Original article

Adolescent Adjustment over Six Years in HIV-Affected Families

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Abstract

Purpose: To assess predictors of adjustment of adolescents of parents with HIV (PWH) at three and six years after the delivery of either a coping skills intervention or a standard care condition.
Methods: A randomized controlled intervention trial was conducted with 288 parents with human immunodeficiency virus (HIV) and their adolescent children. Indicators of adolescent adjustment at both three and six years were examined as a function of intervention condition, demographics, prior behaviors, and parental bonds using structural equation modeling (SEM). Adolescent adjustment at six years was also examined as a function of death of the PWH.
Results: *Protective factors:* Youth in the intervention condition reported significantly less substance use three and six years later. In addition, positive parental bonds reported at baseline reduced emotional distress at three years and increased positive future expectations at six years. *Risk factors:* Substance use at three years predicted heightened sexual risk behaviors, continued substance use, and lower future expectations at six years. Early emotional distress and being Latino predicted increased emotional distress at three years. Parental death by three years predicted more sexual risk behavior and lowered future expectations at six years.
Conclusions: A time-limited, family based intervention with adolescents of PWH demonstrated both direct and indirect benefits lasting into early adulthood, especially in decreasing substance use, and identifies key risk factors for problematic adjustment, including the death of a PWH. © 2006 Society for Adolescent Medicine. All rights reserved.

Keywords: Family intervention; Intervention; Adolescent HIV prevention; Bereavement; Parent death

Increasing numbers of families are coping with human immunodeficiency virus (HIV) as the number of infected parents climbs and antiretroviral therapies (ARV) lengthen the lifespan of HIV-infected parents [1]. Similar to children of parents with other chronic illnesses [2–4] and bereaved children [5], adolescents of parents with HIV (PWH) are likely to experience high levels of stress and to be at risk for long-term negative developmental outcomes. Although we have previously demonstrated that a family-based intervention resulted in improved emotional, behavioral and developmental outcomes for both parents and their adolescent children over six years [6–8], we have not examined the

relationships among potential predictors of adolescent adjustment. Using a structural equation model, we examine multiple predictors of adolescent adjustment at recruitment, three years, and six years later, including intervention or control group membership, parental death, and parental bonding.

Indices of adjustment in young adulthood

Four key adjustment outcomes were examined at three and six years for the adolescents of PWH who aged into early adulthood over the course of the study: substance use, emotional distress, sexual risk acts, and expectations for one's life path. Each of these domains is likely to be influenced by having a PWH [8]. For example, most of the adolescents' parents (84%) had been involved in hard drug use. Children of substance abusers are themselves at risk for substance abuse [9], which can occur from multiple path-

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ways. Parents may model substance use that their children imitate or even engage in drug use with their children. Alternatively, substance-abusing parents are less likely to monitor their children's activities, including their substance use, which allows children to develop undesirable behaviors. For youth, high levels of stress, often associated with higher levels of substance use, can come from many sources: HIV-related stigma, parentification (e.g., taking care of younger siblings, handling household chores), minimal economic resources, racial or ethnic prejudice, or parental unemployment due to illness [10,11]. Many PWH live in neighborhoods with high rates of abuse; thus, regardless of the pathway, adolescents of PWH are anticipated to be at risk for substance abuse. Similarly, frequent and early sexual risk behaviors in adolescents are associated with high levels of emotional distress and low parental monitoring [12,13].

Many PWH are depressed (84% in the current sample), and parental depression is associated with higher rates of depression among their children [14,15]. Similar to externalizing problem behaviors, emotional distress in youth is anticipated to increase with heightened life stressors associated with parental HIV diagnoses [1]. Adolescents may experience a variety of negative emotions related to parental illness: guilt for being healthy, depression induced by anticipated bereavement, excessive concern about minor transgressions, or inadequacy in meeting their parent's needs [15].

Finally, expectations for adolescents' futures are anticipated to be lower among children of PWH. Typically, as young people prepare to leave home, their expectations for their own life path become more focused [16]. For the adolescent children of PWH who experience the anticipated or actual death of a caretaking parent, however, setting future goals may be difficult [8].

