

Setting the Stage: Early Child and Family Characteristics as Predictors of Later Loneliness in Children With Developmental Disabilities

Angela Howell, Penny Hauser-Cram, and Joanne E. Kersh
Boston College

Abstract

Children with developmental disabilities often report having few friends. Researchers have tended to focus on social skill deficits, neglecting other potent predictors of children's feelings of loneliness. In a sample of 82 children with developmental disabilities, we examined characteristics of the child at age 3 (i.e., the conclusion of early intervention services) as well as family income and emotional climate as predictors of children's reported feelings of loneliness at school during middle childhood (age 10). Children with lower levels of externalizing behavior problems at age 3 and from families with a more positive family climate, as indicated by the Family Environment Scale, reported less loneliness at age 10. Implications for children, families, and early intervention services are discussed.

Friendships play an important role in the psychological, social, and academic adjustment of children (Ladd, 1999). They create a context where children can learn and practice appropriate social strategies while developing interpersonal problem-solving skills and conflict-negotiation strategies (Hartup, 1996). Children without friends are deprived of resources such as companionship, validation of one's acceptance, intimacy, and emotional and instrumental support (Hartup, 1996; Parker & Asher, 1993). Further, children who feel lonely or perceive themselves to be less accepted socially are at risk for psychological maladjustment (Ladd & Troop-Gordon, 2003). During elementary school, children who report being lonely also experience a limited sense of belonging and relatedness in the classroom, contributing to lower perceived academic competence and ultimately lower academic achievement (Guay, Boivin, & Hodges, 1999).

As early as preschool, many children with developmental disabilities have difficulty forming friendships (Guralnick, 1990; Guralnick & Groom, 1988; Pavri & Luftig, 2000). Preschool

children with disabilities in mainstreamed settings have been observed to interact less frequently with peers, engage in more isolated play (Bronson, Hauser-Cram, & Warfield, 1995), and form fewer reciprocal friendships (Guralnick, Gottman, & Hammond, 1996). They have less success in their social bids to other children (Guralnick & Groom, 1988) and are chosen as play partners less frequently than are their typically developing peers (Buysee, Nabors, Skinner, & Keyes, 1997; Guralnick & Groom, 1988). By school age, many children with developmental disabilities report high rates of loneliness, placing them at risk for continued psychological distress into adolescence (Leffert, Siperstein, & Millikan, 2000).

Children with disabilities are often challenged by the social skills necessary to initiate, establish, and sustain reciprocated friendships (Leffert & Siperstein, 2002). They may exhibit difficulty entering ongoing activities and choosing appropriate social responses that sustain play with peers (Guralnick, 1997). In addition to compromised or delayed social cognition, some children with disabilities have difficulty regulating their behavior

and may demonstrate behaviors that can lead to social isolation (Kaiser & Rasminsky, 1999). Results of many studies indicate that children with intellectual impairment have higher frequencies of problem behavior than do typically developing children (e.g., Baker, Blacher, & Olsson, 2005; Jacobson, 1982), with the exception of children with Down syndrome (Gunn & Cuskelly, 1991). Hyperactivity, inattentiveness, and impulsivity may be two to four times more prevalent among children with intellectual disabilities (Benson & Aman, 1999). In a study of children with learning disabilities, Wiener (2002) found that those who were rated by teachers as having higher levels of externalizing behavior problems were also reported to be less socially skilled. The externalizing behavior problems of children not only impede successful peer interactions, they may also feed social stigma associated with disability. Thus, children with disabilities are at risk for relational adversity, such as friendlessness.

Fewer opportunities for peer interaction may lead to feelings of lack of social belonging among peers, evidenced by higher rates of chronic loneliness (Williams & Asher, 1992). In the classroom, children with a range of disabilities spend less time playing with others and more time engaged in solitary activities compared to typically developing peers (Bronson, Hauser-Cram, & Warfield, 1997; Guralnick, Connor, Hammond, Gottman, & Kinnish, 1996; Kemp & Carter, 2002). By the time that children with disabilities enter elementary school, they report feelings of loneliness twice as high as those of typically developing children (Luftig, 1988; Margalit, 1994; Williams & Asher, 1992). High rates of loneliness are reported among school-aged children with physical disabilities (King et al., 1997), intellectual disabilities (Luftig, 1988; Williams & Asher, 1992), and learning disabilities (Vaughn, Elbaum, & Schumm, 1996).

The family is typically the most influential context for the development of children's social and emotional development in early childhood (Bronfenbrenner, 1986). Research demonstrates that the quality of early emotional attachments between caregivers and child, parenting style, and parental support influence children's later peer relations (Clark & Ladd, 2000; Elicker, Englund, & Sroufe, 1992). These family processes work directly to provide instrumental support (e.g., communication, directives) and contingent responses to children's efforts to engage in social interactions (Mize & Pettit, 1997). Indeed, Russell, Pettit, and

Mize (1998) suggested that children may learn as much from *how* caregivers interact with them as they do from the content of these interactions. When parents engage in horizontal interactions with their children (i.e., interactions that are reciprocal and egalitarian), children are given the opportunity to learn and practice many social skills and behaviors that are then transferred to the peer social context.

The family climate reflects the quality of relations between family members and the processes within the family system that promote feelings of cohesion among its members. Positive relations are likely to create a context within the home that promotes opportunities for children to develop a positive sense of self, which may ultimately influence children's ability to engage in successful peer relations, contributing to their sense of social belonging (Shonkoff & Phillips, 2000). Three theoretical perspectives suggest that a supportive family environment serves as a mechanism for a sense of social belonging (and, thus, less loneliness) of children with disabilities. First, from a family systems view (Minuchin, 2002), children who feel accepted by family members are more likely to develop positive representations of self and a sense of belonging. Baumeister and Twenge (2003) emphasize that the need to belong is a fundamental aspect of the development of the social self. Family relationships characterized by greater cohesiveness and expressiveness may provide opportunities for children with disabilities to develop a sense of belonging that affects their perception of self and their actions with others.

