizontal forms of relating with 4–6 year-old children with mild intellectual disability elicited more effective influence attempts by the children. In turn, the children showed parallel forms of these effective behaviors in their interactions with peers. A follow-up study (Guralnick, Connor, Neville, & Hammond, 2008) showed that the children's behaviors with their mothers predicted their levels of involvement and successful social behaviors with peers two years later. Similarly, Fenning, Baker, and Juvonen (2011) showed that reciprocal discourse between parents and 8 year-old children with and without mild intellectual disability during a discussion of an emotionally upsetting incident predicted the children's prosocial behaviors on a social problem solving task.

Studies of relationships between parents and children with specific learning disabilities have documented the importance of secure attachment styles for children's social adjustment (e.g., Al-Yagon, 2016), but have not examined specific family interaction behaviors. However, a longitudinal study of family interactions for children with early developmental delays (Baker, Blacher, Crnic, & Edelbrock, 2002) includes a subgroup of relevant families. The children were initially identified with early language or motor delays at age three, and were tested for general cognitive delays after age five, when only a portion of the children met criteria for intellectual disability. The remaining children had milder forms of learning delays which, though labeled "borderline intellectual functioning", overlap with characteristics of specific learning disabilities. Some reports from this investigation combined the subgroups and showed that they differed from families of children without delays. In particular, at age nine years, these children showed relatively limited expression/negotiation skills during a problem solving task, and their mothers displayed relatively high levels of directiveness (Wieland, Green, Ellingsen, & Baker, 2014). Thus, the findings for this combined sample resembled results involving only children with significant intellectual disability. More notably, other reports that examined the separate subgroups identified important distinctions for the families of children with milder learning delays. Specifically, during naturalistic interactions in the home observed at age five, mothers of children with milder learning delays showed the lowest levels of positivity and sensitivity, and the highest levels of detachment compared to families with both typically developing children and children with more significant intellectual disability (Fenning, Baker, Baker, & Crnic,

2007). One year later, these mothers showed the greatest increases in negative-controlling behaviors, the fathers also showed relatively high levels of negative-controlling behaviors, and the children with milder learning delays showed the greatest increases in difficult behaviors in the form of negativity, demandingness and inattentiveness (Fenning, Baker, Baker, & Crnic, 2014). Thus, family negativity may be particularly characteristic of families of children with mild learning delays.

In the present study we investigated family interaction processes in separate groups of families of children with intellectual disability and families of children with specific learning disabilities. We examined the two groups because of the similar challenges the children and their families face, as well as their possible unique features, such as parent-child struggles and negativity in families of children with learning disabilities. The two groups were compared with children in the same age range and from the same school districts who do not have identified disabilities. The comparison families represent more typical experiences when all children have average or above intellectual functioning, no identified learning disabilities, and, thus, are not at risk for peer-related problems. We examined interactions that included all family members in the discussion, and focused on behaviors by mothers, fathers, and target children with and without intellectual and learning disabilities. Research on gender-related parenting practices shows that there are complex patterns of similarity and complementarity in mothers' and fathers' behaviors that vary depending on the developmental period and the domain of functioning (Cabrera, Fitzgerald, Bradley, & Roggman, 2014). Thus, in the subgroups of families where both parents were present, we could explore similarities and differences in the quality and correlates of mothers' and fathers' behaviors in this family context.

1.3. Research questions and hypotheses

Following from previous research, we addressed the following research questions and hypotheses:

1. Do family interaction behaviors differ in families of children with intellectual disability and specific learning disabilities as compared to families with typically developing children? We hypothesized that children with intellectual and learning disabilities would engage in less active problem solving and display fewer interpersonal communication skills in family interactions than age-matched typically developing children. However, parents of children with intellectual and learning disabilities would generally demonstrate behaviors similar to other parents, consistent with resilience seen in previous research. We also examined whether negative parent-child interactions would be most likely in families of children with learning disabilities.
2. How do parents promote the development of children's social competencies during family discussions? We hypothesized that parents would model and scaffold active problem solving and positive interpersonal skills for the target children with and without disabilities, as indicated by both symmetrical and complementary associations between parents' behaviors and the children's problem solving and communication skills. Horizontal parent behaviors that encouraged egalitarian problem solving would predict engaged and skillful problem solving, whereas vertical behaviors (i.e., directiveness) would be associated with less engagement and problem solving by the children.
3. Do children's competencies in family interactions predict success with peers above and beyond differences associated with disabilities? We expected that children with intellectual disability and specific learning disabilities would experience less peer acceptance than typically developing children. Nevertheless, we hypothesized that for all groups of children, the use of competent problem solving and communication skills during family interactions would predict their greater acceptance by peers, whereas negative behaviors would be associated with less peer acceptance.