Protective factors

Intervention condition. To mitigate the negative impact of parental HIV, an intervention was designed to be delivered in three modules, with each module designed to facilitate family adjustment as PWH encountered a different phase of HIV disease. When the study was initiated, PWH were anticipated to die in about 14 months and parents were recruited as they were registered into the Division of AIDS Services in New York City. Thus, Module 1 addressed parents' skills in coping with negative emotions related to HIV illness, making decisions about serostatus disclosure to children, and reducing their own substance use and sexual transmission acts. Module 2 included both parents and adolescents (if the parent had disclosed their serostatus) and encouraged parents to make custody plans and to help their children adjust to their parent's HIV status. For adolescents, Module 2 aimed to decrease youth's problem behaviors, emotional distress, and teenage pregnancy. Finally, if par-

ents died, their adolescent children and guardians were offered a third intervention module to set new life goals and to improve their guardian-youth relationship. The intervention was based on a cognitive-behavioral, skills training model, and was delivered in small, facilitated groups.

We anticipated that the quality of the parent-child relationship would predict adolescent adjustment over time. Positive parent-child relationships typically buffer adolescents from stressful life situations and would be likely to influence the impact of HIV over time [17]. Assessed as parental caretaking and protectiveness, we hypothesized that positive parental bonding at recruitment would predict better adolescent adjustment over time.

Risk factors

Bereaved by parental death. In our cohort, almost half of the PWH died over a three-year period. Having a parent die is often identified as the most serious stressor of childhood [5], yet there are few longitudinal data to support this assertion. We have found only three U.S.-based studies of adolescents bereaved by parental death in the past 25 years [18–20]. The impact of bereavement is unclear in these studies. Some researchers find that adjustment is relatively good immediately after parental death and that it decreases slowly over time [21]. Others find that adjustment is poorest immediately after parental death and improves over time [22–24]. In this sample, prior longitudinal analysis has shown greater overall emotional distress and risk behaviors over one year before the death of the PWH relative to the postparental death period [25]. Given these equivocal data, we were uncertain whether parental death would have a greater impact on youth's adjustment over six years compared with youth living with a chronically ill parent.

Our sample was predominantly low income, African-American and Latino PWH. There have been a substantial number of studies that have demonstrated developmental, gender, and ethnic differences in each of the outcome measures. Younger adolescents typically have highly unrealistic future expectations that are very similar across ethnic groups [26]. With age, future expectations become more realistic and differentiated by ethnic group [27]. There are ethnic differences in problem behaviors (e.g., African-Americans often report lower rates of substance use than youth of other ethnic groups [28]), as well as emotional distress (Latino adolescent females report higher levels of depression compared with females of other ethnic groups [29]).

In summary, we examine the predictive pathways of the expected risk and protective factors on indices of adolescent adjustment, including reduction of substance use, sexual risk acts, emotional distress, and positive expectations for the future.

Method

Participants

A representative sample of parents with HIV was recruited from the New York City Division of AIDS Services from August 1993 to March 1995: 71.6% (n = 307/429) of PWH were recruited with voluntary informed parental consent and youth assent, reflecting 84% (n = 307/364) of the traceable PWH [6–8]. The Institutional Review Boards at Columbia University, the University of California Los Angeles, and the Division of AIDS Services approved the project and also approved the informed consent documents provided to the parents and children. None of the children were HIV-positive.

From 307 PWH, 413 adolescents were eligible for participation in this study (average n per family = 1.5, SD = .7, range 1–5). Families (PWH and all their adolescent children) were randomly assigned by computer to the coping skills intervention condition (n = 153 PWH, n = 206 adolescents) or the standard care condition (n = 154 PWH, n = 207 adolescents) at the completion of the baseline interview. During years one to three of the study, 136 (44.5%) of the PWH died; an additional 22 (total, 51.5%) parents died in years four through six of the study. The number of deaths did not significantly differ by condition (intervention: n = 78, control: n = 80), and the current study uses death of parent by three-year follow-up as a predictor of both three- and six-year outcomes.

Annual re-evaluation rates were high (ranging from 82% to 94%) and were similar in the intervention and control groups. To avoid dependencies in the data, one youth was randomly selected from each family (n = 307 families); 90% (n = 288) of youth eligible for the analysis participated in the baseline, three-year, and six-year follow-up points.

