Early Language Difficulties and Later Behavioral Adjustment in Low-Income, High-Risk Children

EMILY MOYE SKUBAN, DANIEL S. SHAW, THOMAS J. DISHION, ERIKA S. LUNKENHEIMER, FRANCES GARDNER, MELVIN WILSON

ABSTRACT

Background: Children with language difficulties have been shown to have higher rates of emotional and behavioral problems, but less research has explored potential moderating factors on this relationship. Method: The sample included 731 high-risk, low income children who participated in a multisite intervention study. Families with toddlers were recruited for participation at age 2 and also seen at ages 3 and 4. Results: All children at age 2 were seen by their caregivers as having higher rates of withdrawn behavior and emotional reactivity at the age 4 assessment. Neither positive nor negative observed parenting was found to moderate the association between LL difficulties and later behavioral adjustment. Person-centered analyses comparing children who showed a remittance of language problems from ages 2 to 4 years versus persistent language difficulties showed higher rates of withdrawal, aggression, emotional reactivity and attention problems as well as poorer parenting. Conclusions: Findings suggest that while early LL may be associated with later behavioral problems, toddlers with persistent LL are particularly at risk for later behavioral difficulties. Keywords: Language delay, behavior problems, high-risk populations

The acquisition of language is a fundamental aspect of early child development. However, a sizable portion of toddlers experience lags in language development during the first years of life (Horwitz et al., 2003; Rescorla, Hadicke-Wiley, & Escarce, 1993), and for many of these children, early low language (LL) develops into later language, reading and academic problems during the school-age period (Rescorla, 2002; Scarborough, 1990; Snowling, Adams, Bishop, & Stothard, 2001). In addition to learning difficulties, LL has also been linked to high rates of social and behavioral difficulties (Beitchman, Brownlie, Inglis, Wild, & et al., 1996a; Beitchman, Wilson, Brownlie, Walters, & et al., 1996b). Despite this rather extensive body of research demonstrating the frequent co-occurrence of LL and behavior problems, little research has explored the factors contributing to their association. The current study sought to advance our understanding of the relationship between early language risk and child problem behavior in two ways.

Using a sample of toddlers at high risk for the emergence of language and behavioral problems, we first examined the association between LL and behavioral difficulties at age 4. Second, we examined the possible attenuating influence of maternal parenting, specifically sensitive, responsive and harsh, rejecting parenting, in the association between language risk and problem behaviors at age 4.

LL have been linked to aspects of child maladjustment, including behavioral problems and social delays. This association is noteworthy because of the continuity between early problem behavior and more serious forms of psychopathology in middle childhood and adolescence. For example, externalizing symptoms characterized by hyperactivity, impulsivity, and aggression in early childhood are often predictive of more serious forms of antisocial behavior during middle childhood and adolescence (Aguilar, Sroufe, Egeland, & Carlson, 2000; Barkley, 1998; Moffitt, Caspi, Harrington, & Milne, 2002). Although fewer
longitudinal studies have been carried out on early-starting internalizing symptoms (Bosquet & Egeland, 2006; Feng, Shaw, & Silk, in press), such disorders as childhood-onset depression have been associated with a more chronic courses of psychopathology compared to later-onset depression (Kovacs & Devlin, 1998). A sizable portion of children diagnosed with some LL have behavioral problems, including conduct problems, social withdrawal and ADHD (Baker & Cantwell, 1987; Beitchman et al., 1996a; Carson, Klee, Perry, Muskin, & Donaghy, 1998). While associations between LL and emotional and behavioral problems have been identified in the toddler period (Carson et al., 1998; Irwin, Carter, & Briggs-Gowan, 2002), LL in preschool-aged children have been found to be associated with continuing behavioral difficulties into later developmental periods, including adolescence and adulthood (Aram, Ekelman, & Nation, 1984; Beitchman et al., 2001), suggesting that there is a lasting relationship between language ability and behavioral functioning throughout development and across developmental periods.

