Predictors of Psychological Adjustment in School-Age Children Infected With HIV

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Objective: To assess for significant differences in psychological functioning between HIV-infected children and a demographically matched healthy control group and to examine the utility of applying a stress and coping model to children with HIV disease.

Methods: Participants included HIV-infected children (ages 6–16) and their caregivers (n = 36) and a control group of healthy children and their caregivers (n = 32). During routine clinic visits, children completed measures of psychological adjustment, health locus of control, and coping style, and caregivers completed measures of their own and their child’s psychological adjustment.

Results: Caregiver-reported and child self-reported psychological adjustment scores did not significantly differ between the HIV and control groups, with the exception of significantly more internalizing behavior problems reported in the control group. Hierarchical multiple regression analyses revealed that the stress and coping model accounted for 36% of the variance in HIV-infected children’s self-reported psychological adjustment. In addition, child age and coping style were significant predictors of child self-reported psychological adjustment, but not of caregiver-reported child adjustment.

Conclusions: Approximately 25% of children with HIV disease exhibited clinically significant emotional or behavioral problems; however, even higher rates of psychological adjustment problems were found in healthy children. Children with HIV disease who have not been told their diagnosis and children who endorse more emotion-focused coping strategies tend to exhibit more psychological adjustment problems.

Key words: pediatric HIV; psychological adjustment; stress; coping.
Problems vary from increased rates of behavioral problems, depression, anxiety, and school dysfunction to impaired self-images and social withdrawal/avoidance (Thompson, Kronenberger, & Curry, 1989). Childhood chronic illness also has a significant impact on family functioning, including high rates of maternal depression and anxiety, marital distress, and sibling adjustment problems (Wallander & Thompson, 1995). However, although many children with chronic illness and their families experience significant psychological distress, most children and families do not experience significant adjustment problems and many cope remarkably well given their circumstances (e.g., Thompson et al., 1993b).

Children infected with HIV are at particular risk for psychological disturbance due to both the direct effects of HIV infection on brain structures involved in the regulation of emotion, behavior, and cognition, and indirect effects related to coping with the range of medical, psychological, and social stressors associated with HIV disease (Brouwers, Moss, Wolters, & Schmitt, 1994). Previous studies have shown high rates of emotional and behavioral disturbance in children with HIV including attention-deficit hyperactivity disorder (ADHD), oppositional defiant disorder, and problems in social functioning relative to their peers (Bose, Moss, Brouwers, Pizzo, & Lorion, 1994; Havens, Whitaker, Feldman, & Ehhardt, 1994; Moss, Bose, Wolters, & Brouwers, 1998; Papola, Alvarez, & Cohen, 1994). However, little is known about the factors associated with psychological adjustment in children with HIV. Coping style and health locus of control have been linked to adjustment in other chronic illnesses, such that individuals who report more of an internal health locus of control and individuals who endorse using more problem-focused coping strategies tend to have more adaptive responses to their illness (Felton, Revenson, & Henrichsen, 1984; Strickland, 1978). These factors have not been systematically explored in children with HIV disease. Further, although HIV infection disproportionately affects ethnic minority children, the majority of studies examining adjustment problems in children infected with HIV have assessed primarily Caucasian, transfusion-infected children, limiting the generalizability of these findings to the current pediatric HIV population.

In studies of other chronic illnesses in children, theory-driven, conceptual models have been developed to guide the research. For example, Thompson and colleagues have developed a transactional stress and coping model within an ecological-systems theory perspective in which chronic illness is viewed as a potential stressor to which the individual and family system attempt to adapt (Thompson et al., 1993a, 1993b). The illness-adjustment relationship is a function of the transactions of illness parameters, demographic parameters, and psychosocial processes such as stress, coping, and family functioning. This model has been applied to children with sickle cell disease and their mothers, whose demographic characteristics closely resemble the pediatric HIV population (Thompson et al., 1993a, 1993b). However, to date, such conceptually guided assessments have not been applied to research on the psychological functioning of children and families affected by HIV.