Second, consistent with Bandura's (1997) model of self-efficacy, children learn how to become a supportive friend through the modeling of supportive relationships within the immediate family. Caregivers of young children often actively try to enhance their children's social competence by creating opportunities for peer interaction (Ladd & Hart, 1992) while monitoring and enhancing these interactions (Ross, Tesla, Kenyon, & Lollis, 1990). Parents even encourage and model self-regulation, a key to successful social relationships. For example, Weiner and Sunohara (1998) found that parents of children with learning disabilities often coached their children on how to approach friends, actively encouraged appropriate social interactions, and modeled behaviors that ensured that friends felt welcomed in their home.

A third theoretical perspective, derived from

attachment theory (Ainsworth & Bell, 1970), emphasizes that children develop a working model of relationships through the early emotional bonds developed between family members (Ryan & Stiller, 1991). The secure relationship established with parents helps children develop a positive sense of social relatedness (Elicker et al., 1992). Various researchers have shown that toddlers who establish a secure attachment to caregivers are more likely to demonstrate positive social and emotional development later in childhood (Booth, Rose-Krasnor, & Rubin, 1998; Elicker et al., 1992). By extending positive relationships to all family members, as occurs in a cohesive family, children develop a more extensive sense of the stability of such relationships and emerge at the end of early childhood with the emotional security that is essential for the development of positive relationships with others (Levitt, 2005).

All three perspectives emphasize the centrality of advantageous internal family processes to children's social-emotional development, but many researchers have found that those processes may be compromised by risk factors such as a lack of economic resources (Shonkoff & Phillips, 2000). For example, the quality of the home as an environment that supports young children's development has been shown to be positively related to family income (Garrett, Ng'andu, & Ferron, 1994). Limited economic resources may also reduce the type of options available to families who seek to provide social opportunities for their child with a disability while also balancing the needs of the family as a whole (Gallimore, Weisner, Bernheimer, Guthrie, & Nihira, 1993). Moreover, Duncan, Yeung, Brooks-Gunn, and Smith (1998) pointed to the importance of the family's economic resources during a child's early years; they found that family income tends to exert its most powerful influence on children's development during early childhood.

Thus, theoretical perspectives as well as prior research indicate that both child and family characteristics are likely to influence children's feelings of social belonging. Given the importance of family processes, we expect the early family climate to be related to children's later sense of loneliness in school, but it is also possible that children's characteristics may be the primary driving force in their sense of school belonging or loneliness. The purpose of this investigation is to examine two central questions: (a) to what extent do children's

characteristics measured at the conclusion of early intervention services predict their future sense of loneliness in school? (b) To what extent do characteristics of the family's economic resources and climate measured at the conclusion of early intervention services set the stage for children's perception of loneliness within the classroom and school context?

In this study we conceptualized loneliness as a perceived lack of satisfying social relations and consequent feeling of lack of social belonging in a particular context (in this case, school). We investigated the relations among characteristics of both the child (i.e., cognitive skills, adaptive functioning, and externalizing behavior problems) and the family (i.e., income and family climate) during early childhood (at age 3 years) and children's reports of loneliness during middle childhood (at age 10 years). The age 3 time point was selected because children in this study exited from early intervention services at age 3, and, thus, we reasoned that findings would have implications for early intervention services. Age 10 was selected for the measure of loneliness because the middle childhood period is a central one for children's sense of social belonging in school (Furrer & Skinner, 2003).

Method

Participants

Participants were 82 mothers and their children who were enrolled in the Early Intervention Collaborative Study (EICS), an ongoing 18-year longitudinal study of 190 children and families who received early intervention services (Hauser-Cram, Warfield, Shonkoff, & Krauss, 2001; Shonkoff, Hauser-Cram, Krauss, & Upshur, 1992). Families were initially recruited from 29 community-based early intervention programs in Massachusetts (79%) and New Hampshire (21%) at the time they entered early intervention services. The inclusion criteria for children in the EICS were (a) motor impairment evidenced by delayed motor development and abnormal motor tone or coordination deficit; or (b) developmental delay in two or more areas of development, with no established etiology indicating a specific prognosis; or (c) Down syndrome determined by chromosomal analysis. At the time of study entry, participating children had biologically based disabilities that were representative of the types of disabilities most frequently served in early intervention pro-

grams in Massachusetts and New Hampshire (Hauser-Cram et al., 2001). The subset of participants in the investigation presented here was limited to those children at age 10 years whose receptive communication skill age equivalent score was greater than 3 years based on the Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984). This criterion was used to ensure that children could understand and complete the measures included in this investigation. The sample was further limited to families in which data about the child's externalizing behavior problems and early family relationship were complete.

Analyses were conducted to ensure that the subsample used in the current analysis did not differ from the original sample of 190 children and families. As might be expected, given the inclusion criterion for this investigation, the children in the subsample had significantly higher scores than the original sample in both cognitive performance, $t = 4.00$, $p < .001$, and adaptive skills, $t = 3.58$, $p < .01$ (see Table 1). At age 3, the original sample of children demonstrated a mean score on the general cognitive index of the McCarthy Scales of Children's Abilities (McCarthy, 1972) of 62.21 ($SD = 23.58$), and a mean standard score on the Vineland Adaptive Behavior Scales of 65.74 ($SD = 13.28$). These participants did not differ from the original sample on any other child characteristics or family demographic indicators.