Standard care condition

Each PWH was assigned to a social worker who functioned as a case manager and had an ongoing relationship with the family, assisting with referrals and emergency care needs. The Division of AIDS Services provides access to a broad range of services based on need to PWH and their children (e.g., rent subsidies, home care, child care, food banks, mental health services, and medical care).

Intervention: Project TALC (Teens and Adults Learning to Communicate)

A detailed manual contained the specific goals, activities, and scripts for each session of the enhanced condition (http://chipts.ucla.edu). The three intervention modules were delivered in small groups held on alternating Saturdays in a community center or school with one two-hour session in the morning and another two-hour session in the afternoon. Delivered over 15 weeks, Modules 1 and 2 included 24 parent sessions and 16 youth sessions. Bereaved youth and their caregivers participated in Module 3, which included 16 sessions for both youth and caregivers. Intervention attendance was 61% among PWH, 78% among adolescents, and 56% among caregivers. Quality assurance ratings conducted on 10% of videotaped sessions indicated high fidelity and satisfaction with the intervention.

Survey procedures

Interviews of 1.5 to 2 hours were conducted in English or Spanish by a multi-ethnic team at recruitment and at three and six years, with a six-month window at three and six years; youth received a $25 incentive for each interview.

Variables

To obtain adequate measured indicators of the hypothesized latent variables, pertinent items from the sub-scales of the survey for the adolescents were selected for inclusion. In addition, single-item manifest demographic variables were used to represent gender, ethnicity, and age; two dichotomous variables represented intervention group membership and whether the parent had died before the 36-month follow-up assessment. "Recent" behaviors always refer to the past three months.

Single item variables

Demographics included age in years at baseline, gender (0 = males, 1 = females), and ethnicity (1 for Latinos, 0 for all others).

Two dichotomous variables were used as predictors of three- and six-year outcomes: *parental death* by the time of the three-year assessment (44.5% of parents had died by the time of the three-year assessment; 0 = no, 1 = yes) and *intervention group membership* (0 = control group [51%], 1 = intervention group [49%]).

Latent variables

Emotional distress. The Brief Symptom Inventory (BSI) [30] was administered at all three time periods. Symptoms experienced in the last week were assessed. Mean depression, anxiety, and phobic anxiety subscale scores were used as measured indicators of an emotional distress latent variable at each time period. Ratings ranged from 0 to 4, and higher scores indicate more distress.

Recent sexual risk acts. Sexual risk acts were assessed at the three-year and six-year follow-up evaluations. Included in this latent variable were measured indicators: 1) reporting their total number of sexual partners in the past three months. The question was worded: "With how many different people have you had sex during the past three months;" 2) whether they reported having multiple partners (yes = 1, no = 0); and 3) the number of casual partners they had in the past three months. The subcategory of casual partner was defined as someone other than "a regular partner that you have sex with on an ongoing basis like a boyfriend or girlfriend, or a lover or spouse."

Recent substance use. Substance use was assessed at the three- and six-year follow-ups. Measures included 1) the number of times they had drinks of alcohol in the past three months (frequency); 2) the quantity of alcohol used in a day on the days that they drank. The question was worded, "About how many drinks of beer, wine, or liquor did you usually have in a day on the days that you drank during the past three months?" Each 40-ounce bottle was counted as four drinks ; and 3) marijuana use coded as the number of days of use. Other substances were reported too infrequently to be used in the analysis.

Positive future expectations. Positive future expectations were assessed only at the six-year follow-up with 11 self-report items rated on a one- (not very likely) to six-point (very likely) scale and were reverse-scored if necessary to keep higher scores as positive outcomes. Items were combined randomly into three measured indicators. Youth rated their future expectations for a range of future events in their lives regarding financial security and family life. For example, one item asked: "How likely is it that as an adult you will have difficulty finding a good job?"

Positive parental bonds. (Parker Bonding Instrument) [31]. This latent variable was available at baseline only. Self-reported items were rated on a one to four scale ("very unlikely" to "very likely") with negative responses reversed when necessary so that higher scores indicated positive bonds. The four pre-existing subscales of the Parker Bonding Instrument were used as the four indicators of the latent variable for parental bonds: controlling, rejection, independence, and caring. Thus, positive bonds were characterized by reports of parenting behavior that was highly caring, encouraged the child's independence, and reflected fewer rejecting or controlling behaviors toward the child.