The purpose of this study was to assess the psychological impact of HIV infection on children and families with a demographically representative sample of the epidemic. This study incorporated a theory-driven, conceptual model adapted from Thompson and colleagues to guide the hypotheses (see Figure 1). A control group matched with the HIV-infected sample on demographic characteristics was included so that the role of HIV disease independent of other risk factors (e.g., socioeconomic status [SES]) could be assessed. We hypothesized that children infected with HIV would evidence higher levels of psychological distress and poorer adjustment than children who are not infected with HIV but who are living in similar environments. In addition, as outlined in the bottom portion of the model in Figure 1, we hypothesized that children’s psychosocial processes will account for significant increments in the variance in HIV-infected children’s adjustment. Specifically, children’s external health locus of control, maladaptive coping styles, and poor caregiver psychological adjustment will be significant predictors of children’s poor psychological adjustment. A hierarchical regression model was developed to assess these hypothesized relations between psychosocial processes and child adjustment in HIV-infected school-age children.

Method

Participants and Setting

Thirty-six children infected with HIV (HIV-infected group) and 32 healthy children (control group), ages 6–16 ($M = 9.6$ years), and their caregivers
ers were unable to complete the assessment battery even with assistance from the experimenter (e.g., non-English-speaking, caregivers unable to comprehend the assessments).

**HIV-Infected Group.** According to their medical records, 97% of the children with HIV were perinatally infected. Approximately a third of the sample had an AIDS diagnosis at the time of enrollment. Most (86%) of these children were on antiretroviral therapy. Sixty-four percent of this group had been told their diagnosis of HIV. According to their caregivers, approximately 17% of this group were receiving special education services. A third of these children lived with their biological mothers and 50% of the sample lived with their grandmother or another biological relative. The remainder of the group lived with foster parents. A third of the children’s mothers had died from AIDS-related illnesses.

**Control Group.** Approximately 19% of this group were receiving special education services according to their caregivers. The majority (78%) of these children lived with their biological mothers and 13% of the sample lived with their grandmother or another biological relative. The remainder of the group lived with foster parents.

**Measures**

*Caregiver Self-Report: Demographic Parameters.* Caregivers completed a demographic questionnaire on
themselves and their children. This questionnaire requested occupation/job description and educational level in order to calculate an estimate of SES using the Hollingshead Two-Factor Index of Social Position (Hollingshead, 1957). Demographic information on the children was also obtained. Caregivers of HIV-infected children were also asked questions about whether their child’s HIV diagnosis had been disclosed to the child or to other family members.

Caregiver Psychological Adjustment. Caregivers’ psychological adjustment was assessed by the Brief Symptom Inventory (BSI; Derogatis & Melsaratos, 1983). This scale is a 57-item abbreviated version of the Symptom Checklist 90–Revised and yields severity scores for nine dimensions of psychiatric symptoms (depression, anxiety, psychoticism, somatization, obsessive-compulsive, interpersonal sensitivity, hostility, phobic anxiety, and paranoid ideation) and three global indices of distress. The Global Severity Index (GSI) combines information on numbers of symptoms and intensity of perceived distress and was used for this study as an overall index of psychological distress. Derogatis and Melsaratos (1983) have reported alpha coefficients for the symptom dimensions from .71 to .85 and test-retest reliability coefficients for the GSI = .90.

Caregivers also completed the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1991) to provide an index of child psychological adjustment. The CBCL is a 113-item scale used to assess children’s social competence, as well as internalizing and externalizing behavioral problems. The CBCL has been well standardized, and it has adequate reliability and validity (Achenbach & Edelbrock, 1991). Few studies have been conducted on the psychological adjustment of children with HIV; however, the CBCL has been used frequently to assess behavioral disturbance in children with other chronic illnesses (Wallander & Thompson, 1995). Therefore, we chose to use the CBCL to allow for comparisons to other studies of chronically ill children’s functioning.

Child Self-Report: Expectations. The Children’s Health Locus of Control scale (CHLC; Parcel & Meyer, 1978) consists of 20 items designed to assess children’s locus of control pertaining to aspects of health and illness. Scores range from 20 to 40, with higher scores indicating more of an internal health locus of control. Parcel and Meyer have reported overall Kuder-Richardson coefficients of .72 and .75 for this scale.

Child Coping Strategies. Children completed the child version of the Coping Strategies Inventory (CSI; Tobin, Holroyd, & Reynolds, 1989) to assess coping thoughts and behaviors in response to a specific medical stressor. After describing a stressful medical situation, respondents answer 36 questions on a 3-item Likert format scale. Factor analytic studies have delineated broadband methods of coping, such as emotion-focused (palliative) and problem-focused (adaptive; Lazarus & Folkman, 1984). Alpha coefficients on the subscales range from .71 to .94, with test-retest coefficients ranging from .67 to .83. A palliative coping ratio score was derived to reflect the relative use of palliative to adaptive coping (Thompson et al., 1993a).