The sample investigated here included 26 children with Down syndrome, 26 children with motor impairments, and 30 children with developmental delay at age 3. The specific diagnosis of children who evidenced early motor impairments varied significantly and included those with cerebral palsy, diplegia, hemiparesis, and choreoathetosis; all had abnormal muscle tone. Likewise, children who evidenced early developmental delays at entrance to and exit from early intervention were later reported to have a wide variety of learning challenges, such as learning disabilities, speech and language delays, and mental retardation during middle childhood. At age 10, 84.1% of the sample reported here had Individualized Education Plans (IEPs); 36.2% of those children had social skills listed as an area of focus on their IEP. Characteristics of the participants can be found in Table 1.

Procedure

Data were collected as part of a larger longitudinal study that involved a home visit by two

interviewers who were blind to the hypotheses of the study. Interviewers were graduate students who had a background in early childhood development and were trained in child assessment and interviewing. Reliability among interviewers was evaluated at multiple times throughout the study and maintained at $r = .85$ or higher. Around the time of the child's third birthday, mothers were interviewed about their child's adaptive skills, problem behaviors, school setting, and family demographic information. Mothers also completed questionnaires about the quality of the family climate, including the degree of cohesion, expressiveness, and conflict within family relationships. A second interviewer assessed the child's cognitive skills. At the child's 10th birthday, as part of a larger interview, one interviewer asked mothers questions about the child's adaptive behavior skills, friendships, and social experiences with other children. Another interviewer verbally administered questionnaires to each child about his or her feelings of loneliness at school and conducted cognitive assessments of the child.

Mother and Child Measures at Age 3

Child cognitive skills. The McCarthy Scales were administered by a trained interviewer to assess the child's cognitive functioning. The General Cognitive Index at age 3 was used as a measure of cognitive skills. This index reflects the sum of scores on 15 subtests from three subscales: Verbal, Perceptual-Performance, and Quantitative. This instrument has been found to have internal consistency coefficients of .93 across age groups.

Child adaptive skills. The Vineland Adaptive Behavior Scales were administered during a semi-structured interview with the mother to assess the child's adaptive skills in four domains: Social, Communication, Daily Living, and Motor Skills. This analysis used the Child Adaptive Behavior Composite Score at age 3; Cronbach's reliability coefficient for the composite adaptive scale was .95.

Child externalizing behavior problems. Mothers completed the Child Behavior Checklist for Ages 2–3 (Achenbach & Edelbrock, 1983). Children's total raw score on the Externalizing Behavior Problem subscale was used in this study. Examples of items in this subscale include "easily frustrated," "hits others," "has temper tantrums." The Cronbach's alpha for this sample on the Externalizing Behavior Problems subscale at age 3 was .92.

Table 1. Participant Demographics ($N = 82$)

| Characteristic | <i>n</i> /Mean | %/ <i>SD</i> | Range |
|--|----------------|--------------|--------|
| Child at age 3 | | | |
| Gender, female (<i>n</i> , %) | 39 | 47.6 | |
| Type of disability (<i>n</i> , %) | | | |
| Down syndrome | 26 | 31.7 | |
| Motor impairment | 26 | 31.7 | |
| Developmental delay | 30 | 36.6 | |
| Ethnicity (<i>n</i> , %) | | | |
| European American | 75 | 91.5 | |
| Black | 1 | 1.2 | |
| Hispanic | 4 | 4.9 | |
| Mixed race/other | 2 | 2.4 | |
| Cognitive skills ^a (Mean, <i>SD</i>) | 71.1 | 20.1 | 51–124 |
| Adaptive skills ^b (Mean, <i>SD</i>) | 70.4 | 11.8 | 54–106 |
| Externalizing behaviors (<i>t</i> score) ^c | 49.1 | 10.0 | 1–84 |
| Family when child is age 3 | | | |
| Married, mothers (<i>n</i> , %) | 64 | 78 | |
| No. of children in household (Mean, <i>SD</i>) | 2.1 | 0.8 | 1–4 |
| Maternal education, in years (Mean, <i>SD</i>) | 14.1 | 2.4 | 10–18 |
| Income ^d (<i>n</i> , %) | | | |
| <10K | 9 | 11.0 | |
| 10–20K | 9 | 11.0 | |
| 20–30K | 11 | 13.4 | |
| >30K | 49 | 59.8 | |
| Family Relations Index ^e (family climate, mean, <i>SD</i>) | 11.6 | 3.6 | 0–18 |
| Child at age 10 | | | |
| Loneliness | | | |
| Questionnaire ^f | | | |
| (Mean, <i>SD</i>) | 14.8 | 4.6 | 10–30 |
| Cognitive skills ^g | | | |
| (Mean, <i>SD</i>) | 75.3 | 26.6 | 38–141 |
| Adaptive skills ^b | | | |
| (Mean, <i>SD</i>) | 62.6 | 17.1 | 34–107 |
| Has an IEP ^h (<i>n</i> , %) | 69 | 84.1 | |

^aBased on the general cognitive index in The McCarthy Scales (McCarthy, 1972). ^bBased on the adaptive behavior composite score of the Vineland (Sparrow et al., 1984). ^cBased on the externalizing subscale of the CBCL/2 (Achenbach & Edelbrock, 1983). ^dIncome is based on data collected on demographic form at exit from early intervention in 1988. ^eBased on the Family Relations Index from the Family Environment Scale (Moos, 1974). ^fBased on the total summary score from the Loneliness Scale (Williams & Asher, 1992). ^gBased on total composite score from the Stanford-Binet Intelligence Scale (Thorndike, Hagen, & Sattler, 1986). ^hIndividual Educational Plan.