Analyses

Structural equation modeling (SEM) using latent variables was used in this study. SEM compares a proposed hypothetical model with a set of actual data. The closeness of the variance-covariance matrix implied by the hypothetical model to the empirical variance-covariance matrix is evaluated with various goodness-of-fit indices described below. SEM permits simultaneous assessment of relations among several independent and dependent variables in a single model while avoiding problems of multicollinearity; in addition, one is able to examine relations among latent rather than measured variables [32]. Latent variables (or constructs) account for random or measurement error among the measured variables and may be considered analogous to factors in a factor analysis [33]. This method also provides estimates of relations among hypothetical constructs.

The EQS structural equations modeling program was used to test the hypothesized latent variable model. The closeness of the hypothetical model to the empirical data was evaluated statistically through goodness-of-fit indices and the root mean square error of approximation (RMSEA). Goodness-of-fit of the models was assessed with Satorra-Bentler robust fit statistics (the Satorra-Bentler χ^2 [S-B χ^2] degrees of freedom [*df*] ratio), and the Robust Comparative Fit Index (RCFI) because the data were multivariately kurtose with a normalized estimate of 90.5 [34]. A χ^2 *df* ratio of 2:1 is desirable. The RCFI ranges between zero and one and compares the improvement of fit of a hypothesized model to a model of complete independence among the measured variables while adjusting for sample size. Values close to .95 are desirable for the RCFI [35]. We also report the RMSEA for the models [36,37]. The RMSEA indicates lack of fit per degrees of freedom, controlling for sample size, and values less than .06 indicate a close fitting model [38].

Models

Preliminary confirmatory factor analyses

An initial confirmatory factor analysis (CFA) was performed with each hypothesized latent construct predicting its proposed manifest indicators. All latent constructs and measured demographic variables were correlated without any presumption of temporal ordering. This preliminary analysis assessed the adequacy of the proposed factor structure (measurement model) and the relationships among the latent and manifest demographic variables. We did not include the additional intervention group membership and parental death variables in the CFA because we wanted to assess their impact only on the outcome variables in the longitudinal predictive path model. In addition, preliminary analyses ascertained that the intervention and group membership variables were not significantly related to any of the baseline variables. The only a priori correlated error residuals allowed in the CFA were those between measured variables assessed the same way at each wave (e.g., anxiety at baseline, anxiety at three years, alcohol frequency at three years, alcohol frequency at six years). If the a priori associations were not statistically significant, they were dropped from the CFA model. No other nonhypothesized correlated error residuals were allowed.

Path model

Once the factor structure was confirmed, a longitudinal predictive model was tested in which the demographic variables, positive parental bonds, and emotional distress at baseline predicted the three-year outcome variables of emotional distress, sexual acts, and substance abuse. Parent death and intervention group membership were included as predictors as well. In turn, the three-year variables, parent death, and intervention group membership predicted the six-year outcomes of sexual behavior, substance abuse, emotional distress, and positive future expectations and outcomes. Nonsignificant paths were gradually deleted until only significant paths remained. To add greater explanatory

power to the model and to assess long-term effects of the baseline constructs and demographics on the six-year outcomes, we used results of the Lagrange Multiplier (LM) test [39] to add significant paths from baseline to six-year outcomes in the longitudinal model. For instance, it was expected that emotional distress at baseline would predict emotional distress at six years due to the similar way it was measured at both time points and due to stability across time. We also expected that early parental bonding would have long-term effects on the six-year outcomes. Indirect effects of baseline variables on six-year outcomes are also reported.

Results

Prior comparisons of the adolescents and the PWH in the intervention and standard care conditions at recruitment indicated that randomization resulted in well-balanced groups [6]. Intervention status was not associated with any demographic variable or parental death. The adolescents' mean age at baseline was 14.7 years (SD = 2.0, range 11–19), so that by the six-year assessment the mean age was nearly 21 years. More than half (55%) were female. Most adolescents were Latino (52%) or African-American (38%).