Child Psychological Adjustment. The Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992) is a multidimensional personality inventory for children and adolescents. The Self-Report of Personality (SRP) utilized for this study has forms for children (age 8–11) and adolescents (age 12–18) presented in a true-false format. The BASC yields four composite scores: school maladjustment, clinical maladjustment, personal adjustment, and emotional symptoms index (ESI). For the purpose of this study, the ESI was used as a global indicator of serious emotional disturbance, as it measures the cumulative effects of a large number of emotional difficulties and it is a parallel measure to the BSI Global Severity Index completed by caregivers. Internal consistency of the ESI was shown with an alpha coefficient = .95, and the test-retest reliability coefficient = .96. This scale was not normed on children ages 6 to 7. However, the normative data for this instrument did not show significant developmental differences across age groups. Similarly, this study did not obtain significant differences in the raw scores of children ages 6 to 7 and 8 to 9. Therefore, in this study, children ages 6 and 7 were assigned standard scores based on 8-year-old norms using the BASC computer scoring system.

Procedure

This study was approved by the Institutional Review Board (IRB) of Emory University before its initiation. Participants were contacted by telephone or were approached in the clinic waiting room prior to their scheduled clinic appointments and were invited to participate in the study. The purpose and requirements of the study were explained and par-
participation was requested for those children and caregivers who met the eligibility criteria. Written informed consent from the caregiver and verbal assent from the children were obtained. Participants were then taken into clinic exam rooms or staff offices and interviewed for approximately 60–90 minutes. The caregivers and children were administered the assessment batteries in separate rooms by different research assistants so that they would not influence each other’s responses. All questionnaires were verbally administered to all individuals in order to control for differences in reading ability. The order of presentation of the questionnaires was counterbalanced for both caregivers and children. Caregivers were paid a small incentive ($10.00) upon completion of the assessment battery and the children were offered their choice of a small prize. Information on HIV-infected children’s medical status was also obtained from their medical charts.

Separate research assistants conducted the assessments at the two different clinics, as the clinic site identified the child’s group status. A record was kept of families who chose not to participate in this study; only one eligible HIV-infected group family refused participation as the mother was concerned that the child would learn her HIV diagnosis by participating in the study. Approximately 10% of the healthy children attending clinic visits who were invited to participate refused due to caregiver time limitations and they also declined to schedule another appointment to participate in the study.

Results

Overview of Data Analyses

The following paragraphs describe the psychological adjustment of the children and caregivers in this sample and test the hypothesis of significant differences in psychological adjustment between HIV-infected children and healthy children. We explore psychosocial factors associated with psychological adjustment in the HIV-infected children through correlational analyses. Last, hierarchical regression equations predicting psychological adjustment in HIV-infected children are presented, which test a portion of the theoretical model in Figure 1. Specifically, we examine predictors of caregiver-reported and child self-reported psychological adjustment, guided by the hypotheses outlined in the model and tested in previous studies with different populations of chronically ill children (e.g., Thompson et al., 1993b).

Psychological Adjustment of Children and Caregivers. Means and standard deviations of all measures are presented in Table I. On caregiver reported measures of children’s psychological adjustment, 20% of HIV-infected children and 41% of non-infected children obtained internalizing behavior problem scores in the borderline or clinical ranges (T score ≥ 90th percentile), and 20% of HIV-infected children and 38% of non-infected children obtained externalizing behavior problem scores above the 90th percentile. On child self-report measures of psychological adjustment, 25% of children infected with HIV and 28% of non-infected children reported psychological adjustment problems above the 90th percentile. In addition, 34% of caregivers of children infected with HIV and 41% of control group caregivers reported psychological distress levels above the 90th percentile.

