Impact of Parent Death and an Intervention on the Adjustment of Adolescents Whose Parents Have HIV/AIDS

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The impact of parental death and the efficacy of a coping-skills intervention were examined on the adjustment of 211 adolescent children of parents with HIV/AIDS (PWH) over a 2-year period. During the follow-up period, 35% of the PWH died. Using longitudinal structural equation model, controlling for prior measures of adjustment at baseline, the authors found that children of deceased PWH reported significantly more emotional distress and problem behaviors 2 years later. Youth randomized with their parent to a coping-skills intervention reported significantly fewer problem behaviors and sexual partners 2 years later. Also, adolescents were better-adjusted 2 years later when their parents had reported less emotional distress and less severe physical health symptoms at baseline. Female adolescents reported more emotional distress at baseline and at 2 years than males; male adolescents reported more problem behaviors at baseline than the females.

In the United States, about 72,000–125,000 children and adolescents have been orphaned by AIDS (American Association for World Health, 1997; Levine, 1995; Michaels & Levine, 1992); currently 15,570 HIV-infected parents die annually (Leibowitz, Schuster, Bhattacharya, & Rotheram-Borus, 2000). Loss of a parent under any circumstances is traumatic (West, Sandler, Pillow, Baca, & Gersten, 1991). The loss of a parent to AIDS is especially difficult because of the many subsequent unmet needs of AIDS orphans (Levine, 1995; Schuster et al., 2000), as well as the stigma associated with HIV/AIDS (Herek & Capitanio, 1993). In contrast to parents of children who die from heart attacks, cancer, or accidents, parents with HIV/AIDS (PWH) are predominantly low-income, single parents in U.S. inner cities and are more likely to be female, African American or Latino, and substance abusers (Aral & Wasserheit, 1995; Centers for Disease Control and Prevention, 1998; Davidson et al., 1998; Rotheram-Borus, Luna, Marotta, & Kelly, 1994; Schuster et al., 2000; State of New York, Department of Health, 1999). New caretakers for their children may not be readily available after parental death (Schuster et al., 2000; Stein, Riedel, & Rotheram-Borus, 1999), exacerbating adjustment problems among these children who lose a parent (Tremblay & Israel, 1998).

Most of our knowledge regarding the impact of parental illness and/or death on adolescent children comes from the clinical literature. In over 300 articles in the past 10 years, clinicians have argued that parental death has a substantial negative impact on adolescents (Rotheram-Borus & Lightfoot, 2000). With the death of only one parent, young children report increases in depression, anxiety, conduct problems, academic difficulties, somatic complaints, and suicidal acts, as well as decreases in self-esteem (West et al., 1991). However, there are few longitudinal studies of bereavement: We have identified only two longitudinal studies conducted within the past 25 years of adolescents in the United States who lost a parent (Bendiksby & Fulton, 1975; Worden, 1996), and these adolescents were predominantly White and middle class, with a surviving parent.

The present longitudinal study investigated predictors of adjustment over 2 years among adolescent children of PWH. Adolescent adjustment is defined by youth's emotional distress, sexual risk behavior, and conduct problems. More than a third of the PWH died during the 2-year time frame of this study, allowing us to investigate the adjustment of youth after parental death while controlling for their preexisting characteristics. Factors that were hypothesized to influence adolescent adjustment came from several domains: preexisting characteristics of the adolescents, characteristics of the PWH, parental death, and the impact of attending a coping-skills intervention.

Adolescent outcomes are likely to be influenced by including preexisting demographic characteristics of the gender of the PWH and the age and gender of the adolescent. For example, having a chronically ill mother appears to be a greater risk factor for...
children than does having a chronically ill father (Grant & Compas, 1995; Roy, 1990). As most PWH are mothers, mothers may rely on their daughters in different ways, compared with their sons (Romer et al., in press). An earlier cross-sectional analysis of the families in this study found that children were more likely to assume inappropriate adultlike role behaviors when their mother was HIV infected rather than their father (Stein et al., 1999). Gender-stereotyped behaviors are expected among adolescents: Boys are expected to exhibit more conduct problems, and girls are expected to report more emotional distress (Gilligan, 1996). Normative developmental processes lead older adolescents to have greater family responsibilities than younger children, especially youth with an ill parent (Stein et al., 1999), and they may also exhibit more sexual behavior (Rotheram-Borus & Stein, 1999).