2. Method

2.1. Participants

A total of 121 single-parent and two-parent families were recruited for an investigation of family effects on children's peer relationships for 7–11 year-old children with and without intellectual and learning disabilities. Of these families, 107 met inclusion criteria and provided complete family problem solving data. All families were recruited from classes in public elementary schools by mailing information about the study to parents of appropriate children and having the parents contact the investigators by phone if interested. One group (n = 37) was receiving special education services for children with mild or moderate intellectual disability. School records and testing results were obtained from the child's most recent Individual Educational Plan (IEP) evaluation to confirm that the children had IQ scores within the range of mild (IQ = 56–70) or moderate (IQ = 40–55) intellectual disability and evidence of significant delays in adaptive functioning. The school records and parent reports indicated that 14 of the children were diagnosed with Down syndrome, 1 with Cornelia de Lange syndrome, and the remaining children had mild (N = 16) or moderate (N = 6) intellectual disability with no known etiology. A second group of children with specific learning disabilities (n = 48) was recruited from the same school districts. Parent reports and school records confirmed that the children had IQ scores not indicative of intellectual disability (FSIQ $>$ 70), with significant impairments below age level in one or more areas of reading (63%), mathematics (33%), and written expression (40%). The school records and parent reports indicated an array of other difficulties, including ADHD, auditory processing deficiency, receptive language delay, and speech disorder. A comparison group of similar-age children without disabilities (n = 22) was recruited from regular education classes in the same districts. Teacher and parent reports confirmed that the children did not have intellectual disability or a specific learning disability.

The characteristics of the full sample and each of the groups are given in Table 1. One-way ANOVAs and Chi-Squared tests indicated that the fathers in the comparison group were more likely to have a college degree and had higher occupational status scores than the fathers in the learning disabilities group, and the mothers in the comparison group who worked out of the home also had the highest occupational status scores (see Table 1). The groups did not significantly differ on any of the other characteristics.

2.2. Measures

2.2.1. Family problem solving interactions

All family members participated together in a 10-min long discussion of a current problem for their family. The procedures followed a commonly used method for observing marital and family problem solving interactions. Each family member first completed a set of questionnaire ratings of the degree to which 12 potential problem areas were concerns for the family (e.g., cooperation among the children, family rules, completing chores). An interviewer reviewed the ratings with the entire family and helped them select a topic that was relevant to all family members. The family was instructed to discuss the topic together, include all family members in the discussion, describe the problem as each person saw it, and attempt to reach a solution to the problem. The interviewer left the room and the discussion was recorded with a camera mounted on a tripod.

2.2.2. Coded behaviors

The recordings of the family discussions were coded by observational coders who were blind to the research hypotheses. The coding system consisted of 38 specific behavioral codes that evaluated interpersonal communication skills, problem solving skills, and other behaviors that either facilitated the family discussion and led to successful

Table 1
Sample characteristics: total sample and by group.

Variable	Total sample $N = 107$	Intellectual disability $n = 37$	Learning disability $n = 48$	Comparison $n = 22$	Group difference χ^2/F value $N = 107$
Child sex (% girls)	34	35	29	41	0.99
Child age (years)	9.47 (1.05)	9.63 (1.19)	9.32 (0.95)	9.55 (1.0)	
Child ethnicity					1.90
White (%)	50	54	50	45	
Black (%)	38	38	38	41	
Latino (%)	1	0	2	0	
Mixed (%)	10	8	10	14	
Single parents (%)	41	43	52	45	0.71
Mother age (years)	38.21 (6.23)	39.13 (6.61)	37.47 (6.05)	38.36 (6.03)	0.73
Father age (years)[a]	40.95 (6.85)	40.84 (5.35)	40.86 (7.67)	41.33 (8.11)	0.02
Mother education					7.95
High school (%)	25	28	31	5	
Some college (%)	30	22	33	36	
College degree (%)	45	50	35	59	
Father education[a]					9.63*
High school (%)	18	14	30	0	
Some college (%)	25	19	35	17	
College degree (%)	57	67	35	83	
Yearly income ($)	52,692 (39,893)	50,305 (38,063)	47,098 (37,172)	68,885 (45,964)	2.30
TSEI mother[b]	39.36 (17.79)	35.32 (15.00)	36.97 (16.08)	48.36 (21.17)	3.74*
TSEI father[a]	47.58 (21.49)	47.35 (19.06)	38.36 (20.09)	64.08 (18.79)	6.68**
Number of children	2.25 (1.08)	2.51 (1.24)	2.15 (0.96)	2.09 (1.02)	1.68

Note: TSEI = Total Socioeconomic Index. Numbers in parentheses are standard deviations.
[a] *n's* = 21, 23, 12.
[b] *n's* = 24, 35, 20.
* $p < 0.05$.
** $p < 0.01$.