To test our hypothesis of group differences on measures of psychological adjustment, we ran a series of one-way analyses of variance (ANOVA). Contrary to our hypothesis, children with HIV did not significantly differ from non-infected children on their self-reported psychological distress or on caregiver-reported externalizing behavior problems or internalizing behavior problems, using an alpha level corrected for multiple comparisons. Additionally, caregivers of children with HIV did not sig-

<table>
<thead>
<tr>
<th>Variable</th>
<th>HIV group (n = 36)</th>
<th>Control group (n = 32)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>Range</td>
</tr>
<tr>
<td>Caregiver report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSI-GSI</td>
<td>54.5 (12.2)</td>
<td>33–75</td>
</tr>
<tr>
<td>CBCL internalizing</td>
<td>49.7 (11.1)</td>
<td>31–69</td>
</tr>
<tr>
<td>CBCL externalizing</td>
<td>53.3 (10.7)</td>
<td>32–81</td>
</tr>
<tr>
<td>Child report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health locus of control</td>
<td>30.7 (3.3)</td>
<td>26–38</td>
</tr>
<tr>
<td>CSI palliative coping</td>
<td>10.1 (1.7)</td>
<td>6–15</td>
</tr>
<tr>
<td>CSI adaptive coping</td>
<td>7.1 (1.3)</td>
<td>4.8–10.5</td>
</tr>
<tr>
<td>BASC-ESI</td>
<td>51.7 (9.1)</td>
<td>36–69</td>
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</tbody>
</table>

CSI = Coping Strategies Inventory; BSI-GSI = Brief Symptom Inventory Global Severity Index, CBCL = Child Behavior Checklist, BASC-ESI = Behavior Assessment System for Children Emotional Symptoms Index.
significantly differ from caregivers of non-infected children in their reports of their own psychological distress.

**Psychosocial Correlates of Adjustment in HIV-Infected Children.** We calculated a series of Pearson correlation coefficients to provide an initial assessment of the hypothesized relations between demographic parameters, psychosocial processes, and psychological adjustment. Gender and SES were not found to significantly relate to any variables of interest; therefore, they were not included in the final analyses. Psychosocial issues that children living with HIV must cope with were examined as possible correlates of HIV-infected children’s psychological adjustment (see Table II). Children who have not been told their diagnosis of HIV tended to report more psychological distress ($r = .37$, $p < .05$) and had caregivers who tended to report more psychological distress ($r = .40$, $p < .02$) than children who know that they have HIV disease. Whether HIV-infected children lived with their biological mother or another caregiver was found to significantly correlate with children’s internalizing behavior problems ($r = .32$, $p < .05$), but not with children’s externalizing behavior problems or self-reported psychological adjustment. Specifically, children who were living with their biological mothers, who are all also HIV-infected, were reported to exhibit more internalizing behavior problems than children living with other caregivers. It is interesting to note that whether HIV-infected children’s biological mother was deceased was not shown to significantly correlate with any measure of children’s psychological adjustment in this sample.

**Multiple Regression Analyses.** We conducted a series of hierarchical multiple regression analyses to test a portion of the proposed model in Figure 1. The predictor variables were added in a theoretically determined sequence. Specifically, guided by the model predicting HIV-infected children’s psychological adjustment, we entered variables in the following order: child’s age, child’s health locus of control, child’s coping style, and caregiver psychological adjustment. Caregiver reports of children’s psychological adjustment (CBCL scores) and child self-reported psychological adjustment (BASC scores) were analyzed as separate equations. Due to the limited sample size in this study, mediator and moderator relationships could not be tested. However, predictors of child adjustment were assessed in an additive fashion.

**Child Adjustment: CBCL Internalizing Behavior Problems.** Children’s psychosocial processes and caregiver adjustment were entered into a regression equation predicting caregiver-reported child internalizing behavior problems (Table III). The overall $R^2$ when all variables hypothesized as significantly contributing to children’s externalizing problems were considered was significant, $F(4, 31) = 3.33$, $p < .05$, accounting for 30% of the variance. Children’s age was the only child factor that significantly contributed to the variance in children’s externalizing problems ($β = -.36$, $p < .05$). However, caregiver psychological adjustment accounted for a significant increment in variance ($β = .39$, $p < .05$); caregivers who reported higher levels of psychological distress also reported more externalizing behavior problems in their children.

**Child Adjustment: CBCL Externalizing Behavior Problems.** Children’s psychosocial processes and caregiver adjustment were also entered into a regression equation predicting caregiver-reported child externalizing behavior problems (Table IV). The overall $R^2$ when all variables hypothesized as significantly contributing to children’s internalizing problems were considered was significant, $F(4, 31) = 6.12$, $p < .001$, accounting for 44% of the variance. No child factors made significant contributions to the variance in children’s internalizing behavior problems. However, caregiver self-reported psychological distress was a significant predictor of children’s internalizing behavior problems ($β = .67$, $p < .01$); caregivers who reported higher levels of psychological distress also reported higher levels of internalizing behavior problems in their children.