Confirmatory factor analysis

A confirmatory factor model estimated the factor structure and relationships among the latent and demographic variables. Table 1 reports summary statistics of the measured variables and the factor loadings of the hypothesized factor structure. Means and standard deviations are also reported for the separate intervention and control groups. All factor loadings were significant ($p \leq .001$). Fit indexes were all acceptable: S-B χ^2 = 477.82, 365 *df*; RCFI = .95; RMSEA = .03. Correlations among the demographics (e.g., age and gender) were nonsignificant and dropped from the final CFA model. Table 2 reports the bivariate correlations among the constructs of the model including associations with intervention status and parent death by the time of the three-year follow-up. Membership in the intervention group was associated with more positive parental bonds at baseline (.16, $p \leq .05$), and with less substance use at three years and six years ($-.11$, $-.20$, $p \leq .05$).

Path analysis

In the more parsimonious path model, the baseline demographics and psychosocial constructs, as well as intervention status and parental death, were positioned as predictors of three-year behaviors. In turn, the three-year behaviors, intervention status, and parental death predicted the six-year outcomes. The final predictive structural equation model is presented in Figure 1 after model trimming and addition of significant baseline predictors to the six-year outcome variables as suggested by the LM test. Fit indexes were acceptable: S-B χ^2 = 575.29, 460 *df*; RCFI = .95; RMSEA = .03.

Notably, participation in the intervention predicted less substance use at both three and six years. More substance use at three years predicted several dysfunctional outcomes: higher rates of sexual behavior, more continued substance use, and lower positive future expectations and outcomes. Parental death predicted more sexual behavior and lowered future expectations at six years.

Positive parental bonds at baseline predicted less sexual behavior and less emotional distress at three years, and predicted more positive future expectations and outcomes six years later. Beyond the expected stability of similar behaviors across time, more sexual behavior at three years predicted more substance use at six years; more emotional distress at three years predicted more substance use at six years; and, as mentioned above, more substance use predicted more sexual behavior and lower positive future expectations at six years.

Older participants reported more sexual behavior and drug use at three years; males reported more sexual behavior at the three- and six-year assessments as well as more substance use at three years than females. Females reported more emotional distress at baseline and at three years. Latino adolescents reported more positive parental bonds at baseline and also more emotional distress at three years.

Indirect effects of the baseline variables on the six-year outcome latent variables were examined. Male gender exerted significant indirect positive effects on sexual behavior and drug use at six years. This effect was mediated through drug use at three years. Female gender had an indirect effect on more emotional distress mediated through prior emotional distress; female gender also impacted more positive future expectations mediated through less drug use. In addition to its direct effect on drug use at six years, participation in the intervention had a significant indirect effect on drug use at six years mediated through less use of drugs at three years. Being older had an indirect effect on both sexual behavior and drug use at six years mediated through the same prior behaviors at three years. Less positive parental bonds at baseline significantly impacted increased sexual behavior, drug use, and emotional distress at six years mediated through prior emotional distress and sexual behavior.

Discussion

Our analysis provides strong support for delivery of a family-focused, coping skills intervention that provides long-term benefits to adolescent and young adult children of PWH. We found significant direct and indirect protective effects for substance use among youth in the intervention condition over the six years after our program. In turn, we observed the pervasive and deleterious effects of greater

Table 1
Group means and standard deviations; factor loadings of measured variables in CFA model