Family climate. Mothers completed three subscales of the Family Environment Scale (Moos, 1974) to rate the degree of emotional cohesion among family members (e.g., “Family members

really help and support each other”), the expressiveness among family members (e.g., “There are a lot of spontaneous discussions in our family”), and the degree of conflict within family relation-

Early predictors of loneliness

A. Howell, P. Hauser-Cram, and J. E. Kersh

ships (e.g., “We fight a lot in our family”). As in prior analyses (Hauser-Cram et al., 2001), the Family Relations Index was created by summing the scores of the Cohesion and Expressiveness subscales and subtracting the Conflict subscale. Higher scores indicate more positive family relationships. Cronbach’s alpha for the Family Relations Index was .91.

Demographic information. Mothers completed a family information questionnaire to report parental years of education, family income, household composition, and marital status.

Child Measures at Age 10

Loneliness. The Loneliness Questionnaire (Williams & Asher, 1992) includes 10 primary items focused on feelings of loneliness and social connectedness at school (e.g., “Are you lonely at school?” “Are there kids at school who care about you?”) as well as some filler items (e.g., “Do you like to watch TV?”). Children’s responses were recorded as yes, sometimes, or no. Summary scores were generated with high scores indicating more loneliness and less social belonging. Possible scores range between 10 and 30. Cronbach’s alpha for this sample was .83. This measure has been found to have good reliability when used with children aged 8 to 13 years old who have intellectual disabilities (Williams & Asher, 1992).

Child adaptive behavior skills. The Vineland Adaptive Behavior Scales were administered during a semi-structured interview with mothers to assess the child’s adaptive skills. Receptive Communication age equivalents at age 10 were used to select the sample for this investigation. The reliability coefficient for the Communication standard score at age 10 for this sample was .98.

Child cognitive skills. The Stanford-Binet Intelligence Scale (Thorndike, Hagen, & Sattler, 1986) was used to assess child’s cognitive functioning at age 10.

Child social experiences. During the interview, mothers answered questions about their child’s social relationships, such as whether the child had attended another child’s birthday party or sleep-over and whether the child had a group of friends.

Data Analysis

First, ANOVA and *t* test analyses were conducted to determine whether differences in loneliness existed for children based on type of disability (i.e., Down syndrome, motor impairments, or developmental delay) or gender. Next, correlational analyses were conducted (see Table 2) to examine the bivariate relations among the hypothesized variables. Because initial correlation analyses indicated a high relation between the child’s cognitive performance score and adaptive behavior score, $r = .61, p < .001$, a composite measure of children’s cognitive and adaptive functioning was developed from those two scales. Finally, hierarchical regression analyses were conducted to test hypotheses about age 3 predictors of children’s loneliness at age 10. The variables were entered in a specified order to first test the variance predicted by child characteristics and then to examine the unique variance added by the family ecology variables (Fidell & Tabachnik, 2003). The variables were entered in the following order: (a) child cognitive and adaptive functioning composite, (b) child externalizing problem behaviors, (c) family income, and (d) family climate. All predictor variables were based on data collected from children and families at the termination of early intervention services (age 3). The order was designed to determine whether child characteristics alone would predict children’s later feelings of loneliness (Model 1) and then whether internal family relations (i.e., quality of the family climate) would add predictive power over and above the influence of children’s characteristics and functioning (Model 2). Family income was included

Table 2. Intercorrelations Between Variables in Analyses

| Variable | 1 | 2 | 3 | 4 | 5 |
|--|---|-----|--------|--------|--------|
| 1. Cognitive/Adaptive composite (age 3) | — | .07 | -.16 | -.01 | -.07 |
| 2. Externalizing Behaviors (age 3) | | — | -.31** | -.44** | .24* |
| 3. Family Income (age 3) | | | — | .21 | -.21 |
| 4. Family Relations Index ^a (age 3) | | | | — | -.35** |
| 5. Loneliness (age 10) | | | | | — |

^aFamily climate.

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

Early predictors of loneliness

A. Howell, P. Hauser-Cram, and J. E. Kersh

as a variable in this investigation because of its expected association with family relations and the potential impact on child outcomes demonstrated in numerous studies (Shonkoff & Phillips, 2000).

Results

When their child was age 10, mothers were interviewed. Results showed that 40% of children had not attended a friend's birthday party during the prior 12 months, 49% had not experienced a sleep-over at a friend's house, and 47% did not have a group of friends. In keeping with these findings about children's loneliness and friendships, the overall score on the Loneliness Questionnaire was within the range found in other studies of children with intellectual disabilities (e.g., Williams & Asher, 1992). The mean score on the Loneliness Questionnaire for children in the current study was 14.8 compared to 13.4 for the typically developing sample reported by Williams and Asher (1992). Previous studies have found that approximately 12% to 20% of typically developing elementary school-aged children report feeling lonely based on high scores on measures of reported loneliness (Asher, Hymel, & Renshaw, 1984; Luftig, 1988), whereas the rates are twice as high for children with developmental disabilities (Margalit, 1994; Williams & Asher, 1992). In this study we found that 30% of children were one *SD* above the mean of typically developing children on the Loneliness Questionnaire reported by Williams and Asher (1992), and 19.5% were two *SDs* above the mean. Thus, although no typically developing comparison group was used in this study, the scores on the Loneliness Questionnaire in this sample seem to support earlier findings that children with disabilities tend to experience more feelings of loneliness than do their typically developing peers.