**Child Self-Reported Adjustment.** Children’s psychosocial processes and caregiver adjustment were then entered in a regression equation predicting child self-reported psychological adjustment (see

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**Table II.** Inter correlations Between HIV-Related Psychosocial Factors and Psychological Adjustment for HIV-Infected Children ($n = 36$)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Child knows diagnosis</th>
<th>Caregiver</th>
<th>Mother deceased</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBCL-I</td>
<td>.31</td>
<td>.32*</td>
<td>.07</td>
</tr>
<tr>
<td>CBCL-E</td>
<td>.22</td>
<td>.18</td>
<td>.07</td>
</tr>
<tr>
<td>BASC-ESI</td>
<td>.37*</td>
<td>.21</td>
<td>.28</td>
</tr>
<tr>
<td>BSI</td>
<td>.40*</td>
<td></td>
<td>.29</td>
</tr>
</tbody>
</table>

CBCL-I = Child Behavior Checklist Internalizing Scale, CBCL-E = Child Behavior Checklist Externalizing Scale, BASC-ESI = Behavior Assessment System for Children Emotional Symptoms Index, BSI = Brief Symptom Inventory.

*p < .05.
Discussion

Children diagnosed with pediatric HIV disease are thought to be at risk for psychological adjustment problems due to the multiple medical and psychosocial stressors accompanying this chronic illness. Despite this, little is known about the specific factors that predict psychological adjustment in these children, nor is it known how these children and families fare when compared to families of similar backgrounds. This study found that approximately 25% of HIV-infected children in this sample were experiencing significant adjustment problems. This finding is consistent with other studies that have shown that children with chronic illnesses are at risk for significant adjustment difficulties (Wallander & Varni, 1998). When compared to children
with HIV disease in other studies, the children in this study showed a somewhat lower proportion of adjustment problems than in other studies of predominantly African American children (e.g., Havens et al., 1994). However, this sample exhibited notably more psychological difficulties than primarily Caucasian, middle class, transfusion-infected children (Bose et al., 1994; Moss et al., 1998). The majority of children with HIV in this study did not appear to evidence significant psychological adjustment problems, reflecting a tremendous amount of emotional resiliency in the face of this devastating disease. Despite problems associated with poverty, stigma and social isolation, illness and complicated medical regimens, most of the children with HIV in this sample were functioning fairly well emotionally and behaviorally.

Contrary to our hypotheses, we found no significant differences between the HIV-infected and healthy control groups on measures of caregiver psychological adjustment, caregiver-reported child externalizing behavior problems, internalizing behavior problems, or child self-reported adjustment. Although not statistically significant, the proportions of caregivers and children with clinically significant elevations on psychological adjustment measures were consistently higher in the control group of healthy children and their caregivers. The children and caregivers in the control group who chose to participate in this study may utilize health care services more frequently and may exhibit higher levels of distress than children and families from their communities. However, these findings likely reflect the impact of poverty and environmental stress on children’s and families’ psychological adjustment. Similar findings of significant levels of emotional/behavioral problems in children from urban, low-income families have been reported in other studies (e.g., Raadal, Milgrom, Cauce, & Mancl, 1994).

We suspect that the lower percentage of clinically significant adjustment problems reported in HIV-infected children and their caregivers may reflect increased access to multidisciplinary services such as case management, social services, mental health support groups, and individual and family therapy in our pediatric infectious disease clinic. These types of services are not typically provided in pediatric primary care settings, and services other than medical care are not likely to be offered unless an obvious crisis is present. An alternative hypothesis is that children with HIV and their caregivers may exhibit a defensive adaptational style, which may be reflected in their underreporting of psychological distress and in their endorsing avoidant coping styles. This defensive adaptational style has been shown in children with cancer (Phipps & Srivastava, 1997) but has not been explored in children with HIV.

Many caregivers of children with HIV are ambivalent about telling young children their diagnosis of HIV. Most fear that the children will not be able to keep it a secret, possibly subjecting the family to ostracism from their communities, or they feel the children may become hopeless and “give up” if they learn that they have HIV disease. Our findings showed that withholding this information from children was associated with more internalizing behavior problems in children and more psychological distress in caregivers. Clearly, both children and caregivers experience a great deal of anxiety and distress when the child’s illness is not being communicated about openly in the family. In addition, HIV-infected children who live with their biological mothers exhibited more internalizing behavior problems than children who live with other caregivers. Given that all of these biological mothers are also HIV-infected, many of these moms likely are becoming very ill or are already very ill. Consequently, their children may be anxious and worried about their mother’s well-being and possible impending death, and about their own health and future given that they have the same illness.