	Control group Mean (SD) (n = 148)	Intervention group Mean (SD) (n = 140)	Whole sample Mean (SD) (n = 288)	Factor loadings[a]
Baseline				
Demographics				
Age (years)	14.82 (1.90)	14.72 (2.09)	14.77 (1.99)	—
Gender (1 = male, 2 = female)	.56 (.50)	.54 (.50)	.55 (.50)	—
Hispanic	.50 (.50)	.55 (.50)	.52 (.50)	—
Emotional distress				
Depression	.66 (.79)	.73 (.84)	.69 (.81)	.82
Anxiety	.48 (.69)	.51 (.66)	.50 (.67)	.91
Phobic anxiety	.47 (.70)	.50 (.74)	.49 (.72)	.72
Positive parental bonds				
Controlling (R)[b]	2.80 (.63)	2.80 (.58)	2.80 (.61)	.28
Rejection (R)	3.09 (.66)	3.27 (.67)	3.17 (.67)	.63
Independence	2.97 (.59)	2.99 (.67)	2.98 (.63)	.34
Care	3.22 (.71)	3.39 (.67)	3.30 (.69)	.56
3-Year follow-up				
Sexual behavior				
Number partners	.63 (.69)	.71 (.79)	.67 (.74)	.84
Multiple partners	.08 (.27)	.12 (.33)	.10 (.30)	.86
Casual partners	.11 (.41)	.21 (.54)	.16 (.48)	.74
Substance use				
Alcohol frequency	4.95 (16.46)	2.39 (5.76)	3.70 (12.51)	.70
Alcohol quantity	1.28 (2.24)	1.06 (2.44)	1.17 (2.33)	.43
Marijuana frequency	12.34 (34.44)	10.50 (28.89)	11.45 (31.82)	.53
Emotional distress				
Depression	.55 (.82)	.54 (.83)	.54 (.83)	.77
Anxiety	.31 (.59)	.37 (.62)	.34 (.61)	.95
Phobic anxiety	.25 (.57)	.29 (.65)	.27 (.61)	.73
6-Year follow-up				
Sexual behavior				
Number partners	.95 (1.78)	.89 (.99)	.92 (1.45)	.68
Multiple partners	.10 (.30)	.09 (.29)	.10 (.30)	.88
Casual partners	.18 (.48)	.12 (.39)	.15 (.44)	.97
Substance use				
Alcohol frequency	6.40 (18.62)	3.55 (8.35)	5.01 (14.61)	.39
Alcohol quantity	1.64 (2.56)	1.47 (2.18)	1.56 (2.38)	.55
Marijuana	18.10 (43.11)	8.53 (24.31)	13.45 (35.51)	.52
Emotional distress				
Depression	.44 (.67)	.44 (.76)	.44 (.71)	.79
Anxiety	.27 (.46)	.35 (.65)	.31 (.56)	.92
Phobic anxiety	.23 (.47)	.28 (.61)	.25 (.54)	.80
Positive expectations and outcomes				
Outcome 1	4.31 (1.26)	4.59 (1.30)	4.45 (1.28)	.78
Outcome 2	4.98 (1.08)	5.08 (1.07)	5.03 (1.08)	.66
Outcome 3	4.87 (1.28)	4.94 (1.14)	4.90 (1.21)	.84

[a] All factor loadings significant ($p < .001$).
[b] Reverse-scored.

substance abuse on several critical indicators of young adult adjustment.

The mechanism by which some of these longer term benefits occur is unclear. Yet, youth who reported positive parent-child bonding at baseline later reported less emotional distress, less sexual risk-taking, and greater expectations for the future. Positive parent-child relationships appeared to provide significant buffer against the risks of HIV and reduce stress in young people's lives after the death of a parent. Future research would benefit from examining the differential importance of parenting, such as parental monitoring relative to caring behaviors. This also underscores the importance of preventive interventions that enhance positive parenting skills, as well as parent-child relational functioning. Future intervention trials must also be designed to evaluate in greater detail the impact of the intervention on the mechanisms and processes of change within these families.

Table 2
Correlations among variables in confirmatory factor analysis

	1	2	3	4	5	6	7	8	9	10	11	12	13
Baseline													
1. Age	—												
2. Gender	−.02	—											
3. Hispanic	−.05	−.01	—										
4. Emotional distress	.07	.16[b]	.02	—									
5. Positive parental bonds	−.16[a]	−.09	.13[a]	−.24[c]	—								
3-Year follow-up													
6. Sexual behavior	.23[c]	−.14[a]	−.08	.08	−.19[b]	—							
7. Substance use	.13[a]	−.17[b]	−.09	.12[a]	−.09	.21[b]	—						
8. Emotional distress	.05	.20[c]	.17[b]	.49[c]	−.22[c]	−.02	.12	—					
6-Year follow-up													
9. Sexual behavior	.09	−.19[c]	−.02	−.01	−.11	.23[c]	.29[c]	−.00	—				
10. Substance use	.22[b]	−.15[a]	−.04	.11	−.20[a]	.26[b]	.57[c]	.20[b]	.47[c]	—			
11. Emotional distress	.01	.13[a]	.03	.40[c]	−.13[a]	−.02	.07	.61[c]	.01	.29[c]	—		
12. Positive expectations & outcomes	−.08	.02	−.01	−.14[a]	.25[c]	−.03	−.26[c]	−.12[a]	.02	−.22[b]	−.09	—	
Additional correlates													
13. Intervention group member	−.02	−.02	.05	.03	.16[a]	.09	−.11[a]	.05	−.06	−.20[a]	.06	.07	
14. Parent died by 3 year follow-up	.00	.10	−.13[a]	.14[a]	.04	−.06	.11	.06	.10[a]	.06	.03	−.21[c]	−.04

[a] $p \le .05$; [b] $p \le .01$; [c] $p \le .001$.