The baseline levels of each of the outcomes of interest in this study were also used as predictors of the 2-year youth outcomes (emotional distress, sexual risk behavior, and problem behaviors). Behaviors are stable, and past behavior is the best predictor of future adjustment and future behaviors (Aiken, Stein, & Bentler, 1994; Lerner & Galambos, 1998). We anticipated that youth who were emotionally distressed, having sex, using cigarettes and alcohol, and engaging in adverse behaviors at the time of recruitment would be more likely to report these behaviors 2 years later.

Parental characteristics may also influence adolescent adjustment. The emotional distress of uninfected parents has been related to their children's distress (Downey & Coyne, 1990; Phares & Compas, 1993). In the present sample, PWH's emotional distress was correlated cross-sectionally with somaticizing symptoms among youth at the time of recruitment (Rotheram-Borus & Stein, 1999). The analysis allowed us to examine prospectively whether more emotionally distressed PWH were likely to have more emotionally distressed children 2 years later. Furthermore, the severity of parents' physical health symptoms is likely to impact their entire family significantly. When parents are chronically ill, their children have more difficulties and burdens, including greater household responsibilities (Cates, Graham, Boeglin, & Tielker, 1990; Romer et al., in press). Previous studies of the children of ill parents have indicated that the children's symptoms emerge primarily in the areas of depression and anxiety (Worsham, Compas, & Ey, 1997). Among the families in our study, PWH with more physical health symptoms at baseline had children reporting higher levels of emotional distress at baseline (Rotheram-Borus & Stein, 1999). Parents with many symptoms may have greater difficulty in dealing with their children, monitoring their behavior, and managing their households. Therefore, the severity of physical health symptoms at baseline was also included as a predictor of adjustment 2 years later.

In addition to indicating preexisting adolescent and PWH characteristics, Figure 1 indicates that youths' adjustment over 2 years varied with impact of the death of the parent and attending an intervention. At the time of recruitment, it had been anticipated that the parents would die in about 1 year; 2 years later, 35% of the parents in the study had died. Among those who did not die, both PWH and their children have had to adjust to living with a chronic and unpredictable illness over time. The parents' chronic illness was expected to have a negative influence on their children's adjustment (Cates et al., 1990; Clark, Pynoos, & Goebel, 1996; Maddison & Raphael, 1972; Worden & Silverman, 1996). Furthermore, HIV status may also have a unique effect on adolescent adjustment because of the stigma and uncertainties associated with it. Thus, the adjustment of adolescent children of PWH is likely to be influenced by the parent's HIV status, whether the parent dies or survives.
Because of the parent's HIV status, we implemented an intervention for PWH and their adolescent children in a randomized controlled trial (Rotheram-Borus, Lee, Gwadz, & Draimin, 2001; Rotheram-Borus, Murphy, Miller, & Draimin, 1997). The intervention has been associated with reductions in multiple problem behaviors and in emotional distress for both PWH and their adolescent children (Rotheram-Borus et al., 2001). Although we have previously demonstrated the efficacy of the intervention on the primary outcomes, it was important to examine factors other than the intervention that may have mitigated or attenuated the effect of the intervention over 2 years, such as death of the parent, and simultaneously to examine the impact of bereavement on adolescents' adjustment while controlling for prior adjustment and parental contextual factors. Therefore, this article presents the results of a latent variable structural equation model (SEM) that simultaneously examines multiple predictors of adolescent adjustment over 2 years, including parental death and randomization to the intervention.

Method

Participants

Persons with AIDS in New York City have access to a comprehensive set of services including financial, housing, and home care for persons with late-stage HIV or AIDS who are eligible for Medicaid in New York State. The Division of AIDS Services has estimated that 95% of persons with AIDS who are eligible for services actually receive services through this agency (New York City Human Resources Division of AIDS Services, 1993). From August 1993 to March 1995, the names of all financially needy persons with AIDS who requested services were entered into a log at the Division of AIDS Services in New York City. From this log, 429 eligible PWH were identified, that is, those who were alive during the recruitment period, who were 25–70 years old, who had at least one adolescent child aged 11–18 years old, who were not institutionalized, and who had the assent of their clinical social worker that study participation was appropriate. Among the 429 eligible PWH, 65 (15%) were untraceable and 46 (11%) refused to participate. Thus, 87% (n = 318 of 364) of the traceable PWH (74% of total eligible PWH, 318 of 429) were successfully recruited. After the PWH were recruited, recruitment of their adolescent children commenced, which required both parental and adolescent informed consent. To be included in this analysis, the PWH and one of their adolescent children had to be available at the time of recruitment and the adolescent had to be available 2 years later. At the time of recruitment, 25 PWH temporarily did not have custody of their children, and another 27 PWH did not allow their children to participate, even though the PWH participated in the study. These 52 PWH were not then eligible to participate in this analysis. Among the 266 remaining PWH, there was an average of 1.5 adolescents per family (SD = 0.7, range = 1–5). Among these families, 1 adolescent child was randomly selected as part of the PWH–youth pair. In 6 cases the adolescent child was over 18 years (i.e., ineligible) by the time the intervention was delivered and, therefore, was eliminated from the analysis, leaving 260 eligible PWH and 260 eligible adolescent children. Two years later, 211 of the 260 adolescents (81%) were reassessed and, thus, available for the study analysis.