resolution of the problem or disrupted this process through withdrawal, hostility, or aversiveness. Codes were assigned to each discernable verbal or nonverbal action emitted by any family member, and they were entered into a computer data management system that kept track of the person who emitted the behavior and the content code. Coding was exhaustive and continuous, so that each behavioral turn (i.e., change of speaker) by a family member received at least one code, though a single turn could include multiple distinct coded behaviors. The behavioral codes were derived from well-validated measures of family problem solving, and the coding system has been used successfully in research with families of children with intellectual disability to describe family behaviors and identify sequential dyadic exchanges (Costigan et al., 1997; Floyd et al., 2004). New coders were trained until they reached 90% agreement with the coding supervisor. During the process of coding, 20% of the interactions were blindly assigned to be independently coded by two coders, one of whom was usually the coding supervisor. Coder agreement was satisfactory, with average kappa = 0.66 (range: 0.52 to 0.80) for specific behavioral codes, which indicates very good agreement (Fleiss, 1981). Disagreements were resolved in weekly coder meetings.

Based on an earlier set of principal components analyses (Costigan et al., 1997), the codes were grouped into four categories of behaviors by the parents and four categories by the children that were relevant to the current research hypotheses. The parent categories were (1) *supportive problem solving*, which were solution-focused behaviors paired with interpersonal warmth (e.g., plan suggestion, accept responsibility, approval/acceptance, empathy), (2) *active listening*, which were questions that engaged the children in the discussion (e.g., opinion probe), (3) *critical*, which included refutations and complaints (e.g., disagree, disapprove/criticize), and (4) *directive*, which were imperative statements directing current or future actions (e.g., direct command, "stop" command). For the children, the 4 categories of behavior were (1) *active problem solving*, which incorporated solution-focused behaviors and complaints (e.g., plan suggestion, solution/compromise, disapprove/criticize), (2) *facilitative*, which were supportive, warm behaviors (e.g., agree, approval/acceptance), (3) *involved*, which indicated active engagement in the discussion (e.g., problem talk, opinion probe), and (4) *negative*, which were aversive and defensive behaviors (e.g., testing/challenging, tease, whine). For each parent and child, the frequencies of codes for the 4 categories were tabulated, and the category frequencies were divided by the total number of behaviors by that family member to obtain relative frequency scores. The relative frequency scores controlled for overall behavioral productivity and, thus, were used in the analyses.

2.2.3. Peer acceptance

The target child's experiences of acceptance by peers were evaluated with a set of parent-report (usually mothers) and teacher-report items derived from scales for peer relationships developed by Crick and Grotpeter (1996) and a teacher-report measure developed by Ladd and colleagues (Ladd, Herald-Brown, & Andrews, 2009; Ladd & Profilet, 1996). All items were administered to the parents, referencing "my child", and the teachers, referencing "the student." A principle components analysis identified five items that were the same and formed a consistent factor for the parents and teachers (e.g., "My child [The student] is well liked by other children.", "Children are very accepting of my child [the student]."). Items were rated on a 5-point scale indicating the extent to which the item described the child's experiences with peers (1 = "never true", 5 = "always true"). The measure was completed by the mother and by as many as 3 school teachers, including the child's primary classroom teacher and other teachers who observed the child in less structured classes such as art or physical education, and peer-oriented activities such as lunch and recess. Across parents and teachers, the internal consistency of the measure was $\alpha = 0.83$. The teachers' scores were averaged to obtain one score for peer acceptance at school, and these scores were averaged with the parent-report to obtain one composite index of peer acceptance across settings. The correlation between the parent and school scores was $r = 0.38$, which matches levels of overlap generally found in parent and teacher reports about children (van der Ende, Verhulst, & Tiemeier, 2012). The composite acceptance scores were significantly correlated with similar composite ratings of children's peer support, $r(105) = 0.69$, and peer victimization, $r(105) = -0.66$, and total problem scores from the Child Behavior Checklist/Teacher Report Form

(Achenbach & Rescorla, 2001), $r(105) = -0.57$, all $p < 0.001$.

2.3. Procedures

All procedures and measures were approved by the institutional review board, and informed consent was obtained from the parents and assent was obtained from the children. As part of a larger study of family effects on children's social relationships, two sessions with each family were conducted in the home, during which parents and children completed interviews and questionnaire measures, and the family completed a series of interaction tasks. The problem solving discussion was completed during the first family session.

