Moderating Effects of Family Structure on the Relationship Between Physical and Mental Health in Urban Children with Chronic Illness

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Examined whether certain family structures modify the relationship between psychological adjustment and severity of physical illness, as measured by an index of functional status, among children with chronic illness. 352 families were divided into four types: two biological parents (n = 149), mother plus another adult relative (n = 47), mother plus unrelated spouse or partner (n = 23), and mother alone (n = 133). Correlations between children's functional status and adjustment were higher in the mother plus unrelated partner and mother alone families, and lower when mother lived with either the biological father or another adult relative. Children in the mother plus unrelated partner group also tended to have poorer overall adjustment than other children. Results are discussed in terms of family structure, childhood illness and adjustment, and the possible mechanisms that interrelate these variables.

KEY WORDS: childhood chronic illness; family structure; functional status; psychological adjustment.

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Studies generally demonstrate that children with chronic illness are more likely than well peers to have behavioral or emotional problems (e.g., Cadman, Boyle, Szatmari, & Offord, 1987; Wallander, Varni, Babani, Banis, & Wilcox, 1988). However, the variability in adjustment among these children suggests that factors other than health may influence their psychological responses to the stresses of childhood illness. As a result, the emphasis in the literature has shifted toward studies that attempt to specify those conditions or circumstances under which chronic illness is likely to be associated with poor mental health. Disease parameters such as illness severity and functional disability have been studied more than any other variable, and appear to be correlated with adjustment to some extent (Lavigne & Faier-Routman, 1993). Yet, because of important methodological differences among studies and difficulties in defining illness severity, the exact nature of this association remains unclear.

Additional research offers the observation that the relationship between chronic illness as a stressor and the extent of psychological distress experienced may be altered by other child and family factors (Lavigne & Faier-Routman, 1993; Wallander et al., 1988). Yet most current models (e.g., Thompson, Gustafson, Hamlett, & Spock, 1992; Varni & Setoguchi, 1993) have identified potential risk and resistance factors only by testing direct or main effects on children's mental health. Few investigators have examined interactions between illness severity and these other variables in order to determine their possible moderating effects on the relationship between illness stress and child adjustment.

A number of community studies of children's mental health point to the importance of family structure. They demonstrate that psychological adjustment in children is in part related to the number of parents and other adults living in the home (e.g., Achenbach, Howell, Quay, & Conners, 1991; Cohen, Brook, Cohen, Velez, & Garcia, 1990; Fergusson, Horwood, & Shannon, 1984; Kellam, Ensminger, & Turner, 1977). In general, these studies suggest that the presence of either the biological father or a grandparent in the home has a positive benefit for children, but mother alone families or the presence of a nonrelated adult (e.g., a stepfather) in the household may place children at increased risk for behavioral and emotional problems.

Only a few studies have examined whether family structure also plays a role in the relationship between physical and mental health in children. For example, in a large study using a nationally representative sample of children with and without chronic conditions, Gortmaker, Walker, Weitzman, and Sobol (1990) found that having a chronic physical condition and the absence of either biological parent both were significant risk factors for extreme behavior problems, independent of other sociodemographic variables. In addition, their data suggested that behavioral consequences related to having a chronic health condition were magnified for children who were living in families missing either biologic
parent. However, they did not determine the presence of other adults in the household.

Stein and Jessop (1984) used several measures of illness severity, including functional status of the child, to examine the relationship between physical and mental health among children in different family structures. They found that the relationship between illness severity and children's adjustment was the strongest in mother plus other adult families, less strong in mother alone families, and close to zero in families with two biological parents. However, their relatively small sample precluded controlling for possible confounding of family structure with other sociodemographic variables, and also had a very small number in the "mother with other adult" group. Nevertheless, their results suggested that family type may serve to modify the relationship between a stressor, chronic illness, and children's adjustment.