Analysis of variance and cross-tabulation procedures were used to examine any selection bias due to attrition. There were 49 slightly older adolescents that were only available at Year 1 (M = 15.3 years; n = 49) compared with the 211 adolescents that were available at both Year 1 and Year 2 (M = 14.8 years; n = 211). There were no significant differences between the groups on age, gender, ethnic distribution, or any of the measured variables that compose the predictor behaviors in the current study (p > .05 for all variables).

In addition, although a diagnosis of AIDS was an eligibility requirement for admission into the Division of AIDS Services, not all parents had received a formal diagnosis of AIDS according to their self-reports. Forty percent of parents were diagnosed with AIDS, 42% reported that they were symptomatic for HIV, and 18% reported that they were HIV-positive but asymptomatic. These self-reports were highly correlated to CD4 counts and related to survival (Lee & Rotheram-Borus, 2001). An earlier study with a similar sample of persons living with HIV found a high correlation between self-reports and chart reviews of health status (Cunningham, Rana, Shapiro, & Hays, 1997; Rotheram-Borus, Murphy, Coleman, et al., 1997).

Demographic Information

The PWH were mostly mothers (83%) ages 27–44 years (M = 37.6 years, range = 25–70 years). The sample was 45% Latino, 36% African American, 10% White, and 3% Asian. Almost half (49%) of the parents had not graduated from high school. Household compositions varied: Ninety-four percent included children living in the household, with the remaining 6% having children temporarily in foster care placements, group homes, or jail; 27% included an adult partner; 11% lived with a parent and 10% with other relatives. At baseline, many PWH reported a prior history of substance use (37%, injection use) and multiple sexual partners (M = 32.6; SD = 83.1; Md n = 7.0), but there were far fewer recent risk behaviors (5% injection drug use, 58% sexually aboriginal). About 14 physical symptoms were reported over the previous 3 months (SD = 5.7, range = 0–23); the severity of physical health symptoms was rated as moderate (M = 1.8, SD = 1.0, range = 0–4.7). On the Brief Symptom Inventory (BSI; Derogatis, 1993), several of the subscale scores of emotional distress were in the clinical range: Sixty-seven percent of the fathers and 60% of the mothers had at least one subscale score in the clinical range. Among the adolescents, 53% were female and most (89%) were currently in school (Mean age = 14.8 years). Only 6% of the adolescents had any subscale scores on the BSI above the clinical cutoff score; emotional distress scores of the youth were lower at Year 2 than they were at baseline.

Procedure

An ethnically diverse and bilingual team of interviewers conducted 2-hr individual assessments with participants in their homes. Intensive training was provided, and ongoing quality assurance procedures indicated that more than 80% of the interviews met criteria for completeness and appropriate voice tone (Rotheram-Borus & Leonard, 2000). Intensive supervision was given when criteria were not met, and if improvement did not occur, the interviewers were replaced.

Intervention

At the baseline interview, PWH and all adolescent children in their family were randomly assigned to the control or the intervention condition. At baseline, the adolescents in the intervention and standard care conditions were similar in sociodemographic characteristics, school enrollment, emotional distress, sexual- and substance-use-risk acts, and conduct problems. The PWH in each condition also were similar in their sociodemographic characteristics, severity of physical health symptoms, emotional distress, and sexual- and substance-use-risk behaviors at baseline (Rotheram-Borus, Murphy, Miller, & Draimin, 1997).1

PWH and youth in both the control and intervention conditions received case management services from the Division of AIDS Services and had access to mental health counseling and medical care on an ongoing basis. In addition to the care accessible through the Division of AIDS Services, those randomized to the conditions were invited to attend a two-module