2.4. Overview of analyses

The hypotheses about group differences were evaluated in a series of MANOVAs and one-way ANOVAs contrasting the three groups on child, mother and father behaviors. Post hoc contrasts among the three groups were conducted with Duncan tests. The hypotheses about parents' behaviors predicting competent behaviors for the target children were evaluated with multiple regression analyses in which scores for each of the categories of target child behaviors were first regressed on scores for the four categories of mothers' behaviors, then the four categories of fathers' behaviors. For these analyses, control variables were entered at step 1, which included two orthogonal group vectors contrasting both the intellectual disability group and the specific learning disabilities group with the typically developing comparison group, and a control variable for child age. The analyses with mothers' behaviors as predictors also included a binary variable to control for family composition (single vs. two-parent). The four parent behaviors were entered together in the second step. Also, in order to evaluate whether there were differences among the groups in these predictions, in step 3 the cross-products of the group vectors with each of the parent behaviors were tested for stepwise entry. These effects are described only when they were significant. The hypothesis that the child's competent, engaged behaviors during family problem solving would predict greater success with peers was tested by regressing the peer acceptance scores on the four behaviors by target children during the family discussion. For this regression, the vectors for group differences were entered in the first step to assess and control for group differences in peer acceptance. Child age and family composition (single vs. two-parent) were also entered as controls. The four types of target children's behaviors during the family discussion were entered together in the second step. Cross-products of the group vectors with child behaviors were entered in step 3 to test for group differences in these predictions. The peer acceptance scores were missing for one child with intellectual disability and one with a learning disability, so the regression analysis included $N = 105$.

3. Results

3.1. Group differences in interaction behaviors

The mean scores for each of the groups on the interaction variables are given in Table 2. A significant one-way MANOVA with the four types of child behaviors, Wilks' Lambda = 0.80, $F(8, 202) = 2.99$, $p < 0.01$, indicated that children's behaviors differed across the groups. As shown in Table 2, the follow-up ANOVAs were significant for two of the child behaviors, facilitative and negative, and there were trends for active problem solving and involved. However, the Duncan post hoc tests revealed significant differences for all four child behaviors. The means in Table 2 indicate that, as expected, the children with intellectual disability engaged in less active problem solving and displayed fewer involved behaviors than the comparison children. The children with learning disabilities showed intermediate levels of both of these behaviors. However, the children with learning disabilities displayed the highest mean rate of negative behaviors, which was significantly greater than the rates for both the comparison children and the children with intellectual disability (see Table 2). In contrast to expectations, the children with intellectual disability displayed the most facilitative behaviors, which were significantly greater than the rates for both the comparison and the learning disability groups (see Table 2).

Table 2
Group means (SD) for children's and parents' behaviors.

Variable	Intellectual Disability	Learning Disability	Comparison	*F* value
Child behaviors	$n = 37$	$n = 48$	$n = 22$	
Active Problem Solving	0.03 (0.06) $_a$	0.06 (0.07)	0.07 (0.09) $_b$	2.57
Involved	0.58 (0.22) $_a$	0.64 (0.15)	0.70 (0.14) $_b$	2.58
Facilitative	0.11 (0.12) $_a$	0.07 (0.07) $_b$	0.06 (0.06) $_b$	3.87*
Negative	0.01 (0.03) $_a$	0.03 (0.06) $_b$	0.01 (0.02) $_a$	3.56*
Mother behaviors	$n = 37$	$n = 48$	$n = 22$	
Supportive problem solving	0.08 (0.07)	0.08 (0.07)	0.09 (0.09)	0.40
Active listening	0.16 (0.10)	0.16 (0.12)	0.14 (0.09)	0.43
Critical	0.04 (0.05)	0.07 (0.09)	0.07 (0.09)	1.38
Directive	0.09 (0.08)	0.12 (0.10)	0.08 (0.06)	1.78
Father behaviors	$n = 21$	$n = 23$	$n = 12$	
Supportive problem solving	0.09 (0.09)	0.09 (0.09)	0.14 (0.09)	1.26
Active listening	0.09 (0.08)	0.11 (0.10)	0.13 (0.11)	0.77
Critical	0.03 (0.05)	0.07 (0.11)	0.03 (0.06)	1.48
Directive	0.07 (0.10)	0.08 (0.08)	0.06 (0.05)	0.41

Note: Means with different subscripts are significantly different in Duncan post hoc comparison tests.
* $p < 0.05$.

Regarding the parents' behaviors, the MANOVAs testing group differences were not significant for either the mothers' behaviors, Wilks' Lambda = 0.92, $F(8, 202) = 1.12$, *ns*, or the fathers' behaviors, Wilks' Lambda = 0.87, $F(8, 100) = 0.90$, *ns*. Furthermore, as shown in Table 2, none of the follow-up ANOVAs were significant, and there were no significant post hoc Duncan tests for any of the parents' behaviors. Thus, there was no indication that the parents' behaviors differed depending on the children's disability status.

3.2. Parent behaviors predict competent child behaviors

3.2.1. Prediction from mothers' behaviors

There were significant regression models for predicting two types of target child behaviors from the mothers' behaviors; child active problem solving, $F(8,98) = 5.52$, $p < 0.001$, $R^2 = 0.31$, and child involved, $F(8,98) = 3.17$, $p < 0.01$, $R^2 = 0.21$. The regression models with mother behaviors were not significant for predicting target child facilitative behaviors, $F(8,98) = 1.39$, *ns*, and negative behaviors, $F(8,98) = 1.55$, *ns*.