In addition to the impact of the intervention, this model identifies other important pathways for youth to develop risky lifestyles. Consistent with research with adolescents who are not in families affected by HIV, substance use and sexual risk behaviors increase with age and are more common among males. Females are more likely to be emotionally distressed both at recruitment and over time, again consistent with other studies [1,6–8]. Substance use at the

six-year follow-up assessment was also predicted by more sexual risk acts and greater emotional distress three years earlier. There is a closer relationship between internalizing symptoms of emotional distress and externalizing symptoms of substance use and sex over time, as predicted [6–8].

Youth of PWH are likely to be at risk for substance use, in part related to parental modeling of substance use. However, the rates of alcohol and marijuana use were similar to other studies of ethnic minority youth during a similar time period [40]. Furthermore, symptoms of emotional distress of HIV-affected youth are similar to national norms for adolescent emotional distress [6–8]. Therefore, not all adolescents of PWH demonstrate multiple problem behavior syndrome. Because PWH are living longer, ongoing support mechanisms must be routinely implemented for families affected by HIV to avoid the long-term negative consequences of HIV for families.

Parental death predicts more sexual risk behaviors and reduces positive expectations for adulthood. Consistent with our earlier findings [6–8], frequent sexual risk behavior places adolescents at risk for early pregnancy and sexually transmitted diseases. Because many PWH contract HIV in their primary romantic relationship, their children may have more complex emotional reactions to their own romantic relationships. Alternatively, the young people could be modeling their parent's risky sexual behaviors or may be more sexually active because they lack a parent monitoring their sexual practices. Parental death also predicts lowered expectations for the future in the realms of establishing stable, supportive romantic relationships and attaining educational and career goals. The untimely loss of a parent during adolescence may result in a foreshortened sense of future possibilities as youth enter young adulthood.
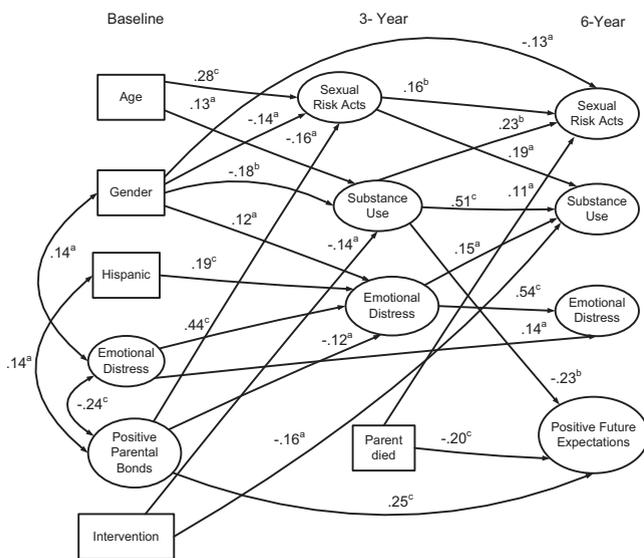

Figure 1. Significant standardized regression paths predicting young adult outcomes among 288 children of parents with HIV/AIDS. Large circles represent latent variables; rectangles represent single-item indicators. Gender: 1 = male, 2 = female; negative coefficients associated with males. Single-headed arrows represent regression coefficients; double-headed arrows represent correlations. [a] $p \le .05$; [b] $p \le .01$; [c] $p \le .001$.

Summary

This study identified predictive pathways of risk and protective factors that may guide future prevention and treatment interventions for youth of PWH. In this study, a family-based, cognitive behavioral intervention for adolescents of PWH demonstrated both direct and indirect benefits on adolescent adjustment that persist into early adulthood, especially in decreasing substance use over time. Youth who lose a parent to HIV illness are at greater risk for adjustment problems as they enter young adulthood, whereas the protective effect of positive parent-child bonds on youth emotional distress, sexual risk-taking, and future expectations suggests the potential role of interventions that enhance developmentally appropriate parent-child interactions.

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