The present study further explores the role of family structure in modifying the relationship between mothers' perceptions of severity of illness and adjustment in their children with chronic physical illness. We hypothesized that severity of illness in the child, as measured by functional status, would correlate with psychological adjustment most highly in families where mother lived with an unrelated spouse or partner, less in "mother alone" families, and the least in families with two biological parents or where the mother lived with another related adult. Based on previous research, we also examined whether there were differences in the absolute levels of illness impairment and psychological adjustment across the family groups. To see whether variations in this relationship that were ascribed to family structure could be accounted for by other sociodemographic variables, we also looked for differences in child and family variables across the four family structures and controlled for their potential influences in subsequent analyses. Finally, we examined whether group differences in the child measures were associated with differences in mother's mental health, since such a finding might suggest either differential reporting patterns or a potential direct influence of mothers' mental health on child adjustment. Following the noncategorical approach to chronic illness (e.g., Pless & Pinkerton, 1975; Stein & Jessop, 1989), we considered children with all illnesses or diagnoses as a single group in testing our hypotheses.

METHOD

Sample

Families were recruited as part of a longitudinal investigation designed to evaluate a community-based support intervention for inner-city mothers of children with chronic illness (Silver et al., 1994). Only baseline data, collected
before randomization to the experimental or control groups, were used in these analyses. A list of 1,195 children with chronic illness seen within the previous 2 years was compiled from inpatient and outpatient records of two large urban medical centers serving a predominantly inner-city population. Eligible children were 5 to 8 years of age, not moderately or severely mentally retarded, and with a life expectancy of 18 months or more. We enrolled 365 mother–child pairs; others had mail returned (n = 145), no telephone number available (n = 298), failed to meet eligibility criteria (n = 240), refused to participate (n = 86), or were unable to complete an interview during the study period (n = 61). Participants did not differ from nonparticipants with respect to child’s age, sex, or type of illness.

The present analyses included biological mothers only; we excluded 11 participating families in which a foster mother, grandmother, or other female relative was the child’s guardian, as well as 2 other families in which an unrelated adult female lived in the household with the mother and child, because this represented a distinct family structure for which there were too few cases for analysis. Thus, all analyses reported here were based on a total of 352 mother–child pairs. The children had a wide range of conditions, with asthma most prevalent (34%). Other common diagnoses were sickle cell anemia (8%), epilepsy (8%), congenital heart disease (8%), cleft lip or palate (5%), endocrine disorders (5%), and cancer (5%); 16% had multiple illnesses. The average time since diagnosis was 5.2 years; 55% were diagnosed at birth or within the first year of life.

Procedure

All data were obtained from face-to-face interviews with the mother. Although all mothers spoke at least conversational English, they were given the option of being interviewed in English or in Spanish. Mothers were paid $20 for the 1 hour interview. Informed consent was obtained from all participants.

Measures

Functional Status. Severity of illness was defined as the extent to which an illness limits or interferes with a child’s performance of normal roles and tasks in domains such as sleeping, eating, communication, energy, and mood. It was measured by the 14-item version of the Functional Status II(R) [FSII(R); Stein & Jessop, 1990], applicable to children from birth to 16 years. Lower scores indicate greater behavior dysfunction due to illness. The FS II(R) has good internal consistency reliability (α = .85), differentiates between well and ill children, and is appropriate for use with different ethnic populations. Functional status scores correlate in the expected direction with other indices of child health such as school absence and hospitalization.
Child Adjustment. The child's psychological adjustment was operationalized in terms of overall adjustment, and separately with regard to externalizing and internalizing problems. As a measure of the child's externalizing behavior, we used the Eyberg Child Behavior Inventory (ECBI), a parental checklist of children's behavior problems, including aggression, noncompliance, rule breaking, and lying (Eyberg & Ross, 1978; Robinson, Eyberg, & Ross, 1980). The ECBI has good reliability and validity. It yields a total Intensity score, produced by summing the frequency of occurrence of 36 problem behaviors from 0 (never) to 7 (always) (range = 36–252) and a Problem score that is the tally of the number of behaviors that the parent rates as a problem. In this study, the ECBI Intensity score was used. To measure overall adjustment and internalizing problems, we used the 28-item Personal Adjustment and Role Skills Scale III (PARS III; Stein & Jessop, 1984; Walker, Stein, Perrin, & Jessop, 1990). The PARS III is appropriate for minority populations, and it is suitable for children who have a chronic condition in that it does not include somatic items that might inflate their maladjustment score (Walker et al., 1990). It contains six subscales (Dependency, Hostility, Withdrawal, Anxiety-Depression, Productivity, and Peer Relations) as well as producing a Total score. Higher PARS III scores indicate better adjustment. Internal consistency coefficients range from .7 to .8 for the subscales and are very high for the Total score (>.88). We used the PARS III Total to measure of overall adjustment. To complement the mothers' ratings of externalizing behavior, we selected three subscales as measures of internalizing problems: Withdrawal, Anxiety-Depression, and Dependency. Previous research (Walker et al., 1990) has shown that these subscales correlate highly with the Internalizing scale of the Child Behavior Checklist (Achenbach & Edelbrock, 1983).