Regarding the prediction of child active problem solving, as shown in Table 3, after controlling for child disability group differences, child age, and mother marital status at step 1, two of the mothers' behaviors made significant independent contributions to the regression at step 2, supportive problem solving and critical. Consistent with the hypotheses about eliciting competent child behaviors, both more supportive problem solving and more critical statements by the mothers were associated with higher rates of active problem solving by the children. In addition, after step 1 there was a significant partial correlation for directive behaviors, partial $r(101) = -0.21$, $p < 0.05$, indicating that high rates of mother directives were associated with less active problem solving by the children. This effect is consistent with the hypothesis that directiveness would inhibit child active problem solving, although the mothers' directive behaviors did not make a significant unique contribution to the regression at step 2 (see Table 3). No two-way interactions with the group vectors were significant. Overall, the mothers'

Table 3
Prediction of child active problem solving and involved behaviors from mothers' behaviors.

Variable	Child active problem solving				Child involved			
	B (SE)	β	B (SE)	β	B (SE)	β	B (SE)	β
Step 1								
Group vectors								
LD versus comparison	− 0.01 (0.02)	− 0.06	0.01 (0.02)	0.01	− 0.05 (0.05)	− 0.14	− 0.05 (04)	− 0.15
ID versus comparison	− 0.04 (0.02)	− 0.26*	− 0.02 (0.02)	− 0.14	0.11 (0.05)	− 0.28*	0.12 (0.05)	− 0.31**
Child age	0.01 (0.01)	0.09	0.00 (0.01)	− 0.01	0.02 (0.02)	0.10	0.01 (0.02)	0.05
Family composition	− 0.01 (0.01)	− 0.03	− 0.01 (0.01)	− 0.03	0.06 (0.03)	0.15	0.03 (0.03)	0.08
Family composition	− 0.01 (0.01)	− 0.03	− 0.01 (0.01)	− 0.03	0.06 (0.03)	0.15	0.03 (0.03)	0.08
Step 2								
Mothers' behaviors								
Supportive problem solving			0.39 (0.10)	0.36***			− 0.44 (0.26)	− 0.16
Active listening			0.06(0.07)	0.08			0.54 (0.20)	0.27**
Critical			0.42 (0.09)	0.41***			0.01 (0.26)	0.01
Directive			− 0.12 (0.09)	− 0.14			− 0.43 (0.24)	− 0.19

Note: $N = 107$. LD = Specific Learning Disability, ID = Intellectual Disability.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

behaviors accounted for an additional 25% of the variance in child active problem solving after accounting for the control variables, $Fchange(4,98) = 9.01$, $p < 0.001$.

Regarding the prediction of child involvement, after accounting for the control variables at step 1, the mothers' active listening made a significant contribution to the regression at step 2 (see Table 3). Consistent with scaffolding child involvement in the problem discussion, more active listening by the mothers was associated with more child involved behavior. Also, similar to the prediction of child problem solving, there was a significant partial correlation for mothers' directive behaviors at step 2, partial $r(101) = -0.22$, $p < 0.05$, indicating that high rates of mother directives was associated with less involvement for the children, consistent with the hypothesis that directiveness would inhibit child active involvement. However, directive behaviors did not make a significant unique contribution to the regression at step 2 (see Table 3). No two-way interactions with the group vectors were significant. Overall, the mothers' behaviors accounted for an additional 13% of the variance in child involvement after accounting for the control variables, $Fchange(4,98) = 3.91$, $p < 0.01$.

3.2.2. Prediction from fathers' behaviors

In the two-parent families, the relative frequencies of mothers' and fathers' behaviors were significantly correlated for all four categories of behaviors; $r(54) = 0.48, 0.48, 0.65$, and 0.54, all $p < 0.001$, for supportive problem solving, active listening, critical, and directive, respectively. Also, the same two child behaviors that were predicted by the mothers' behaviors also were predicted by the fathers' behaviors; child active problem solving, $F(8,47) = 2.55$, $p < 0.05$, $R^2 = 0.30$, and child involved, $F(7,48) = 2.71$, $p < 0.05$, $R^2 = 0.28$. In addition, the fathers' behaviors significantly predicted the children's negative behaviors, $F(8,47) = 2.55$, $p < 0.05$, $R^2 = 0.30$. Similar to the results for the mothers, the regression model was not significant for predicting child facilitative behaviors, $F(7,48) = 1.16$, *ns*. The significant regressions are presented in Table 4.

Regarding the prediction of child active problem solving, as shown in Table 4, after controlling for child disability group differences and child age at step 1, the fathers' critical behaviors made a significant contribution to the regression at step 2. Consistent with the hypotheses about eliciting competent child behaviors, and similar to the findings for the mothers, higher rates of critical statements by the fathers predicted higher rates of active problem solving by the child. However, the interaction of father critical with the group vector contrasting the learning disabilities and comparison groups was significant at step 3, $Fchange(1,47) = 3.78$, $p = 0.05$, $R^2change = 0.06$. The simple effects indicated that the association of father critical with greater child problem solving was larger in the comparison group, $r(10) = 0.62$, $p < 0.05$, than in the learning disabilities group, $r(21) = 0.24$, *ns*. Overall, the main effects and interaction accounted for an additional 17% of the variance in child problem solving after accounting for the control variables, $Fchange(5,47) = 2.31$, $p = 0.05$.