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1 Comparisons on each of these measures are available from the authors.
intervention. The first module, coping with illness, involved only PWH; the second module, planning a legacy, was attended by PWH and adolescents (if adolescents were at least 12 years old and knew parental serostatus). Across modules, cognitive—behavioral principles were used to (a) improve coping with one's serostatus and ongoing illness-related stressors; (b) help in deciding who, when, and how to disclose one's serostatus and to make custody plans; and (c) establish positive daily routines that assist the family in coping with illness. Each Saturday, two intervention sessions were held with child care and transportation provided. Because most PWH lived longer than expected, PWH were allowed to attend make-up and booster sessions covering the same content of the intervention.

In the sample of 211 matched PWH—adolescent pairs, 104 were assigned to the intervention, and 107 were assigned to the control condition at the baseline interview. Of those randomized to the intervention, 66% attended at least one session; fathers and Spanish-speaking mothers were less likely to attend even one session of the intervention. PWH attending at least one session were present for a mean of 19.2 sessions (SD = 12.3, Mdn = 17.5 sessions). Some adolescents were ineligible to attend this intervention because their PWH died, did not attend, were unavailable because of being institutionalized, or did not disclose their serostatus to their children. Among the adolescents who were eligible to attend (n = 56), 80% attended at least one session of the intervention. The mean number of sessions attended by adolescents was 10.8 (SD = 7.4, Mdn = 10.0 sessions). A conservative analytic strategy was adopted: If the family was assigned to the intervention, regardless of whether any family member attended the intervention, the youth and the parent were included in the intervention as part of the intention-to-treat analysis.

Participation in other intervention activities was monitored during the course of the study. Participants in the intervention and control conditions attended counseling at a similar rate (65.4% to 64.5%, respectively).

Parental status was based on family self-report and verified by state death records. Within the sample of 211 matched PWH—adolescent pairs, 73 of 211 parents died (35%), and the percentage was similar across intervention conditions. The mean time to death was 13.9 months from time of entry into the study.

Measures

Because SEM was to be used in this analysis, we constructed latent variables from the measured variables; latent variables (or constructs) provide better estimates of relations among constructs by accounting for random or measurement error among the measured variables and also represent a higher order of abstraction of the constructs (Hoyle & Smith, 1994). To construct the hypothesized latent variables, we selected pertinent items from the scales and subscales of the assessment measures for the parents and children for factor analysis. Items that formed reliable and distinct factors corresponding to the constructs were used as manifest indicators of the latent variables. Recent behaviors were defined as over the past 3 months for both PWH and the adolescents.

Measured and Latent Variables

Demographic characteristics. We included gender of the parents and their adolescent children (male = 1; female = 2) and age of the adolescents in years.

Parent latent variables: Severity of HIV-related physical health symp-
toms. A 23-item questionnaire assessed the degree to which the PWH was distressed by 23 HIV-associated symptoms; responses ranged from 1 (not at all) to 6 (extremely) (Rotheram-Borus, Murphy, Coleman, et al., 1997; Rotheram-Borus & Stein, 1999). A factor analysis of this question-
naire generated five composite scores: (a) weakness, the mean response to four items such as "feeling dizzy or lightheaded," and "fatigue, weakness"; (b) pain, the mean response to four items such as "overall discomfort," "pain, numbness, or tingling in hands or feet"; (c) HIV symptoms, the mean response to four items such as "loss of appetite" or "weight loss"; (d) lung disorders, the mean response to five items such as "coughing and wheezing" or "chest pain or tightness"; (e) ear, nose, and throat problems, indicated by four items. On the basis of the results of the factor analysis, two items from the questionnaire were not used.

Parent emotional distress was assessed with three subscales from the BSI: Depression, Anxiety, and Phobic Anxiety symptoms. Mean scores from these subscales were generated with each item rated from 0 (not at all characteristic) to 4 (extremely characteristic). Although the BSI has nine subscales, our sample size was relatively small; all nine could not be used in a latent variable representing distress. Furthermore, the Somatization subscale would have overlapped with the scale of Severity of Physical Health Symptoms described above.

Adolescent baseline latent variables. Youth emotional distress was composed of the same subscales on the BSI as those for the PWH, Depression, Anxiety, and Phobic Anxiety symptoms (consistent with the findings of earlier research; Worsham et al., 1997).