Mothers' Adjustment. To measure mothers' mental health, we used the Psychiatric Symptom Index (PSI; Ilfeld, 1976), a 29-item checklist of psychiatric symptoms with good psychometric properties. Its concurrent validity with other criteria indicating emotional distress has been well established, and its internal consistency reliability estimates are high (α = .91). The PSI is not intended to define psychiatric diagnoses or "caseness," although Total scores of 20 or greater are considered to indicate "high" symptoms (Ilfeld, 1976). The PSI has been used successfully with other urban, minority samples (Stein & Jessop, 1984).

RESULTS

Sample Description

Families were grouped for analysis according to mothers' reports of their household members as given in their interviews. The distribution of family types
Table I. Sociodemographic Data on the Sample by Family Type

<table>
<thead>
<tr>
<th>Family structure*</th>
<th>(1) Two parents</th>
<th>(2) Mother + relative</th>
<th>(3) Mother alone</th>
<th>(4) Mother + partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>149</td>
<td>47</td>
<td>133</td>
<td>23</td>
</tr>
<tr>
<td>Means (years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child age</td>
<td>7.0</td>
<td>6.8</td>
<td>7.1</td>
<td>7.4</td>
</tr>
<tr>
<td>Mother age*</td>
<td>35.6</td>
<td>30.4</td>
<td>34.1</td>
<td>29.6</td>
</tr>
<tr>
<td>Mother education</td>
<td>12.7</td>
<td>12.3</td>
<td>12.3</td>
<td>12.4</td>
</tr>
<tr>
<td>Percentages</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child female</td>
<td>45.0</td>
<td>48.9</td>
<td>47.4</td>
<td>47.8</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>25.0</td>
<td>59.6</td>
<td>41.7</td>
<td>27.3</td>
</tr>
<tr>
<td>Hispanic</td>
<td>48.0</td>
<td>27.7</td>
<td>46.2</td>
<td>50.0</td>
</tr>
<tr>
<td>White</td>
<td>20.3</td>
<td>8.5</td>
<td>7.6</td>
<td>22.7</td>
</tr>
<tr>
<td>Mixed/other</td>
<td>6.7</td>
<td>4.3</td>
<td>4.5</td>
<td>0.0</td>
</tr>
<tr>
<td>Welfare</td>
<td>23.6</td>
<td>53.2</td>
<td>72.2</td>
<td>43.5</td>
</tr>
<tr>
<td>Mother works</td>
<td>47.6</td>
<td>32.6</td>
<td>46.7</td>
<td>47.8</td>
</tr>
<tr>
<td>More than one</td>
<td>75.8</td>
<td>46.8</td>
<td>58.6</td>
<td>78.3</td>
</tr>
<tr>
<td>child &lt; age 12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(1) Two biological parents, (2) mother with one or more adult relatives, (3) mother alone (no other adults), and (4) mother with a spouse or partner unrelated to the child.

• Group 1 differs from 2, 3, 4; Group 3 also differs from 2, 4; ps < .05.

found in our sample was: Two biological parents (n = 149); Mother + an adult relative (n = 47); Mother only (n = 133); and Mother + a spouse or partner who is unrelated to the child (n = 23). We examined the mother’s marital status and the length of time in the relationship. Although 87% (n = 129) of mothers living with the child’s biological father were married to him, only 30% (n = 7) of mothers living with a spouse or partner who was not related to the child were married. The average length of time in the relationship for women living with the biological father was 11.6 years; for mothers living with a man who was not the biological father, the average length of time in the relationship was 2.3 years. Among mothers currently living alone, 43% (n = 57) had never been married; among mothers living with adult relatives, 60% (n = 28) had never been married.