Thus the extant literature on the association between LL and behavioral adjustment has a number of gaps. First, the majority of research on the co-occurrence between language difficulties and problem behavior examined samples of children who are either older preschool-aged or school-aged (Beitchman et al., 1996b; Redmond & Rice, 1998) or vary greatly in age (Aram et al., 1984; Baker & Cantwell, 1987), with the vast majority of these studies limited to cross-sectional designs. Similarly, while existing studies of toddlers with language difficulties have indicated a variety of behavioral difficulties (Carson et al., 1998; Horwitz et al., 2003; Irwin et al., 2002), they have relied on concurrent reports of child adjustment. The absence of studies that are longitudinal in design makes it challenging to establish the relationship between toddler-aged language problems and later behavioral adjustment.

Language Delayed or Language Deviant?
One reason for the heightened focus on children who are over three years of age has been that many “late-talking” toddlers have language problems which remit in toddlerhood versus persist into middle childhood (Paul, 1996; Whitehurst & Fischel, 1994). Two longitudinal studies of late-talking toddlers reported that a substantial portion of the children showed significant improvements in their language abilities during the preschool period and some regards “caught up” to the children in the control group (Paul, 1993; Rescorla, Roberts, & Dahlsgaard, 1997). Despite these improvements, many of these children continued to display some language weaknesses compared to their peers (Paul, Murray, Clancy, & Andrews, 1997; Rescorla, 2002). Little work has focused on differentiating the “language delayed” toddlers from the “language impaired” toddlers. Additionally, no longitudinal work has explored differences in rates of behavioral and emotional disturbances in children who catch up compared to children who continue to evidence deficits. It seems likely that children with transitory delays should display fewer behavior problems than children with more lasting language deficits. Studies that identify and compared “remitters” and “persisters” might provide new information about emotional and behavioral risks for these two groups of children.

Parenting as a Moderator between LL and Problem Behavior
Little is known of the nature of the relationship between LL and behavioral adjustment. It is possible that LL during toddlerhood may increase a child’s risk for later behavioral difficulties because of the challenges these children have communicating with others (Redmond & Rice, 1998). Children who have trouble expressing their needs may be more likely to use suboptimal methods to communicate such as aggression or conversely, social withdrawal (Rourke, 1988; Tomblin, Zhang, Buckwalter, & Catts, 2000). Further, proximal factors in the child’s environment may moderate this association, such that only in certain contexts will children with LL ultimately demonstrate behavioral and/or emotional difficulties. In early childhood when children spend relatively more time with parents, it is logical to expect that caregiving quality may serve to moderate associations between LL and later behavior. Mothers who use more verbal stimulation and richer vocabularies are more likely to have children who develop language more quickly (NICHD, 2000; Pan, Rowe, Singer, & Snow, 2005). Additionally, maternal sensitivity and responsiveness have been found to contribute to the acquisition of language (Landry, Smith, Miller-Loncar, & Swank, 1997) and the absence of language problems (Hammer, Tomblin, Zhang, & Weiss, 2001). It is possible that mothers who are more sensitive are better able to scaffold and provide adequate structure to their children’s environment, which may contribute to the development of language. Alternatively, mothers who are rejecting and negative may make it more difficult for children with LL to develop the necessary compensatory skills to improve their later adjustment. The association between warm and sensitive parenting and the development of emotional and behavioral problems is also well-established, with maternal warmth being associated with a decreased likelihood for later behavioral difficulties (Aguilar et al., 2000; Erickson, Sroufe, & Egeland, 1985), and the
use of high rates of control and/or hostility associated with externalizing and internalizing problems (Campbell, Pierce, Moore, & Marakovitz, 1996; Gilliom & Shaw, 2004). Given the current pattern of associations, it seems reasonable to hypothesize that low levels of negative parenting and high levels of positive parenting may attenuate the association between language and behavioral difficulties.

Studies of Language Problems and Child Adjustment in Low-income Populations

Poverty appears to be a common shared risk factor for both language problems and emotional and behavioral problems. Children living in poverty are more likely to demonstrate higher rates language delay in young children, as much as half of the children reported in one sample (King et al., 2005) and these rates were particularly high in boys with behavioral disturbances (Kaiser, Cai, Hancock, & Foster, 2002). However, with the exception of the few studies cited above, the majority of studies on language-impaired children has been focused on children from middle-class contexts and samples of children with language impairments but less pervasive types of emotional and behavioral problems (e.g., Rescorla et al., 1997). While there are methodological advantages to restricting samples of language-impaired children with fewer co-occurring types of problem behavior, samples with greater variability in language functioning and problem behavior provide an opportunity to examine the relationship between early language deficits and emerging emotional and behavioral problems.