Youth sexual risk behavior was constructed with one indicator and assessed the number of sexual partners in the past 3 months.

Youth problem behaviors were indicated by (a) cigarette smoking, measured on a 6-point scale that ranged from 0 (none) to 6 (35 cigarettes or more per day); (b) frequency, the number of times of alcohol use; (c) theft, indicated by the sum of six items such as "snatched someone's purse," "shoplifted," "held someone up or robbed someone"; (d) aggression, the sum of five items indicating aggressive or cruel behavior such as "tortured animals or hurt them on purpose," "been in serious physical fights with punching or hitting"; (e) criminal behavior, the sum of 14 behaviors such as "started any fires without permission," "broken into a house, building, or car," and "been in trouble with the police."

Adolescent Year-2 follow-up variables. The same variables of youth emotional distress, youth sexual-risk behavior, and youth problem behaviors measured exactly the same way were used as outcome latent variables. Dichotomous variables representing intervention group membership (standard care was coded as 0; intervention was coded as 1) and whether the parent had died before the 24-month follow-up assessment (no was coded as 0; yes was coded as 1) also predicted the adolescent outcome latent variables (e.g., Aiken et al., 1994). Preliminary analyses had ascertained that neither of these dichotomous variables was significantly associated with any baseline youth measures or demographics.

Analyses. The latent variable analyses were performed using the EQS SEM program (Bentler, 2001). Latent variables are error-free constructs that are composed of the shared variance or relations among a number of manifest or indicator variables (Bentler & Stein, 1992). One advantage of SEM is that it permits simultaneous assessment of several dependent variables in a single model, whereas it avoids problems of multicollinearity. In addition, the relations among latent rather than measured variables can be examined (Hays, Marshall, Wang, & Sherbourne, 1994). These analyses compare a proposed hypothetical model with a set of actual data. The closeness of the hypothetical model to the empirical data was evaluated statistically with the adjusted Satorra—Bentler robust χ²(S-B χ²), the robust comparative fit index (RCFI), and the root-mean-square error of approximation (RMSEA). Robust statistics were used because the data were multivariately kurtosis with a normalized estimate of 57.01 (Bentler & Dudgeon, 1996). The RCFI ranges between 0 and 1 and compares the improvement of fit of a hypothesized model with a model of complete independence among the measured variables, while adjusting for sample size. Values of .95 or greater are desirable for the RCFI (Hu & Bentler, 1999). The RMSEA is helpful as an additional tool to evaluate fit because

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it indicates the size of the residuals. Values less than .06 indicate a relatively good fit between the hypothesized model and the observed data (Hu & Bentler, 1999).

Because the sample was somewhat small, a bootstrap procedure was also used to test the stability of the final parameter estimates (Chan, Yung, Bentler, & Tang, 1998; Latimer, Newcomb, Winters, & Stinchfield, 2000). One hundred twenty-five separate samples were randomly derived from the sample of 211 adolescents with replacement, and the final model was run 125 times using each derived sample. Ninety-five percent confidence intervals were computed for all parameters in the final path model after the parameters obtained from the 125 analyses were averaged across the randomly selected samples.

Models

Preliminary confirmatory factor analyses (CFA). An initial CFA was performed with each hypothesized latent construct predicting its proposed manifest indicators. All latent constructs correlated freely. This analysis assessed the adequacy of the proposed factor structure and the relationships among the latent and manifest variables. For completeness, we included the demographic manifest variables in this model, although we did not necessarily expect that each would relate significantly to the latent variables. We did not include intervention group membership and parental death in the CFA because we only wanted to assess their impact on the outcome variables in the longitudinal predictive path model after the path model had been developed, and we did not expect them to correlate significantly with the baseline variables. However, the correlations among group membership, parental death, and the other variables in the model were assessed to ascertain that there were no preexisting significant relationships at baseline between intervention status, parental death, and the baseline variables. To improve the fit of the CFA model, covariances were allowed to be added between the error residuals of the same measured variables at the two time points if they were reported as significant by the LagrangeMultiplier (LM) test (Chou & Bentler, 1990; e.g., autocorrelations between measured variable of cigarette use at baseline and cigarette use at 2 years).