Table I shows sociodemographic data grouped according to family structure. Significant differences among family types were found for: mother’s age, F(3, 336) = 12.0; mother’s ethnicity, χ²(12) = 31.5; receiving welfare χ²(3) = 67.0; and having more than one child under age 12 in the household, χ²(3) = 18.8; all ps < .01. The groups did not differ on child’s age or gender, mother’s educational level, or her employment status.
Table II. Correlations Between Children's Functional Status and Adjustment Measures by Family Structure

<table>
<thead>
<tr>
<th>Family structure*</th>
<th>(1) Two parents</th>
<th>(2) Mother + relative</th>
<th>(3) Mother alone</th>
<th>(4) Mother + partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>149</td>
<td>47</td>
<td>133</td>
<td>23</td>
</tr>
<tr>
<td>PARS III</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>.42</td>
<td>.31</td>
<td>.51</td>
<td>.68</td>
</tr>
<tr>
<td>Dependency</td>
<td>.04</td>
<td>-.02</td>
<td>.35</td>
<td>.49</td>
</tr>
<tr>
<td>Anxiety/Depression</td>
<td>.43</td>
<td>.37</td>
<td>.44</td>
<td>.59</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>.40</td>
<td>.21</td>
<td>.42</td>
<td>.55</td>
</tr>
<tr>
<td>ECBI Intensity</td>
<td>-.23</td>
<td>-.24</td>
<td>-.37</td>
<td>-.43</td>
</tr>
<tr>
<td>PSI Total</td>
<td>-.11</td>
<td>-.15</td>
<td>-.23</td>
<td>-.32</td>
</tr>
</tbody>
</table>
|°(1) Two biological parents, (2) mother with one or more adult relatives, (3) mother alone (no other adults), and (4) mother with a spouse or partner unrelated to the child.

Relationship Between Severity of Illness and Children's Adjustment by Family Structure

Table II shows the bivariate correlations between illness severity as measured by the FS II(R) and the child's psychological adjustment on the PARS III and ECBI Intensity scales for each family structure. As hypothesized, the correlations were strongest for the mother plus unrelated partner group and weakest for the two-parent and mother + adult relative groups. Although correlations in the mother alone group consistently fell between these two extremes, in some cases they were extremely similar to the two-parent group (Anxiety/Depression and Withdrawal). Z tests were used to compare correlations across groups, and tested directional (one-tailed) hypotheses that higher correlations between FS II(R) scores and the adjustment measures would occur in family structures with the following ascending order (a) mother with the biological father or with a related adult, (b) mother alone, and (c) mother + unrelated spouse or partner. These tests revealed that the correlation between PARS III Total and FS II(R) scores was significantly higher in the mother + partner group than in either the two-parent or mother + relative group (p < .05). The correlations between PARS III Dependency and FS II(R) scores were significantly higher in both the mother + unrelated partner and mother alone groups than in either the two-parent and mother + adult relative groups (all p < .05). The same pattern occurred for ECBI Intensity scores, but differences in correlations by family type were not significant. No other correlations were significantly different.
Table III. Means for Functional Status, PARS III Total and Subscales, ECBI Intensity Score, and Maternal PSI Total by Family Structure

<table>
<thead>
<tr>
<th>Family structure*</th>
<th>(1) Two parents (n = 149)</th>
<th>(2) Mother + relative (n = 47)</th>
<th>(3) Mother alone (n = 133)</th>
<th>(4) Mother + partner (n = 23)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Functional status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PARS III Total</td>
<td>91.2</td>
<td>11.7</td>
<td>92.6</td>
<td>9.4</td>
</tr>
<tr>
<td>Dependency</td>
<td>12.1</td>
<td>2.6</td>
<td>11.7</td>
<td>2.0</td>
</tr>
<tr>
<td>Anx/dep</td>
<td>20.2</td>
<td>3.0</td>
<td>20.4</td>
<td>2.4</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>14.6</td>
<td>2.1</td>
<td>14.7</td>
<td>1.9</td>
</tr>
<tr>
<td>ECBI intensity</td>
<td>102.3</td>
<td>33.2</td>
<td>98.4</td>
<td>27.5</td>
</tr>
<tr>
<td>PSI total</td>
<td>21.4</td>
<td>15.2</td>
<td>20.3</td>
<td>14.2</td>
</tr>
</tbody>
</table>

*(1) Two biological parents, (2) mother with one or more adult relatives, (3) mother alone (no other adults), and (4) mother with a spouse or partner unrelated to the child.