Regarding child involved behavior, as shown in Table 4, after controlling for child disability group differences and child age at step 1, the fathers' problem solving behaviors made a significant contribution to the regression at step 2. However, contrary to expectations about facilitating child involvement, fathers' supportive problem solving was negatively associated with child involved behavior. That is, when fathers engaged in relatively high rates of active problem solving, the target children showed less involvement in the family discussion. No two-way interactions with the group vectors were significant. Overall, the fathers' behaviors accounted for an additional 21% of the variance in child involved behaviors after accounting for the control variables, $Fchange(4,48) = 3.56$, $p < 0.05$.

Regarding child negative behaviors, after controlling for disability group differences and child age at step 1, the fathers' supportive problem solving made a significant contribution to the regression at step 2 (see Table 4). Again contrary to the hypothesis, the fathers' active problem solving was associated with higher levels of child negative behavior. That is, when fathers engaged in relatively high rates of supportive problem solving, the target children behaved relatively negatively. In addition, the interaction of father supportive problem solving with the group vector contrasting the learning disabilities and comparison groups was significant at step 3, $Fchange(1,47) = 6.78$, $p < 0.01$, $R^2change = 0.10$. The simple effects indicated that the association of father supportive problem solving with more child negative behaviors was significant in the learning disabilities group, $r(21) = 0.46$, $p < 0.05$, but not in the comparison group, $r(10) = -0.10$, *ns*. Together, the main effects and interaction accounted for an additional 19% of the variance in child negative behaviors after accounting for the control variables, $Fchange(5,47) = 2.51$, $p < 0.05$.

3.3. Competent engagement in family problem solving predicts child peer acceptance

The results of this regression are presented in Table 5. The regression was significant, $F(8,96) = 2.95$, $p < 0.01$, $R^2 = 0.20$. At step 1, the group vectors and control variables accounted for 6% of the

Table 4
Prediction of child active problem solving, involved behaviors, and negative behaviors from fathers' behaviors.

Variable	Child Active problem solving				Child involved				Child negative			
	B (SE)	β	B (SE)	β	B (SE)	β	B (SE)	β	B (SE)	β	B (SE)	β
Step 1												
Group vectors												
LD versus comparison	−0.04 (0.03)	−0.24	−0.04 (0.03)	−0.26	−0.01 (0.06)	−0.02	−0.03 (0.06)	−0.09	0.03 (0.01)	0.28	0.03 (0.02)	0.37*
ID versus comparison	−0.07 (0.03)	−0.42**	−0.06 (0.03)	−0.38*	−0.09 (0.07)	−0.24	−0.12 (0.06)	−0.31	0.01 (0.02)	−0.07	0.01 (0.02)	0.01
Child age	0.01 (0.01)	0.15	0.01 (0.01)	0.08	0.02 (0.02)	0.13	0.03 (0.02)	0.16	0.01 (0.01)	0.07	0.01 (0.01)	0.06
Step 2												
Fathers' behaviors												
Supportive problem solving			0.18 (0.13)	0.19			−1.04 (0.30)	−0.46***			0.15 (0.08)	0.28*
Active listening			−0.03 (0.12)	−0.04			0.30 (0.28)	0.14			0.04 (0.07)	0.08
Critical			0.35 (0.14)	0.33**			−0.32 (0.33)	−0.13			−0.04 (0.08)	−0.06
Directive			−0.05 (0.14)	−0.05			−0.13 (0.31)	−0.05			0.04 (0.08)	0.07
Step 3												
LD X critical			−0.58 (0.30)	−0.46*								
LD X problem solving											0.36 (14)	0.43**

Note: $N = 56$. LD = Specific Learning Disability, ID = Intellectual Disability.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

Table 5
Prediction of peer acceptance from children's behaviors.

Variable	B (SE)	β	B (SE)	β
Step 1				
Group vectors				
LD versus comparison	−0.62 (1.11)	−0.07	−0.08 (1.07)	−0.01
ID versus comparison	−2.23 (1.16)	−0.25*	−2.18 (1.17)	−0.24
Child age	0.05 (0.40)	0.01	−0.11 (0.39)	−0.03
Family composition	−1.24 (0.84)	−0.14	−1.35 (0.81)	−0.16
Step 2				
Children's behaviors				
Active problem solving			−0.74 (6.61)	−0.01
Facilitative			11.18 (5.35)	0.20*
Involved			6.55 (2.43)	0.27**
Negative			−16.86 (10.73)	−0.15

Note: $N = 105$. ID = Intellectual Disability, LD = Specific Learning Disability.
* $p < 0.05$.
** $p < 0.01$.