Thus, the goals of the present study were three-fold: 1) to explore longitudinal associations between early language problems and later child adjustment, 2) to explore the moderating role of both positive and negative dimensions of parenting between language problems and later child adjustment, and 3) to compare differences in child outcomes and age-3 parenting practices among children whose early language problems remit versus persist. The study was carried out using an ethnically diverse sample of 731 low-income children who were selected based on the presence of risk factors to participate in a prevention study in the United States. Language ability, in the form of low expressive vocabulary at age 2, was examined in relation to later assessments of language skills and multiple reports of children's functioning at age 4. It was hypothesized that children who had low levels of expressive vocabulary at age 2 would be at increased risk of emotional and behavioral problems two years later. Further, it was hypothesized that positive and negative dimensions of parenting would moderate these associations. Finally, it was hypothesized that differences in parenting and child adjustment between children who had a remittance of language problems by age 4 and children with persistent language difficulties would be observed.

Methods

Participants

Participants included 731 mother–child dyads recruited between 2002 and 2003 from WIC programs in the metropolitan areas of Pittsburgh, Pennsylvania, Eugene, Oregon, and Charlottesville, Virginia. For a complete description of recruitment and characteristics of this sample, see Dishion and colleagues (2007). Families were contacted at WIC sites and invited to participate if they had a child aged 24 to 35 months, following a screen to ensure that they met criteria by risk factors for future behavior problems. Risk criteria for recruitment were defined at or above one standard deviation above normative averages on several screening measures in the following three domains: (a) child behavior (conduct problems, high-conflict relationships with adults), (b) family problems (maternal depression, substance use, teen parenthood), and (c) socio-demographic risk (low education achievement, low income). Two or more of the three risk factors were required for inclusion in the sample.

Recruitment. Of the 1666 families who had children in the appropriate age range and who were contacted at WIC sites, 879 met the eligibility requirements, and 731 (83.2%) agreed to participate. The children in the sample had a mean age of 29.9 months (SD = 3.2) at the time of the age 2 assessment.

Primary caregivers self-identified as belonging to the following ethnic groups: 28% African American, 50.0% European American, 13.0% biracial, and 9% other groups. Thirteen percent of the sample reported being Hispanic American. Over 66% of the families enrolled in the project had an annual income of less than $20,000. Forty-one percent of the population had a high school diploma or GED, and an additional 32% had one to two years of post–high school training.

Retention. Of the 731 families who initially participated, 659 (90%) were available at the one-year follow-up and 619 (85%) participated at the two-year follow-up. At ages 3 and 4, selective attrition analyses revealed no significant differences in project site, children’s race, ethnicity, or gender, levels of maternal depression, or children’s externalizing behaviors (parent reports).

Measures

MacArthur Language Development Inventory (Fenson et al., 1994). The MacArthur Language Development Inventory (MCDI) is a widely used parent-report checklist of children’s vocabulary. In this study, par-
ents completed this measure at the age-2 assessment, using the version of the MCDI designed for children between the ages of 24 and 30 months of age. While a portion of the children in this sample were older than 30 months at the time the MCDI was completed, this version was used for the entire sample because we expected a significant portion of these high-risk, low income children to show below-average performance. Children who scored in the lowest tenth percentile of the MCDI were considered to have “Low Language” (LL). The tenth percentile has been used in the literature previously as a cut-point (Heilmann, Weismer, Evans, & Hollar, 2005; Horwitz et al., 2003).

Fluharty-2 Preschool Speech and Language Screening Test (Fluharty, 2001). The Fluharty is a brief assessment of language, which was designed to be administered to children aged 3 to 7 years, who may be at risk for speech and language problems. It consists of five subtests and three standardized composite scores. It was administered by trained examiners during the age 3 and 4 assessments. In this report, children’s scores on the General Language Quotient, which assesses both receptive and expressive language abilities, at age 4, were used.