Children's Adjustment by Family Structure

We next explored whether our sample exhibited differences in adjustment by family type as shown in the literature. As Table III shows, differences in means on the PARS III scales generally were in the predicted direction. Children in the mother + unrelated partner group had the poorest adjustment (i.e., lowest PARS III scores), followed by children in the mother alone group. The mother + relative and the two-parent groups had the highest adjustment. However, ANOVA revealed statistically significant differences only for the PARS III Anxiety-Depression scale. Children in the mother + unrelated partner group had poorer adjustment than those who lived with mother and either the biological father or an adult relative (ps < .01), but did not differ from children in the mother alone group.

Mean scores on the ECBI Intensity scale showed a similar pattern, with ANOVA again demonstrating an overall difference among the family structures, $F(3, 335) = 5.61, p < .001$. Children in the mother + unrelated partner group had the highest levels of conduct problems, followed by children in the mother alone group; the lowest scores occurred in the mother + adult relative and two-parent groups. Planned contrasts showed that children in the mother + unrelated partner group were significantly different from children in each of the other three groups (ps < .05); scores of the other three groups did not differ.
Severity of Illness

ANOVA revealed no significant differences across family structure groups on children's severity of illness as measured by functional status (see Table III). Thus, mothers in the four family-type groups did not report differences in the extent to which illness interfered in their children's lives.

Mothers' Mental Health

To test whether our results for children's adjustment and for the relationship of adjustment with illness severity might be attributable to group differences in mother's own levels of psychological distress, we compared mothers' PSI Total scores across the family groups using ANOVA and found no differences by family structure. Z tests also revealed no differences across family structures in the strength of the correlations between mothers' PSI Total and children's FS II(R) scores.

Sociodemographic Correlates of Family Type

Finally, we examined whether the relationship of illness severity and child adjustment continued to differ by family structure when sociodemographic variables associated with family type were controlled. Four separate regression analyses were run with the PARS III Anxiety-Depression, Dependency, and Total, and the ECBI Intensity scores as dependent variables. Predictors were added hierarchically in the following blocks: (a) sociodemographic variables: mother's age, mother's ethnicity (black and Hispanic, each dummy coded as 1 = yes, 0 = no), more than one child under age 12 in household (1 = yes, 0 = no), and welfare (1 = yes, 0 = no); (b) child's FS II(R) score; (c) family type, dummy coded 1 or 0 to compare the mother plus partner group with the other three groups combined; and (d) multiplicative interaction term of functional status by grouped family type.

For the PARS III Total score, the total prediction from the first three blocks of variables was $R = .50$, Adjusted $R^2 = .24$, $F(7, 328) = 15.7$, $p < .01$. The only significant sociodemographic variable was mother's age ($b = .13$, $p < .01$). The FS II(R) score also was a significant predictor of PARS III Total ($b = .45$, $p < .01$), but family type (i.e., living with mother and her unrelated spouse or partner) had no direct relationship to child adjustment. The change in $R^2$ was significant when the functional status by family type interaction term was added ($p < .05$), again supporting our finding that the relationship of illness severity to PARS III Total differs by family structure. The identical pattern was found for the prediction of PARS III Dependency scores, although the total variance accounted
for was much less, $R = .25$, Adjusted $R^2 = .04$, $F(7, 328) = 3.2$, $p < .01$. As before, mother's age ($b = .14$, $p < .01$) and child's FS II(R) score ($b = .18$, $p < .01$) were significant predictors of adjustment, but family structure was not. Adding the functional status by family-type interaction term on the last step produced a significant $R^2$ change ($p < .05$) that supported our hypothesis.