variance in peer acceptance. Consistent with the hypothesis that the children with disabilities would experience relatively low levels of peer acceptance, there was a significant negative effect for the group vector contrasting the children with intellectual disability and the comparison group, indicating that the children with intellectual disability obtained significantly lower scores ($M = 17.58$, $SD = 4.84$) than the comparison group ($M = 19.80$, $SD = 4.01$). However, there was no significant effect for the children with specific learning disabilities, who had intermediate scores for peer acceptance ($M = 19.10$, $SD = 3.94$) that did not significantly differ from the comparison group. At step 2, both facilitative listening and involved behaviors contributed uniquely to the prediction of peer acceptance. Consistent with expectations, both associations are positive (see Table 5), indicating that higher rates of both facilitative behaviors and involved behaviors by the children were associated with greater peer acceptance. In addition, after step 1 there was a significant partial correlation for negative behaviors, partial r $(99) = -0.23$, $p < 0.05$, indicating that high rates of negative child behaviors were associated with lower peer acceptance, although these behaviors did not make a significant unique contribution to the regression at step 2 (see Table 5). There were no significant interactions involving the group vectors with the child behaviors. Together, the four child behaviors accounted for 14% additional variance in peer acceptance, $Fchange(4,96) = 4.07$, $p < 0.01$. Thus, consistent with the hypothesis, after accounting for group differences in peer success, children who exhibited more competent behaviors and fewer negative behaviors during family problem solving experienced more acceptance from their peers.

4. Discussion

The purpose of this investigation was to examine how family interactions can provide a context for elementary school-age children with intellectual disability and learning disabilities to develop social interaction skills that might help them relate effectively with peers. As expected, the children with disabilities had more difficulty with family problem solving than same age peers without disabilities. The children with intellectual disability tended to use fewer problem solving skills and were less engaged in the interactions, and the children with learning disabilities were relatively negative. Regardless of disability status, however, the mothers' behaviors appeared to facilitate competent child behaviors. Notably, the mothers' positive problem solving, critical statements, and active listening were associated with more active and involved problem solving by the children, whereas the mothers' directiveness was associated with less problem solving and involvement by the children. Although the fathers' behaviors were generally similar to the mothers' behaviors, only fathers' critical behaviors were associated with competent active problem solving by the children, and the effect was largely accounted for by the comparison families. Regarding the link between children's competencies with the family and their success with peers, after controlling for the generally low levels of peer acceptance for children with intellectual disability, across groups the children who were the most facilitative, the most involved, and the least negative during family problem solving

experienced the highest levels of peer acceptance. These findings are important in demonstrating links between family interactions and children's social adjustment outside of the family during this developmental period in which peer interactions become increasingly important and complex (Selman, 1980). The findings are also important for extending family-peer linkages to children with intellectual and learning disabilities who are at high risk for peer difficulties.

The specific significant links between parent and child behaviors generally conformed to family processes hypothesized to teach and promote children's competent interpersonal skills. Notably, the association in which the mothers who displayed high rates of problem solving behaviors had children who also displayed high rates of problem solving is consistent with a pattern of behavioral symmetry, wherein parents model competent behaviors that are copied by children (Putallaz & Heflin, 1990). There was also support to the process of teaching through complementary forms of interaction (Putallaz & Heflin, 1990). Notably, high rates of active listening by the mothers, in the form of seeking the children's opinions and summarizing their statements, were associated with more active participation in the discussion by the children. This pattern of complementary behaviors is consistent with the type of reciprocal parent-child discourse that Fenning et al. (2011) identified in children with disabilities who showed effective prosocial problem solving. Together, these symmetrical and complementary associations suggest patterns of family interaction in which the mothers model problem solving and solicit and validate the children's participation in the discussion, and the children freely offer their opinions and ideas about how to resolve the family problem. This type of parent-child exchange is consistent with the "horizontal" style of parent-child relating that children can bring to their interactions with peers (Guralnick et al., 2007).

The association of criticism by both parents with the children's more frequent displays of problem solving behaviors also was consistent with a complementary style of parent-child interaction that might promote children's interpersonal competence. Parents' critical statements were usually complaints about chores or other child-related situations in the home, and the positive association with child problem solving suggests that the criticisms challenged the children to generate and offer solutions. It is notable that the parents' criticisms and complaints generally were not expressed with hostility, which might explain why they did not tend to elicit the type of mutual aversiveness that can erupt between parents and children, including children with disabilities (Fenning et al., 2014). Indeed, encouraging parents to use effective, non-hostile ways of stating problems or complaints is the type of skillful approach to discussing problems that is encouraged in therapeutic interventions with families (e.g., Alexander et al., 2013). For children, learning to respond to criticism in a non-defensive, self-confident way may be a useful skill for managing conflicts with peers (Vernberg, 1990).