Longitudinal SEM. Once the factor structure was confirmed, we tested a longitudinal predictive model in which the demographic constructs predicted the baseline parent and adolescent latent constructs of severity of parent physical health symptoms, parent emotional distress, youth emotional distress, youth sexual risk behavior, and youth problem behaviors. In turn, all baseline variables predicted the three adverse 24-month adolescent outcome variables of youth emotional distress, youth sexual risk behavior, and youth problem behaviors. All nonsignificant paths were gradually deleted until only significant paths remained. We then added the effects of parent death and intervention group membership to the outcome variables (e.g., Aiken et al., 1994). If these predictive paths were not significant, they were deleted.

Results

CFA

Table 1 reports the means, standard deviations, factor loadings, and the alpha coefficients for the individual items that were selected to form the latent constructs. All manifest variables loaded significantly ($p < .001$) on their hypothesized latent factors. The satisfactory fit indexes for the CFA indicated that the hypothesized factor structure was plausible: $S-B \chi^2(324, N = 211) = 381.71$; RCFI = .95, RMSEA = .029. Three correlated error residuals among similar measured variables at baseline and at 2 years were added between cigarette use, theft, and criminal behavior.

Correlations among all of the latent variables, the demographics, intervention group status, and whether the parent had died are reported in Table 2. Associations between intervention group, parental death, and the youth baseline variables were quite minimal, as stated previously.

Developmental and gender issues emerged in several of the relationships among adolescent demographics and the adolescent constructs. For instance, female adolescents reported more emotional distress and fewer problem behaviors than male adolescents reported both at baseline and at 2 years. Greater age and more sexual behavior were significantly correlated at both baseline and at 2 years.

Examining only the largest correlations, the relationship between the severity of HIV-related physical health symptoms and emotional distress was quite high among parents ($r = .53$). Youth problem behaviors and emotional distress were also highly associated within time (baseline $r = .20$, follow-up $r = .33$). Youth baseline sexual risk behavior was associated with youth problem behaviors at baseline ($r = .39$). In addition, the similar latent variables across time demonstrated high levels of stability: youth
emotional distress \( (r = .36) \), youth sexual-risk behavior \( (r = .29) \), and youth problem behaviors \( (r = .61) \).

**Longitudinal SEM**

The final longitudinal SEM, which includes the additional effects of group membership and parent death as predictors of the outcome variables, had excellent fit statistics, S-B \( \chi^2(415, N = 211) = 470.29; \) RCFI = .96, RMSEA = .025. Results of the analysis are presented in Figure 2.

**Impact of parent death and the intervention program.** If the PWH had died, the adolescent was more likely to report greater emotional distress and more problem behaviors. Thus, parental death had a pervasive effect on both emotional distress and problem behaviors.

Randomization to the intervention was significantly associated with fewer problem behaviors (i.e., conduct problems and substance use). Those in the intervention also reported fewer sex partners. There was no significant interaction effect between intervention and parental death, which was tested previously.

**Impact of demographics on baseline and outcome variables.** Parent gender and adolescent age influenced outcome behaviors at 2 years. When the mother was the PWH, the adolescents reported more emotional distress and more sexual-risk behavior 2 years later. Mothers also reported more severe physical health symptoms and emotional distress than did fathers. Older adolescents reported more sexual behavior than younger children both at baseline and at 2 years. Adolescent boys reported more problem behaviors than girls did at baseline, and adolescent girls reported more emotional distress than boys did both at baseline and at 2 years.

**Impact of parent baseline latent variables on adolescent outcome variables.** The severity of parental physical health symptoms predicted more adolescent problem behaviors at 2 years. Parent emotional distress predicted more emotional distress among their children at 2 years.

**Impact of adolescent baseline factors on outcomes.** Stability across time was demonstrated among the adolescents by the significant predictive relationships of all baseline measures on their analogous measures at 2 years.

**Analysis of Model Stability**

We conducted 125 replications with the randomly derived samples using the bootstrap method as described above (Chan et al., 1998; Latimer et al., 2000). All parameter estimates reported in Figure 2 fell within the 95% confidence intervals for the averaged parameter estimates derived from the 125 replications. In addition, all estimates in the figure are nearly identical or identical to the averaged parameter estimates from the bootstrap analysis.

**Discussion**

Parents and children form an interdependent and interactive social unit; when parents become infected with HIV, the entire family is affected (Pequegnat & Szapocznik, 2006; Romer et al., in press). The interactions between parents and children are inevitably affected by parent illness. This study examines a diverse set of factors influencing the adjustment among children of PWH over 2

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**Table 2**

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Note: PWH = parents with HIV/AIDS.