Findings differed for PARS III Anxiety-Depression and ECBI Intensity scores, in that both lower functional status and family structure (i.e., living with mother and her unrelated spouse or partner) were related to poorer adjustment. Although the addition of the functional status by family-type interaction term was suggestive, it failed to produce a significant $R^2$ change ($ps < .10$). Total prediction for PARS III Anxiety-Depression was $R = .49$, Adjusted $R^2 = .23$, $F(7, 327) = 15.06$, $p < .01$. As noted, PARS III Anxiety-Depression scores were predicted by the child's FS II(R) score ($b = .42, p < .01$) and by family structure ($b = -.10, p < .05$). For the ECBI Intensity score, total prediction was $R = .39$, Adjusted $R^2 = .13$, $F(7, 316) = 7.9$, $p < .01$. Again, the significant predictors were FS II(R) ($b = .30$) and family type ($b = .16$, $ps < .01$).

**DISCUSSION**

Our findings suggest that the relationship between severity of chronic physical illness and children's psychological adjustment varies across different family structures. As hypothesized, we found that illness severity, measured by functional status, correlated most strongly with children's adjustment in families in which the mother lived with a spouse or partner who was unrelated to her child. In families containing two biological parents or the mother plus another related adult (e.g., grandmother), a weaker relationship between illness severity and child adjustment was found. Results were mixed in that differences between correlation magnitudes across family type groups were not all statistically significant, nor were interaction terms in the regression analyses. However, they were significant for PARS III Dependency and Total and were suggestive for two other scales (PARS III Anxiety-Depression and ECBI Intensity). Despite the lack of strict statistical significance, the match between our hypotheses and the pattern of results suggests that family structure may play a moderating role in this relationship.

Our results support and extend the findings of an earlier study by Stein and Jessop (1984). Together, these studies contribute to theory regarding the relationship of illness severity to children's adjustment by helping to specify the important subgroups in which such relationships may be found. In particular, both studies suggest that poor functional status correlates with behavior and adjustment problems more strongly in households where children and their mothers live without another related adult, and is most apparent when a stepfather resides
in the home. However, the presence of the child's father or another biological relative seems to exert a moderating or protective influence on this relationship. These results have implications for interpreting research on childhood illness and psychological distress because they suggest that samples differing in moderator variables such as family type may account in part for discrepancies in the literature. That is, relationships between severity of illness or functional disability and children's mental health are less likely to be found in studies whose samples primarily consist of two-parent households, the situation that characterizes most investigations. However, in instances where a range of family types is found or where mothers tend to live alone with their children or with partners unrelated to the index child, relationships between adjustment and illness parameters such as severity are more likely to be found.

As in previous studies, we also found relationships with family structure for both externalizing (ECBI Intensity score) and internalizing (PARS II Anxiety-Depression subscale) measures of child adjustment. These findings are consistent with the cited epidemiological literature in that children were at greater risk for adjustment problems in mother alone families or when living with a stepfather. Family type was not, however, associated with differences in the overall adjustment of the child as measured by the PARS III Total score, a score that includes a number of other psychosocial domains including the child's general productivity, hostility, and peer relations.

We considered several threats to the interpretation of our findings. First, we examined the variance characteristics of our measures and ruled out differences in variance as a potential statistical explanation for our results. Next, as noted in our results, we established that family type was not associated with differences in the absolute levels of illness severity as measured by functional status. In analyses not reported here, we also determined that number and type of illnesses, as well as mothers' ratings of their children's overall health, prognosis, and difficulty of care did not differ by family structure. Thus, it is unlikely that the higher correlations in some groups were due to the influence of illness characteristics. This also fails to support the interpretation that illness in the child may have produced different family types, such that having a severely ill child can cause a family to break up. However, only a longitudinal study that examines the impact of illness severity on family stability could test the accuracy of this interpretation. The longitudinal data available as part of our larger investigation are not appropriate for this purpose since, for the most part, they were not collected near the time of the child's diagnosis. In addition, any relationships found at later data points could be influenced by participation in the intervention.