Early childhood problem behavior. The Child Behavior Checklist for Ages 1.5–5 (CBCL; Achenbach & Rescorla, 2000) is a 99-item questionnaire that assesses behavioral problems in young children. Mothers and alternative caregivers completed the CBCL at the all three assessments. Primary and alternative caregiver reports at age 4 on four narrow band factors were selected including: Emotional Reactivity, Withdrawn Behavior, Attention Problems, and Aggressive Behavior to represent symptoms of behaviors reported in children with language difficulties.

Observed negative and positive parenting. For fuller details of the coding system and assessment of the Positive Parenting and Negative Parenting codes, see Dishion and colleagues (2007) and Moilanen and colleagues (2007), respectively. Four items were standardized and summed to devise the positive parenting scores: parental involvement, positive support behavior, engaged parent-child interaction, and proactive parenting. These items were obtained from the examiner’s rating on the Home Observation for Measurement of the Environment inventory (Bradley, Corwyn, McAdoo, & Garcia-Coll, 2001), and the videotaped coding of caregivers using the RPC coding system (Dishion, Gardner, Patterson, Reid, & Thibodeaux, 1983). Comparable items from the RPC coding system (Dishion et al., 1998) were also standardized and summed for negative parenting, including negative support behaviors, verbal negativity, physical negativity and developmentally-inappropriate parental behavior.

**Design and Procedure**

Primary caregivers (PC) and, if available, alternative caregivers (AC), completed a 2.5-hour home visit. Each assessment began by introducing the target child to an assortment of age-appropriate toys and having the child play while the PC completed questionnaires. Next, each PC and child participated in a clean-up task, followed by a delay of gratification task, four teaching tasks, with the last task being completed by AC and child, a second free play and clean-up with the alternate caregiver, the presentation of two inhibition-inducing toys, and a meal preparation and lunch task. This protocol was repeated at ages 3 and 4. Following the age 2 assessment, families were randomly assigned to intervention or not. Examiners completing follow-up assessments were not informed of the family’s assigned condition. For a detailed description of the intervention, see Dishion et al. (2007). For the purposes of the current study, treatment group status was used as a covariate in all analyses.

**Results**

Descriptive statistics for the sample are shown in Table 1. Of the 731 children who participated at the initial home assessment at age two, 252 (34.5%), scored below the 10th percentile on the MCDI. As can be seen in Table 1, the children whose PC reported clinically significant language problems on the MCDI performed significantly worse on the Fluherty-2 at age 4 compared to children in the sample who were not characterized by LL. In addition, in terms of group differences on observed negative and positive parenting, ANOVAs revealed no group differences with respect to negative parenting, but parents of LL children were found to show lower rates of positive parenting than other children.
Age 4 behavioral outcomes for LL children. To examine our first aim, whether children with language risk would show higher levels of behavioral and emotional problems at age 4, a series of ANOVAs were performed in which age-4 child measures of problem behavior served as dependent variables and LL was the independent variable. As can be seen in Table 1, primary caregivers reported higher levels of withdrawal and attention problems in LL children compared to the other children in the sample. Alternate caregivers also reported significantly higher levels of withdrawal in LL children compared to the rest of the sample.

Positive and Negative Parenting as Moderators in the Associations between LL and Behavioral Outcomes: Variable-Centered Analyses

To test the hypotheses that PP might attenuate associations between LL and later child adjustment and NP might amplify associations between LL and later child adjustment using a variable-oriented analysis, a series of hierarchical linear regressions were performed with treatment group status and LL status entered first, followed by PP or NP and finally the interaction between LL status and PP or NP with primary and alternate caregiver reports of behavioral outcomes on the CBCL. The results of these regressions are presented in Tables 2 and 3.

First, for the regressions involving PP, although PP continued to account for significant variances in relation to primary caregiver reports of all CBCL factors except for Emotional Reactivity, no interactions were found involving PP and LL with respect to any CBCL factors using primary caregiver reports. A similar pattern emerged using alternative caregiver reports for age-4 CBCL factors, with no significant interactions emerging between LL status and PP, although PP accounted for independent variance in relation to CBCL Aggression and LL accounted for independent variance with respect to CBCL Emotional Reactivity and Withdrawal.