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(continued...)
years. An SEM that controlled for the parent and adolescent status at the time of recruitment suggested a complex, multileveled, developmental trajectory for youth.

**Impact of Bereavement**

Consistent with the literature on younger children and on adolescents whose parents did not have HIV (West et al., 1991; Worden, 1996), bereaved adolescents reported significantly higher levels of emotional distress and more problem behaviors when they were compared with nonbereaved youth. Although emotional distress was higher among bereaved adolescents than among nonbereaved adolescents, only 6% of the adolescents had subscale scores on the BSI above the clinical cutoff score. In addition, the emotional distress of youth was lower at follow-up than it was at baseline (see means reported in Table 1). There are three potential explanations for this decrease: (a) because of the introduction of effective antiretroviral medications, parents who were expected to die did not die (Eron et al., 1995; Kinloch-de Loes & Perrin, 1995) and distress was potentially relieved; (b) the youth could be adjusting and adapting to a chronically ill parent over time; or (c) youth generally score lower as they get older (Derogatis, 1993). Further research needs to identify the specific mechanism associated with decreased emotional distress over time and to determine whether this finding holds among samples of adolescents who do not have parents that are ill.

Bereaved youth report engaging in more problem behaviors (i.e., "acting out") than nonbereaved adolescents. Clinicians have observed that bereavement results in anger, agitation, and aggression (Corr & Corr, 1996). Theorists have differ on whether the greatest impact of bereavement is an acute effect or whether the negative impact of bereavement increases over time (Lutzke, Ayers, Sandler, & Barr, 1997). As this sample is followed over time, the youth may provide even more evidence on the long-term consequences of bereavement, including greater depressive affect and general internalized distress or externalized behaviors that increase their own risk for AIDS. There were diverse guardianship arrangements after death (Gwadz, Rotheram-Borus, Lightfoot, & Sneed, 1999). The quality and the stability of the adolescents' living situations after the death of their parent may play an important role in monitoring and regulating their own risk behaviors, which may include both sexual and drug-related activities that can leave them open to AIDS risk of their own (Stein et al., 1999).

**Impact of the Intervention**

Randomization to the intervention condition predicted fewer problem behaviors and sexual partners at 2 years. The intervention did not differentially impact bereaved and nonbereaved adolescents. Similarly, the intervention effects were comparable across ethnic and gender subgroups (Rotheram-Borus et al., 2001). There is one caveat to the intervention effects: Fathers and Spanish-
speaking mothers were less likely to attend the intervention and did not allow their children to attend. The sample size of these two subgroups was too small to have the power to examine differential impact among these parents. However, adaptations of the current intervention are clearly needed to encourage these two subgroups to attend the intervention.

There were no significant differences in emotional distress across intervention conditions at 2 years; these results may mask some important variations in the timing of the impact of the intervention. In a related article (Rotheram-Borus et al., 2001), changes over 2 years for each 3-month assessment period were examined. Emotional distress decreased at a significantly faster rate among youth in the intervention condition for the first 12 months and was relatively stable after 12 months. Emotional distress decreased slowly over time among youth in the control condition, so that at 2 years there was no significant difference between youth in the two conditions. Because PWH did not die at the rate the families initially anticipated, it is difficult to know if the pattern of emotional distress observed in this study would be similar among other samples. Also, it may be that the intervention does not address emotional issues as well in the long run as it addresses behavioral problems.

A reduction in the number of the adolescents’ sexual partners is a finding unique to this preventive intervention. Previous adolescent HIV-prevention programs have reduced the number of sexual partners for at most 3 months, although the programs have increased condom use and reduced the number of sexual-risk acts (see Jemmott & Jemmott, 1997; Rotheram-Borus, O’Keefe, Kracker, & Foo, 2000, for a review). The adolescents in the coping-skills program reported fewer sexual partners than those in the control condition 2 years later. The Project TALC intervention is similar to other successful adolescent HIV-prevention programs, in that it is delivered in a small group format over multiple sessions and is focused on building coping skills by using cognitive—behavioral principles. However, including parents in the intervention was a unique factor in the Project TALC intervention design. Involving parents in future adolescent risk-reduction programs may be an effective way to reduce the numbers of sexual partners among adolescents.