Caregivers of HIV-infected children who reported higher levels of psychological distress also endorsed higher levels of both internalizing and externalizing behavior problems in their children, and caregivers’ psychological distress was found to be the only significant predictor of children’s psychological adjustment reported by their caregivers (CBCL scores), other than child’s age. These findings are consistent with other studies that have reported that children’s emotional and behavioral functioning is affected by their caregiver’s psychological adjustment (e.g., Thompson & Gustafson, 1996). However, caregivers’ psychological distress was not found to significantly predict children’s self-report of psychological adjustment, which may also suggest that depressed caregivers are more likely to perceive their children’s behavior as problematic (Renouf & Kovacs, 1994). In addition, the discordant findings between children’s self-report of psychological adjustment and caregivers’ report of their children’s adjustment highlight the impor-
tance of assessing both children’s and caregivers’ perspectives on children's functioning (Fergusson, Lynskey, & Horwood, 1993).

When the predictors of child self-reported psychological adjustment were explored for HIV-infected children, younger children and children who use more palliative coping strategies were found to exhibit poorer psychological adjustment. When a similar model was applied to the adjustment of children with sickle cell disease, those endorsing a palliative coping style also reported more psychological distress (Thompson et al., 1993b). Children who use more emotion-focused coping strategies may be focusing more on feelings of helplessness and frustration, which leads to distress rather than focusing on strategies to change the situation. Most children with HIV are on complicated medication regimens of 10–35 pills per day, yet they may still get sick and die because there is no cure for their illness. They may also experience negative side effects from their medications, such as fatigue, nausea, and so on. Consequently, feelings of helplessness and frustration about their illness are understandable. Clearly, this is an important area for clinicians to target when helping older children with HIV cope more adaptively with their illness, as their increased survival depends on their ability to adhere to their medication regimens.

In conclusion, this study obtained support for applying the adapted stress and coping model to predicting children’s self-reported psychological adjustment in children living with HIV disease. However, the child variables in the model did not appear to be useful for predicting caregivers' report of children's psychological adjustment. In addition, several other limitations to this study warrant noting. First, the small sample size limited our ability to test the complete transactional stress and coping model, and we were not able to test mediator or moderator effects. The small sample size may also have reduced the power of the study to find significant differences between groups. Second, while the measures for this study were chosen because of their prior use with African American families, we cannot be certain of the cultural sensitivity of these measures and their ability to truly reflect the experiences and problems of low-income African American children and families. Third, the BASC computerized scoring system does not have norms for children ages 6 and 7, which may affect the interpretation of the child self-reported psychological adjustment scores for the youngest children in this sample. However, analysis of the raw scores yielded no significant differences between the 6- and 7-year-olds and 8- and 9-year-olds’ scores in this sample. This finding is consistent with the normative data provided by the authors of the instrument, which also showed no developmental trends in raw scores across ages (R. W. Kamphaus, personal communication, May 2000; Reynolds & Kamphaus, 1992). In addition, we found that when 6- and 7-year-olds were deleted from the sample, age was still significantly correlated with BASC-ESI scores. Therefore, the relation between age and psychological distress clearly extends beyond the youngest children in the sample. Finally, other variables not included in the model may be contributing to the variance in children's psychological adjustment. Future research is needed to both evaluate additional factors affecting children’s adjustment and to assess predictors of caregivers’ adjustment, as outlined in the model.

These findings may reflect the benefit of psychosocial interventions on the psychological adjustment of children and caregivers with HIV, given the large number of children and caregivers in this sample who were not reporting significant adjustment problems. Future studies should seek to evaluate the efficacy of these interventions (e.g., support groups, individual and family therapy, case management, etc.) for children and families as they struggle to cope with this devastating disease. In addition, these findings also highlight the need for case management, social work, and mental health services to be available for at-risk families in primary care settings, as many healthy children and caregivers exhibited significant levels of psychological distress and poor adjustment. This recommendation is consistent with recent trends by national funding agencies to provide mental health screening and intervention in primary care settings to prevent the development of serious mental illness in children and adolescents.

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