Preliminary analyses indicated that children's loneliness did not vary by type of disability ($M = 14.84$, $SD = 4.42$; $M = 14.58$, $SD = 4.96$; and $M = 15.04$, $SD = 4.71$ for children with Down syndrome, motor impairment, and developmental delay, respectively). Children's loneliness also did not vary by gender ($M = 15.07$, $SD = 4.65$; $M = 14.56$, $SD = 4.69$, for boys and girls, respectively).

Bivariate correlations (see Table 2) indicated that children's scores on the Loneliness Questionnaire at age 10 were moderately positively correlated with their externalizing behavior problems, $r = .24$, $p < .05$, and negatively correlated with the Family Relations Index, $r = -.35$, $p < .01$, at age 3. Thus, for children in this sample, feelings of loneliness during middle childhood were associated with both child and family characteristics during early childhood. Furthermore, early child externalizing behaviors were significantly negatively associated with both the Family Relations Index, $r = -.44$, $p < .01$, and family income, $r = -.31$, $p < .01$, at that time. Thus, families who evidenced poorer relational qualities and had lower incomes tended to have children who demonstrated more externalizing behavior problems during early childhood.

To test the research questions, we conducted hierarchical regression analyses using children's loneliness scores as the criterion variable. As indicated in Table 3, two models were developed. In the first model (which included only child characteristics), children's externalizing problem behavior (but not children's cognitive and adaptive functioning) was a significant predictor of feelings of loneliness in middle childhood. Children who exhibited more behavior problems (based on parent report) at age 3 reported significantly greater feelings of loneliness at school 7 years later. Children's behavior problems at age 3

Table 3. Hierarchical Regression Analyses for Child and Family Variables at Age 3 Predicting Loneliness in 10-Year Olds With Disabilities ($N = 82$)

| Variable entered at each step | Model 1 | | | Model 2 | | |
|--|--------------|---------|--------------|--------------|--------|--------------|
| | B (SE) | β | δR^2 | B (SE) | B | δR^2 |
| 1. Child cognitive/adaptive composite | -.422 (.566) | -.081 | .004 | -.489 (.551) | -.094 | .004 |
| 2. Child externalizing behavior problems | .112 (.051) | .241* | .058* | .034 (.056) | .072 | .058* |
| 3. Family income | | | | -.224 (.184) | -.137 | .024 |
| 4. Family Relations Index | | | | -.378 (.152) | -.292* | .068* |

$p < .05$.

Early predictors of loneliness

A. Howell, P. Hauser-Cram, and J. E. Kersh

accounted for a significant 5.8% of the variance in loneliness scores at age 10.

Model 2 included family income and the family climate as predictors above and beyond the child characteristics. As can be seen in Table 3, family income was not a significant predictor, but the family climate added significant variance (6.2%) to the prediction of children's loneliness, controlling for children's characteristics, including externalizing behavior problems. A test of the interaction between children's behavior problems and the family climate was not significant, indicating that the quality of the family climate adds significant variance in predicting loneliness of children regardless of the extent of children's externalizing behavior problems.

Discussion

Children's feelings of loneliness at age 10 were not predicted by their type of disability, gender, or cognitive and adaptive skills at age 3. The participants were limited to those children who could understand the questions about friendship and who could reliably communicate their responses. Therefore, children with more limited communicative skills were by necessity not included. Nevertheless, the children in this sample had a wide range of both cognitive and adaptive behavior skills, as indicated in Table 1.

The findings indicate that children with more externalizing problem behaviors during early childhood were more likely to report feelings of loneliness in the school setting during middle childhood. This result is not unexpected, as prior research on typically developing children indicates that maladaptive trajectories of relational difficulties follow from disruptive behaviors in the classroom and ultimately lead to low social acceptance and feelings of loneliness (Ladd & Troop-Gordon, 2003). Although children in this sample did not exhibit a high number of behavior problems, as 96.3% of the sample was below the *T*-score cutoffs for clinical referral based on the Child Behavior Checklist for Ages 2–3, the findings have importance for intervention. Certain types of behavior problems, such as hitting others and defiance, are especially likely to negatively affect the development of positive peer relations and parental well-being (Baker et al., 2005). One important implication is the need for service providers in early intervention to work with parents to help children regulate their behavior, even

when children's behavior problems are not extreme.

Prior research indicates that during middle childhood, children tend to select playmates with similar social participation styles (Rubin, Lynch, Coplin, Rose-Krasnor, & Booth, 1994). Therefore, children with disabilities who exhibit poor self-regulation, as indicated by externalizing problem behaviors, may seldom be selected spontaneously as friends or playmates. Moreover, in a study of friendships of school-aged children with Down syndrome, Freeman and Kasari (2002) suggest that friendship patterns have a developmental progression from "unilateral" to "emerging" to "true" friendships and that children with developmental disabilities may be at a lower level in friendship development than peers of similar chronological age. During middle childhood, children with developmental disabilities, especially those in inclusive classrooms, may be surrounded by peers with true friendships and, thus, feel left out of this type and quality of friendship. Additionally, children become more cognizant of peers' appraisals during middle childhood and use social comparison to evaluate self-worth (Harter, 1998). If children with developmental disabilities follow a similar developmental trajectory, they would be expected to make social comparisons to others when evaluating their self-worth during middle childhood, and their sense of loneliness may increase with such awareness. Because children with problem behaviors may be particularly susceptible to negative evaluation by others, they are likely to have an increased sense of loneliness.