In contrast to the facilitative parent behaviors, the directive behaviors by mothers, which involved giving children specific instructions or commands, were associated with lower rates of child involvement in the family discussions. We speculated that, unlike active listening that encourages involvement, directives might be the type of top-down, vertical communication that reduces children's initiative (Russell et al., 1998). It is notable that directives did not make unique contributions to the predictions of the children's behaviors, but overlapped with and were accounted for by the effects of *not* doing more of the productive behaviors that encouraged child involvement and problem solving. Previous research (Floyd et al., 2004) has suggested that high rates of directives by parents of children with disabilities may be attempts to keep the children engaged with the task. The current findings raise the possibility that they distract parents from other forms of relating that might be more productive for obtaining children's active involvement.

The similarities and differences in the findings for mothers and fathers contribute to our growing understanding of parenting roles related to child and family development. Despite significant inter-parent correlations demonstrating considerable similarity in the parents' behaviors, the inconsistencies in their association with children's behaviors suggest different roles for the parents in these family discussions. Notably, unlike the symmetrical pattern of mutual mother-child problem solving, supportive problem solving by the fathers was associated and low levels of involvement and more negative behaviors by the children. It is possible that high rates of problem solving by fathers occurred when they engaged directly in exchanges with the mothers, and these mother-father exchanges excluded children from active, positive forms of involvement in the discussion. However, it is also possible that fathers' problem solving was reactive to the children's inactivity and negativity, where the fathers attempted to maintain the focus on the family problem, and model and encourage more active problem solving from unengaged children. Research with both toddlers (Clarke-Stewart, 1978) and young children with disabilities (Fenning et al., 2014) has suggested that mothers' behaviors tend to actively lead the children's development, whereas fathers' behaviors are more reactive to children's functioning. This active-reactive distinction is consistent with frequently seen patterns of similarity and complementarity in mothers' and fathers' behaviors with children (Cabrera et al., 2014). In the current situation of family problem solving with elementary school-age children, perhaps fathers contributed consistently with mothers in eliciting children's problem solving from their critical statements, but complemented mothers' actions by attempting to maintain and model problem solving for unengaged and negative children.

The prediction of peer acceptance from three of the children's behaviors, engaged, facilitative, and low levels of negativity, is consistent with developmental models of the immerging importance of these interpersonal competences during elementary school (e.g., Coie et al., 1990). That is, the ability to be warm, supportive, and engaged and involved in a non-aggressive way during interpersonal interactions likely pays off as well in children's interactions with peers. Indeed, prosocial behaviors toward peers increase steadily from the preschool years (Fabes et al., 1999), and verbally and physically aggressive behaviors can put children at risk for peer rejection (Bierman, 2004). Also, the ability to actively listen to others has been associated with higher peer status during this developmental period (Bierman, 1986). The similarities and differences for the disability groups are also informative. The failure to detect differences in predicting peer acceptance for children with and without disabilities may simply reflect limited power in this study to detect significant two-way interactions. Nevertheless, the group differences in rates of behaviors might have different implications for children with different limitations. For children with intellectual disability, the relatively higher rates of facilitative behaviors, paired with lower rates of problem solving and active involvement in the discussions, suggests that they may bring a different set of skills to peer interactions than other children, namely, the ability to be warm and supportive rather than taking a lead in decision making. However, for children with specific learning disabilities, relative difficulties with controlling negative responding in the family context might contribute to their difficulties with peers as well.

The findings must be considered in light of limitations of the study. Notably, the analyses had relatively low statistical power for testing complex models. Thus, the preponderance of main effects across groups might have occurred because there was limited power to detect higher order interactions in the associations among family behaviors and in predicting peer acceptance. Furthermore, the cross-sectional correlations are limited for addressing causality. There is a need for more careful longitudinal modeling of how specific behaviors with family members might lead to peer acceptance, similar to Guralnick et al.' (2007, 2008) studies of children with intellectual disability. We relied on parents' and teachers' reports of peer acceptance, and did not have sociometric data from classmates. The relatively higher levels of education and occupational status for the fathers and employed mothers in the comparison group might be associated with parenting practices that could have influenced the results of this investigation. Nonetheless, the

relatively lower socioeconomic status for families of children with disabilities matches population trends (e.g.; Parish, Seltzer, Greenberg, & Floyd, 2004) and, thus, is representative of experiences for these families.

Regarding implications for intervention, Guralnick (1999) has concluded that years of efforts to improve social behaviors of children with intellectual disability through child focused interventions in peer settings generally have been ineffective. Similarity, reviews of intervention research on children with learning disabilities conclude that neither social skills training (Kavale & Mostert, 2004), nor inclusive education (Estell et al., 2008) substantially improved social functioning for these students. Evidence of overlap between children's skills with their parents and with their peers suggests that interventions might instead focus on parent-child interactions to improve behaviors that would be effective in the peer context (Guralnick, 1999). The current findings support this line of reasoning. That is, an important avenue for improving social skills for children with disabilities might be to focus on the broader family context, and help the entire family learn to relate together in effective ways.

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