For regressions examining NP as a moderator, a similar pattern emerged for both primary and alternative caregiver reports of CBCL factors; no significant interactions were found between NP and LL with respect to any CBCL factor (Table 3). Similar to the results for PP, NP contributed unique variance to the prediction of several CBCL factors for primary caregivers with the exception of Withdrawal. Using primary caregiver reports, LL status also accounted for significant variance in relation to CBCL Withdrawal and treatment status was related to primary caregiver reports of CBCL Aggression. For alternative caregiver reports, LL was related to Emotional Reactivity and Withdrawn behavior after accounting for covariates.

Parenting Practices and Behavioral Outcomes for Persistent versus Remittent LL Children

To supplement the variable-centered analyses examining associations between early LL and preschool adjustment and parenting moderators, we conducted an additional series of analyses using a person-centered approach. For these analyses, children with persistent LL at ages 2 and 4 were considered to be persisters and those with impaired LL at age 2 but at least average levels of language skills at age 4 were considered remitters. We then compared these two groups on age 4 child outcomes and positive and negative parenting assessed at age 2. Of the 252 children who were identified as scoring at or below the 10th percentile on the MCDI at age 2, 34 (13.4%) achieved a standard score of 70 or lower on FLU at age 4, indicating the presence of severe and persisting language
difficulties, and 58 LL children (23.0%) achieved a standard score of 90 or higher on the FLU at age 4, suggesting the improvement of their language problems. As seen in Table 4, it was found that persisters had significantly higher primary caregiver ratings on the CBCL factors of Attention Problems, Aggressive Behavior, and Withdrawn Behavior, with a trend towards higher levels of Emotional Reactivity. There were no significant differences between the groups on alternate caregiver ratings of behavioral adjustment.

In addition, with respect to age 2 indices of observed parenting, it was found that “persisters” had primary caregivers who engaged in marginally higher rates of NP and significantly lower rates of PP compared to the children who showed remittance.

Discussion

The current study examined associations between early expressive language abilities and several indices of preschool children’s behavioral adjustment, as well as the potential moderating role of both positive and negative parenting on these associations. Some but not all hypotheses were supported. According to primary caregiver reports of age 4 children’s adjustment, direct associations were found between early LL and withdrawal and attention problems, findings that were corroborated for withdrawal using alternative caregiver reports. Contrary to our expectations, there was no indication that negative and positive dimensions of parenting moderated the relationship between LL at age 2 and age 4 children’s adjustment. However, when children with persistent LL were compared with children who showed language improvement from ages 2 to 4, significant differences in ratings of behavioral adjustment and observed parenting were observed, with primary caregivers of persistent LL children reporting higher rates of withdrawal, emotional reactivity and aggressive behaviors compared to parents of remitters. In addition and in line with our expectations, children with persistent language problems were observed as having marginally lower positive parenting and significantly higher negative parenting than parents of remitters.

Direct Associations between LL and Child Behavior: Specificity of Effects

Main effects of LL on child adjustment were limited to disturbances in social behavior and emotional reactivity rather than disruptive behavior, with group differences involving withdrawal and emotional reactivity rather than attention problems and aggression. These results confirm, with a much larger sample, other finding in the literature by Irwin and colleagues (2002). They compared a group of 14 late-talking toddlers to demographically matched peers on concurrent measures of social and emotional functioning, finding that late-talking toddlers had higher levels of emotional negativity and social withdrawal compared to typically matched peers.

From a theoretical perspective, the results are also consistent with models of LL that suggest links with these difficulties may be due to LL children’s inability to communicate with others. Children with language problems may struggle with engaging with others, leading them to social withdraw. Similarly, children
with language problems may have fewer strategies for managing negative emotions leading to heightened levels of emotional reactivity. Other research has found associations between language difficulties and aggression and attentional problems (Dionne, Tremblay, Boivin, Laplante, & Perusse, 2003; Redmond & Rice, 1998), which was not found except when differences were examined between persisters and remitters. It is possible that among toddlers with LL these behavioral differences are not as apparent as they are in older preschool and school-aged children.