In relation to the second and focal hypothesis tested in this investigation, the results indicate that the quality of the family climate in the preschool years predicted the development of feelings of loneliness among children with disabilities in middle childhood, regardless of the child's level of externalizing problem behaviors. Thus, the early family climate operated as a unique and potent predictor of children's later perception of social belonging. Children whose mothers reported more positive family relationships (i.e., more cohesive and expressive relationships and less family conflict) during early childhood reported having lower levels of loneliness at age 10. These findings are consistent with prior research, such as that of Guralnick, Neville, Connor, and Hammond (2003), who reported that aspects of the family environment (parental stress, social support) influence peer competence. They also build on previ-

ous investigations of the EICS, in which the early family climate was found to predict trajectories in adaptive functioning in children with Down syndrome (Hauser-Cram et al., 1999) and trajectories of adaptive social functioning of children with a range of developmental disabilities from early through middle childhood (Hauser-Cram et al., 2001).

All families make accommodations to meet the needs of their family members and maintain their daily routines. For families of children who have developmental disabilities, these accommodations may be shaped by the quantity and type of child problems (Gallimore et al., 1993). Although this study did not address the specific avenues by which the family climate may contribute to children's later feelings of social belonging and loneliness in school, the family climate might serve to both protect children who are at risk of experiencing peer rejection and concomitant loneliness as well as promote children's positive feelings of social belonging. The pattern of findings from this and our prior studies point to the importance of relationships within the family. As Shonkoff and Phillips (2000) contended, the relational aspects of family life appear to be central to children's social well-being, and the findings from this investigation suggest that this principle holds true for children with disabilities as well. Nevertheless, the findings do not suggest which proposed mechanism—the dynamics of the family system, the modeling of social skills provided by family members, or the internal models of relationships developed through secure attachments—serves as the greatest force by which children gain positive social outcomes. It is likely that all three combine to provide a foundation on which children can develop social skills, self-regulatory behavior, and a sense of belonging; but the means by which each contributes to children's social competence is a critical area for future investigation.

We focused the present study on the family ecology during children's early years and found that family processes relate to children's later sense of social belonging. Therefore, the findings support and extend the rationale for early intervention services to continue to focus on the family unit. Derived from a developmental systems framework, Guralnick (2005) stressed the importance of the family as a central organizing feature in providing comprehensive, interdisciplinary, and community-based early intervention services.

He emphasized that the patterns of interaction within families and the experiences provided to the child within the family system, in addition to health and safety protection, are all critical to children's optimal development. The developmental systems perspective also indicates that the child affects the family (Lerner, Hauser-Cram, & Miller, 1998). Thus, the family is not a static unit but, rather, constantly adapting and accommodating to meet the changing needs of its members (Gallimore et al., 1993). Children with externalizing behavior problems offer challenges to family members and are likely to both affect, and be affected by, the family climate (Baker et al., 2005). In this investigation, families in which the target child exhibited more behavior problems generally had lower scores on the Family Relations Index (as evidenced by the contemporaneous correlations in Table 2), indicating that those families experienced less warmth and cohesion and greater conflict in their relationships. Thus, the findings from this investigation are consistent with the developmental systems perspective.

This study had several limitations. First, the sample size was small as a consequence of excluding children who did not have the necessary receptive communication skills to complete the questionnaire. Also, participants were largely European American, and such families may operate with values and beliefs about what constitutes cohesiveness, expressiveness, and conflict that differ from those of families of other ethnicities (Harkness & Super, 2002). Second, the reliance on self-report to determine children's loneliness gives a one-dimensional view of children's social belonging. It would be beneficial to use multiple indicators of children's social belonging, including observational evidence of their social networks and peer interaction patterns. It is also important to consider children's perception of social belonging within other contexts, such as the community, organized family activities with extended family members, religious and athletic group activities, and activities involving other children who have developmental disabilities. Finally, children with more limited cognitive skills were not included in this study, and they too may experience feelings of loneliness.

Despite the study's limitations, our findings clearly suggest that both children's problem behaviors and the supportive relationships developed within the family unit during early childhood contribute to their sense of social belonging

Early predictors of loneliness

A. Howell, P. Hauser-Cram, and J. E. Kersh

or loneliness in school. Regardless of children's behavior problems, however, families with a healthy family climate during children's early years help to set the stage for children's positive social relationships in middle childhood.