Yet, most adolescents are not modeling dysfunctional parental behaviors such as substance use, sexual-risk acts, and criminal justice contact. Previous studies have indicated that children of HIV-negative, substance-abusing parents tend to use substances at high rates (Mathews & Oaks, 1990; Merikangas, Dierker, & Szamari, 1998; Price & Emshoff, 1997; Rivinus, 1991; Sutherland & Willner, 1996). However, compared with reports of existing risk behaviors of youth in New York City (Goodman & Cohall, 1989), the children of PWH in this study have not been using alcohol or other drugs at high rates, and have reported generally low levels of sexual risk behaviors, and contact with the criminal justice system and trouble at school have also occurred at relatively low rates.

Children of PWH with more severe physical health symptoms were more likely to report problem behaviors 2 years later. It is not clear how or why parental symptoms are associated with adolescent problem acting-out behaviors. Illness may decrease parental monitoring and supervision (Romer et al., in press), and failure to monitor may be associated with risk acts. Illness may lead PWH to withdraw from or ignore their children as they attend to and cope with their physical health symptoms. Unfortunately, we do not have the data to confirm or disconfirm this hypothesis. Alternatively, parental illness may result in premature responsibility for caretaking and adult roles resulting in later acting-out behaviors and the early assumption of adult behaviors such as using alcohol and cigarettes, as shown in other analyses focusing on developmentally inappropriate parent behaviors (Stein et al., 1999).

The pattern of results indicates that the PWH’s functional status (either physical or emotional) is related to the adolescents’ adjustment problems 2 years later. Combined with the benefits of the intervention, these other findings highlight the importance of dealing with the mental and physical status of PWHs to improve not only the quality of their lives, but also the quality of the lives of their children.

**Influence of Demographics and Initial Adjustment Levels**

Finally, consistent with the results of previous cross-sectional analyses (Rotheram-Borus & Stein, 1999), adolescents’ initial level of functioning and developmental capacities were associated in predictable ways with their adjustment 2 years later. Older adolescents reported more sexual behaviors, as would be expected on the basis of the developmental literature (Lerner & Galambos, 1998). Girls were more likely to be distressed than boys; this pattern has been observed previously (Avison & McAlpine, 1992).

**Limitations**

One major limitation is the relatively small sample size in this study. However, the model is very strong and required no post hoc modification in terms of adding supplementary paths or covariates for its excellent fit. The critical issue in sample size is that of statistical power, and our study has ample power to reject false alternative models. In their analysis of power, MacCallum, Browne, and Sugawara (1996) showed that models with 100 degrees of freedom at sample size 200 would have the power of .955 to reject a model of close fit. We have substantially larger degrees of freedom than those tabulated in their table, but because MacCallum et al. also showed that, for a given sample size,
increasing degrees of freedom increases power, the power in our study should be even higher than .955. Thus, the sample size seems more than adequate for our analyses. Furthermore, the use of a rare longitudinal sample of a hard-to-reach population is a positive feature of this study, and a relatively small sample size, although potentially a cause for concern, does not ultimately detract from our findings. Future studies with larger samples that attempt to replicate and expand our results are certainly warranted. Additionally, the bootstrap analysis provided further evidence that the model is plausible and not capitalizing on chance relationships in the data or nonrepresentative individuals that skew the results. Another limitation is the lack of appropriately designed control groups of adolescents without parents that are ill that live in similar circumstances as the disadvantaged adolescents in this study. Future research is planned to address this problem.

Conclusion

Fortunately, much of the sample of PWH has survived longer than was anticipated when this study began in 1994. The introduction of highly active antiretroviral therapies and improved treatment strategies for HIV has been associated with increased survival and improved quality of life for PWH (Eron et al., 1995; Kinloch-de Loes & Perrin, 1995). In the early years of the HIV pandemic, researchers focused primarily on the impact of HIV on the persons who were becoming infected or at high risk of infecting. Increasingly, the importance of recognizing the interconnectedness of social relationships and the effect of HIV on families is being examined (Pequegnat & Szapocznik, 2000), especially because HIV and AIDS have become more prevalent among parents and parents are living longer with HIV and AIDS (Schuster et al., 2000).

This article highlights both the importance of examining the effect of HIV on families by monitoring the behavioral and psychological impact of bereavement and the stress of having a parent living with a chronic illness on children. It also demonstrates the utility of implementing well-thought-out interventions. The findings demonstrate the resiliency of youth to major life stressors and the complex ways in which parental illness influences youth.

References


Four-year cross-lagged associations between physical and mental health in the medical outcomes study. Journal of Consulting and Clinical Psychology, 62, 441–449.