### The Moderating Role of Positive and Negative Parenting

The hypothesis that both negative and positive parenting would moderate the relationship between LL and later child adjustment was not supported, at least when including the entire sample. Although there were main effects for PP, NP and language ability on later child outcomes, there were no significant interactions between parenting and language ability in relation to preschool adjustment, suggesting that neither PP nor NP is a moderating mechanism for the relationship between language ability and child adjustment. Alternatively, it is possible that only in certain contexts does parenting matter in the relationship between language and child outcome. The differences observed between the LL children who showed persistence and remittance at age 4 were stronger than those observed between LL children and non-LL children at age 2. Thus, it is possible that the effects of parenting and later child adjustment matter more for extreme groups of children who have continuing language difficulties rather than those who only manifest a transient delay in expressive abilities. Differences in parenting behaviors, particularly for critical, harsh caregiving practices than positive behaviors, were observed between children with persistent versus transient language lags. This finding is consistent with the premise that harsh, rejecting parenting may amplify trajectories of risk among children already demonstrating poor expressive language abilities. However, rather than leading to coercive patterns of parent-child interaction and subsequent elevated rates of conduct problems (Shaw & Bell, 1993), the current results suggest that such caregiving practices are associated with child withdrawal and at least according to parent reports, higher rates of attention problems. As children with persistent LL were limited to a relatively small subset of families (13% of the sample or 34 children), it is strongly recommended that these results be replicated with samples of slightly older children with chronic language difficulties.

### Strengths and Limitations

Strengths of this study include a very large, community based sample, but on the other hand, it includes only children from high-risk, low-income backgrounds and therefore may not be generalizable to more representative samples of children or those including predominantly middle-class populations. Additionally, this study relied on parent-report of children’s expressive language ability at age 2 as a measure of LL status. While the children categorized as LL within this sample do not meet any diagnostic criteria as being language delayed or impaired, the MCDI has been shown to be reliably related to other methods of assessing language (Fenson et al., 1994) and was found to be moderately correlated with age 3 and 4 Fluharty scores in the current sample (rs = .48 at age 3 and .53 at age 4, p < .0001).

### Conclusions

Low-income children who are described as having low expressive language abilities at age 2 appear to be at increased risk for problems with social withdrawal and attention during the preschool period and show differences in initial caregiving practices at age 2. Although neither positive or negative parenting appear to moderate associations between early LL and preschool-age adjustment, those children with a persistent pattern do have mothers who show slightly lower levels of warm and responsive parenting and significantly higher levels of harsh, rejecting parenting compared to those LL toddlers who show remittance in language difficulties. Replication of these findings is encouraged among larger samples of children with early LL; however, the current results suggest opportunities for moderating the course of persistent patterns of LL by modifying parental behavior during the toddler period.

<table>
<thead>
<tr>
<th>Table 4. Parenting and Child Adjustment in LL Children with Persistent and Remitted Language Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remitters</strong> - LL Children scoring above a</td>
</tr>
<tr>
<td>90 on the FLU at age 4 (n=8)</td>
</tr>
<tr>
<td>Mean(SD)</td>
</tr>
<tr>
<td><strong>Age 4 Fluency</strong></td>
</tr>
<tr>
<td><strong>Primary Caregiver</strong></td>
</tr>
<tr>
<td><strong>Alternate Caregiver</strong></td>
</tr>
<tr>
<td><strong>Age 4 CBCL Emotional Reactivity</strong></td>
</tr>
<tr>
<td><strong>Primary Caregiver</strong></td>
</tr>
<tr>
<td><strong>Alternate Caregiver</strong></td>
</tr>
<tr>
<td><strong>Age 4 CBCL Attention Problems</strong></td>
</tr>
<tr>
<td><strong>Primary Caregiver</strong></td>
</tr>
<tr>
<td><strong>Alternate Caregiver</strong></td>
</tr>
<tr>
<td><strong>Age 4 CBCL Aggressive Behavior</strong></td>
</tr>
<tr>
<td><strong>Primary Caregiver</strong></td>
</tr>
<tr>
<td><strong>Alternate Caregiver</strong></td>
</tr>
<tr>
<td><strong>Age 4 Positive Parenting</strong></td>
</tr>
<tr>
<td><strong>Age 4 Negative Parenting</strong></td>
</tr>
</tbody>
</table>

* p < .10; ** p < .05; *** p < .01; **** p < .001

Unauthorized reproduction of this article is prohibited.
References