References

- Achenbach, T. M., & Edelbrock, C. S. (1983). *Manual for the Child Behavior Checklist and Revised Child Behavior Profile*. Burlington, VT: University Associates in Psychiatry.
- Ainsworth, M. D. S., & Bell, S. M. (1970). Attachment, exploration, and separation: Illustrated by the behavior of one-year-olds in a strange situation. *Child Development, 41*, 49–67.
- Asher, S. R., Hymel, S., & Renshaw, P. D. (1984). Loneliness in children. *Child Development, 55*, 1456–1464.
- Baker, B. L., Blacher, J., & Olsson, M. B. (2005). Preschool children with and without developmental delay: Behaviour problems, parents' optimism and well-being. *Journal of Intellectual Disability Research, 49*, 575–590.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Baumeister, R. F., & Twenge, J. M. (2003). The social self. In T. Millon & M. J. Lerner (Eds.), *Handbook of psychology* (Vol. 5, pp. 327–352). Hoboken, NJ: Wiley.
- Benson, B. A., & Aman, M. G. (1999). Disruptive behavior disorders in children with mental retardation. In H. C. Quay & A. E. Hogan (Eds.), *Handbook of disruptive behavior disorders* (pp. 559–578). Dordrecht, Netherlands: Kluwer Academic.
- Booth, C. L., Rose-Krasnor, L., & Rubin, K. H. (1998). Perceptions of emotional support from mother and friend in middle childhood: Links with social-emotional adaptation and preschool attachment security. *Child Development, 69*, 427–442.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Developmental Psychology, 22*, 723–742.
- Bronson, M., Hauser-Cram, P., & Warfield, M. E. (1995). Classroom behaviors of preschool children with and without disabilities. *Journal of Applied Developmental Psychology, 16*, 371–390.
- Bronson, M., Hauser-Cram, P., & Warfield, M. E. (1997). Classrooms matter: Relations between the classroom environment and the social and mastery behavior of five-year-old children with disabilities. *Journal of Applied Developmental Psychology, 18*, 331–348.
- Buysee, V., Nabors, L., Skinner, D., & Keyes, L. (1997). Playmate preferences and perceptions of individual differences among typically developing preschoolers. *Early Child Development and Care, 131*, 1–18.
- Clark, K. E., & Ladd, G. W. (2000). Connectedness and autonomy support in parent-child relationships: Links to children's socioemotional orientation and peer relationships. *Developmental Psychology, 36*, 485–498.
- Duncan, G. J., Yeung, J., Brooks-Gunn, J., & Smith, J. (1998). How much does childhood poverty affect the life chances of children? *American Sociological Review, 63*, 406–423.
- Elicker, J., Englund, M., & Sroufe, L. A. (1992). Predicting peer competence and peer relationships in childhood from early parent-child relationships. In R. D. Parke & G. W. Ladd (Eds.), *Family-peer relationships: Modes of linkages* (pp. 77–106). Hillsdale, NJ: Erlbaum.
- Fidell, L. S., & Tabachnick, B. G. (2003). Preparatory data analysis. In J. A. Schinka & W. F. Velicer (Eds.), *Handbook of psychology: Research methods in psychology* (Vol. 2, pp. 114–141). New York: Wiley.
- Freeman, S. F. N., & Kasari, C. (2002). Characteristics and qualities of the play dates of children with Down syndrome: Emerging or true friendships? *American Journal on Mental Retardation, 107*, 16–31.
- Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology, 95*, 148–162.
- Gallimore, R., Weisner, T. S., Bernheimer, L. P., Guthrie, D., & Nihira, K. (1993). Family responses to young children with developmental delays: Accommodation activity in ecological and cultural context. *American Journal on Mental Retardation, 98*, 185–206.
- Garrett, P., Ng'andu, N., & Ferron, J. (1994). Poverty experiences of young children and the quality of their home environments. *Child Development, 65*, 331–345.
- Guay, F., Boivin, M., & Hodges, E. V. E. (1999). Predicting change in academic achievement: A model of peer experiences and self-system

Early predictors of loneliness

A. Howell, P. Hauser-Cram, and J. E. Kersh

- processes. *Journal of Educational Psychology*, 91, 105–115.
- Gunn, P., & Cuskelly, M. (1991). Down syndrome temperament: The stereotype at middle childhood and adolescence. *International Journal of Disability, Development and Education*, 38, 59–70.
- Guralnick, M. J. (1990). Peer interactions and the development of handicapped children's social and communicative competence. In H. Foot, M. Morgan, & R. Shute (Eds.), *Children helping children* (pp. 275–305). New York: Wiley.
- Guralnick, M. J. (1997). Peer social networks of young boys with developmental delays. *American Journal on Mental Retardation*, 101, 595–612.
- Guralnick, M. J. (2005). An overview of the developmental systems approach to early intervention. In M. J. Guralnick (Ed.), *The developmental systems approach to early intervention* (pp. 3–28). Baltimore: Brookes.
- 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., Gottman, J. H., & Hammond, M. A. (1996). Effects of social setting in the friendship formation of young children differing in developmental status. *Journal of Developmental Psychology*, 17, 625–651.
- Guralnick, M. J., & Groom, J. M. (1988). Friendships of preschool children in mainstream playgroups. *Developmental Psychology*, 24, 595–604.
- Guralnick, M. J., Neville, B., Connor, R. T., & Hammond, M. A. (2003). Family factors associated with the peer social competence of young children with mild delays. *American Journal on Mental Retardation*, 108, 272–287.
- Harkness, S., & Super, C. M. (2002). Culture and parenting. In M. H. Bornstein (Ed.), *Handbook of parenting: Vol. 2. Biology and ecology of parenting* (pp. 253–280). Mahwah, NJ: Erlbaum.
- Harter, S. (1998). The development of self-representations. In W. Damon & N. Eisenberg (Eds.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (pp. 275–386). New York: Wiley.
- Hartup, W. W. (1996). The company they keep: Friendships and their developmental significance. *Child Development*, 67, 1–13.
- Hauser-Cram, P., Warfield, M. E., Shonkoff, J. P., & Krauss, M. W. with Sayer, A., & Upshur, C. C. (2001). Children with disabilities: A longitudinal study of child development and parent well-being. *Monographs of the Society for Research in Child Development*, 66(3, Serial No. 266).
- Hauser-Cram, P., Warfield, M. E., Shonkoff, J. P., Krauss, M. W., Upshur, C. C., & Sayer, A. (1999). Family influences on adaptive behavior in young children with Down syndrome. *Child Development*, 70, 979–989.
- Jacobson, J. W. (1982). Problem behaviour and psychiatric impairment within a developmentally disabled population: I. Behaviour frequency. *Applied Research in Mental Retardation*, 3, 121–139.
- Kaiser, J., & Rasminsky, J. S. (1999). *Meeting the challenge: Effective strategies for challenging behaviors in early childhood environments*. Washington, DC: National Association for the Education of Young Children.
- Kemp, C., & Carter, M. (2002). The social skills and social status of mainstreamed students with intellectual disabilities. *Educational Psychology*, 22, 391–411.
- King, G. A., Specht, J. A., Schultz, I., Warr-Leeper, G., Redekop, W., & Risebrough, N. (1997). Social skills training for withdrawn unpopular children with physical disabilities: A preliminary evaluation. *Rehabilitation Psychology*, 42, 47–60.
- Ladd, G. W. (1999). Peer relationships and social competence during early and middle childhood. *Annual Review of Psychology*, 50, 333–359.
- 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., & Troop-Gordon, W. (2003). The role of chronic peer difficulties in the development of children's psychological adjustment problems. *Child Development*, 74, 1344–1367.
- Leffert, J. S., & Siperstein, G. N. (2002). Social cognition: A key to understanding adaptive behavior in individuals with mild mental retardation. In L. Glidden & L. Masters (Eds.), *International review of research in mental retardation*