Another possible interpretation relates to the ways that mothers from different family types report on their children. For example, research shows that parental reports of child adjustment may in part reflect the mother's own mental health (e.g., Griest, Wells, & Forehand, 1979). However, given that family type
was not associated with variations in mother's distress level, and that the size of the correlation between mothers' distress level and reports of the child's adjustment did not vary significantly across family types, it is unlikely that our results can be explained by differences in the mothers' psychological adjustment.

Finally, we examined whether differences across groups were due to sociodemographic variables that covaried with family type, including mother's age and ethnicity, welfare status, and the presence of other young children in the home. The only demographic variable directly related to child adjustment was maternal age; we found that having a younger mother was associated with poorer adjustment on the PARS III Total and Dependency subscale. While it might be of added interest to examine patterns of relationships within subgroups based on each of these characteristics, our sample size makes it impossible to disentangle all of the potential linkages among variables at this time. Yet, when these sociodemographic variables were controlled in hierarchical regression analyses, we continued to find that children had higher anxiety-depression scores and more conduct problems in households where the mother had a spouse or partner who was not the child's biological father. In addition, the relationship between functional status and adjustment on the PARS III Total and Dependency subscales still was stronger in these households, especially in comparison to families with two biological parents or mother and a related adult.

We have speculated about the mechanisms underlying our results and offer the following tentative explanation. Chronic illness can be considered a stressor that has implications for the psychological adjustment of children and their families. Where the family comprises more than one adult related to the child, resources that can influence mental health or buffer the child and family from the negative consequences of illness stress are more likely to be available. Such resources might include emotional and practical support, communication, problem-solving skills, discipline, and increased economic well-being (Dadds 1987; Goodyer, 1990). In households where mother lives alone with her children, some of these resources may be less accessible. Further, when mother lives with a spouse or partner who is not the child's father, part of her own resources may be directed toward maintaining her relationship with her partner, especially in cases where this relationship is relatively new. She and her child also may face a number of additional strains or demands related to this family transition (Patterson, 1988). If families types differ systematically in these variables, this not likely to alter severity of illness across family structures, but these other potentially moderating influences could affect the strength of the correlation between illness-related stress and children's adjustment. Further, if our interpretation regarding resources and stress is correct, it offers a potential explanation of other studies showing differences in children's psychological adjustment according to family type (Achenbach et al., 1991; Fergusson et al., 1984; Kellam et al., 1977). That is, mother alone and mother plus unrelated partner families may be
associated with poorer child adjustment because available resources are less, allowing many types of life stressors (chronic illness as well as others) to have impact on the children's mental health. In contrast, other family types may be associated with better mental health because they also are associated with the presence of resources and resistance factors that can moderate or buffer life stress.

It has been suggested previously that family functioning variables such as adaptability and cohesion, as well as the extent of parental marital discord, can influence adjustment in children with health conditions (cf. Lavigne & Faier-Routman, 1993). However, most studies explore only main effects of family functioning and related variables on child adjustment; they do not test for interactions between these hypothesized risk or protective factors and measures of illness stress. In addition, the few studies using healthy comparison groups (e.g., Perrin, Ayoub, & Willett, 1993) suggest that family functioning is an important predictor of children's adjustment regardless of health status. Thus, most current work does not help to determine if family functioning variables might increase or decrease the risks for adjustment problems that may be associated with illness severity or with other condition-related parameters (e.g., visibility).

Because we performed a secondary analysis of data that were collected to address mental health outcomes of an intervention, we are constrained by the information available. We do not have data that permit us to further explore the underlying processes that might characterize different family types. In our sample, it also appears that family structure could be confounded with ethnicity. Thus, the significance of different family structures and processes for mothers and children of varying cultural backgrounds is a factor that should be examined further. On the other hand, family structure may not simply serve as a proxy measure of resources or family functioning, but could have effects on the illness and adjustment relationship that are either partly or entirely independent of family functioning, resources, or associated sociodemographic variables. Future studies must build in measures of specific parent and child characteristics and behaviors that could be related to family type and to children's adjustment to chronic illness in order to determine the mechanism by which family composition influences the relationship between physical status and mental health.

REFERENCES