Early predictors of loneliness

A. Howell, P. Hauser-Cram, and J. E. Kersh

- dation (Vol. 25, pp. 135–182). San Diego: Academic Press.
- Leffert, J. S., Siperstein, G. N., & Millikan, E. (2000). Understanding social adaptation in children with mental retardation: A social cognitive perspective. *Exceptional Children*, 66, 530–545.
- Lerner, R. M., Hauser-Cram, P., & Miller, E. (1998). Assumptions and features of longitudinal designs: Implications for early childhood education. In B. Spodek, O. N. Sarcho, & A. D. Pelligrini (Eds.), *Yearbook in early childhood education* (Vol. 8, pp. 113–138). New York: Teachers College Press.
- Levitt, M. J. (2005). Social relations in childhood and adolescence: The convoy model perspective. *Human Development*, 48, 28–47.
- Luftig, R. L. (1988). Assessment of the perceived school loneliness and isolation of mentally retarded and nonretarded students. *American Journal on Mental Retardation*, 92, 472–475.
- Margalit, M. (1994). *Loneliness among children with special needs: Theory, research, coping and intervention*. New York: Springer-Verlag.
- McCarthy, D. (1972). *McCarthy Scales of Children's Abilities*. New York: Psychological Corp.
- Minuchin, P. (2002). Looking toward the horizon: Present and future in the study of family systems. In J. P. McHale & W. S. Grolnick (Eds.), *Retrospect and prospect in the psychological study of families* (pp. 259–287). Mahwah, NJ: Erlbaum.
- 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.
- Moos, R. H. (1974). *Family Environment Scale*. Palo Alto, CA: Consulting Psychologists Press.
- Parker, J. C., & Asher, S. R. (1993). Friendship and friendship quality in middle childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychology*, 29, 611–621.
- Pavri, S., & Luftig, R. (2000). The social face of inclusive education: Are students with learning disabilities really included in the classroom? *Preventing School Failure*, 45, 8–14.
- Ross, H., Tesla, C., Kenyon, B., & Lollis, S. (1990). Maternal intervention in toddler peer conflict: The socialization of principles of justice. *Developmental Psychology*, 26, 994–1003.
- Rubin, K. H., Lynch, D., Coplin, R., Rose-Krasnor, L., & Booth, C. L. (1994). "Birds of a feather . . .": Behavioral concordances and preferential personal attraction in children. *Child Development*, 65, 1778–1785.
- 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.
- Ryan, R. M., & Stiller, J. (1991). The social context of internalization: Parent and teacher influences on autonomy, motivation, and learning. In M. Maehr & P. Pintrich (Eds.), *Advances in motivation and achievement* (Vol. 7, pp. 86–114). Greenwich, CT: JAI Press.
- Shonkoff, J. P., Hauser-Cram, P., Krauss, M. W., & Upshur, C. C. (1992). Development of infants with disabilities and their families. *Monographs of the Society for Research in Child Development*, 57(6, Serial No. 230).
- Shonkoff, J. P., & Phillips, D. A. (Eds.). (2000). *From neurons to neighborhoods: The science of early childhood development*. Washington, DC: National Academy Press.
- Sparrow, S., Balla, D., & Cicchetti, D. (1984). *Vineland Adaptive Behavior Scales: Expanded form manual*. Circle Pines, MN: American Guidance Service.
- Thorndike, R., Hagen, E., & Sattler, J. (1986). *Stanford-Binet Intelligence Scale* (4th ed.). Chicago: Riverside.
- Vaughn, S., Elbaum, B. E., & Schumm, J. S. (1996). The effects of inclusion on the social functioning of students with learning disabilities. *Journal of Learning Disabilities*, 29, 598–608.
- Weiner, J., & Sunohara, G. (1998). Parents' perceptions of the quality of friendship of their children with learning disabilities. *Learning Disabilities Research & Practice*, 13, 242–257.
- Wiener, J. (2002). Friendship and social adjustment of children with learning disabilities. In B. Y. L. Wong & M. L. Donahue (Eds.), *The social dimensions of learning disabilities* (pp. 93–114). Mahwah, NJ: Erlbaum.
- Williams, G. A., & Asher, S. R. (1992). Assessment of loneliness at school among children with mild mental retardation. *American Journal on Mental Retardation*, 96, 373–385.

Received 1/26/05, accepted 7/13/06.

Editor-in-charge: Frank Floyd

Early predictors of loneliness

A. Howell, P. Hauser-Cram, and J. E. Kersh

The Early Intervention Collaborative Study is supported by Grant R40MC00333 from the Maternal and Child Health Bureau (Title V, Social Security Act), Health Resources and Services Administration, U.S. Department of Health and Human Services. We are grateful to the children and

families who participated in the Early Intervention Collaborative Study. Requests for reprints should be sent to Angela N. Howell, Lynch School of Education, 140 Commonwealth Ave., Chestnut Hill, MA 02467 E-mail: angelahow@gmail.com