

CORRELATES OF EMOTIONAL DISTRESS AMONG HIV+ YOUTHS: HEALTH STATUS, STRESS, AND PERSONAL RESOURCES^{1,2}

Mary Jane Rotheram-Borus, Ph.D., Debra A. Murphy, Ph.D.,
Helen M. Reid, M.A., and Christy L. Coleman, Ph.D.
University of California, Los Angeles

ABSTRACT

The level of emotional distress and the impact of stress and personal resources on distress were examined among 149 youths aged 14–23 who tested seropositive for the human immunodeficiency virus (HIV+). These HIV+ females and males (the males were predominantly gay and bisexual) were relatively healthy (M T cells = 516; 17% T cells < 200; 3.8 physical symptoms in the previous three months) and reported levels of emotional distress and self-esteem similar to uninfected adolescents. Youths experienced about three stressful life events in the previous three months, primarily death/illness of friends and violent crimes. Youths were less likely to utilize self-destructive, avoidant, and depressed coping styles in contrast to taking positive actions. Social support from parents, friends, and romantic partners was high, but these support persons often engaged in sexual and substance use risk acts. Controlling for youths' physical health status, increased emotional distress was associated with significantly lower self-esteem, higher stress, and negative coping styles. Social support did not mediate emotional distress among HIV+ youths.

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INTRODUCTION

The World Health Organization estimates that half of the 14 million people worldwide who are infected with the human immunodeficiency virus (HIV) were infected between the ages of 15 and 24 years (1). In New York City alone, it is estimated that 20,000 youths are HIV positive (HIV+) (2). However, relatively few youths living with HIV know their serostatus. Many service providers are opposed to HIV testing among adolescents (3), and most HIV-infected persons remain asymptomatic for some time (4). Therefore, even though the estimated number of HIV+ adolescents is high, few are identified or linked to medical care (5). Consequently, we know little about these

adolescents, and most published reports have focused on their transmission behaviors (6–8). In addition to protecting others from infection by youths living with HIV, long-term survival of the youths themselves will depend on maintaining their mental and physical health. Designing effective interventions to help these youths maintain their health will depend on identifying predictors of emotional distress. A substantial body of theoretical and empirical research has documented that emotional distress, as well as physical health, are mediated by low levels of stress and high levels of personal resources (9–12). Therefore, the goals of this study were: (a) to examine the level of emotional distress and physical health status among HIV+ adolescents, and (b) to examine how stress and personal resources (stress, self-esteem, coping, and social support) mediate emotional distress.

Emotional distress is common among HIV+ adults (13,14). For example, Chuang et al. (13) found that both asymptomatic and symptomatic HIV+ persons have significantly higher levels of depressive symptoms, mood disturbance, and anxiety than uninfected persons. Similarly, high emotional distress is found among the adolescents at highest risk for HIV: gay/bisexual males, young women, and injecting drug users (15,16). For example, between 30% and 39% of gay and bisexual male youths reported suicide attempts (17,18) and emotional distress (19,20); 72% have mental health problems requiring professional consultation (17). Adolescent females are at enhanced risk; 21% of adolescent females report attempting suicide (21), and females are twice as likely as males to be depressed (22). Many adolescent substance abusers have a diagnosis of major depression (23). Rates of depression are higher among African-American (24) and Latino youth (25) compared to Anglo youth, and because youths living with HIV are more likely to be African-American and Latino (4,26), it is likely that youths living with HIV are also at increased risk for emotional distress (27,28).

As important as documenting the level of distress among HIV+ adolescents is identifying the predictors of distress. Ostrow et al. (29) found that the number of reported physical symptoms of HIV+ adults was directly related to their mental health symptoms. Similarly, health status has a strong association with emotional distress among adolescents, even more than gender or ethnicity (25). In this study we were interested in three factors associated with emotional distress (viz. stressful life events, coping styles, and social support), given a particular level of health status or symptomatology. Therefore, we examined T-cell counts and physical symptoms in the previous three months and used these health indices as covariates to examine predictors of emotional distress.

Stressful Life Events

Stressful life events are consistently associated with more emotional distress (30–32). Stress related to illness has been

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Reprint Address: M. J. Rotheram-Borus, Ph.D., 10920 Wilshire Boulevard, Suite 1103, Los Angeles, CA 90024.

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found to be a key predictor of emotional distress among HIV+ adults (33–35); sexual, family, and school stressors have been related to increased depression and suicide among high-risk adolescents (21,24), as well as increased emotional distress among gay/bisexual youths (19). Given these data, stressful life events were assessed among youths living with HIV as one factor predicting emotional distress.

Although stressors are likely to exacerbate emotional stress, personal resources such as self-esteem, positive coping styles, and social support may mediate emotional distress (36). HIV+ adults with higher self-esteem have fewer symptoms of psychopathology (14,37) similar to adolescents (38,39). Thus, HIV+ adolescents with high self-esteem are likely to have fewer symptoms of emotional distress.

Coping Styles

Coping styles refers to those cognitive and behavioral efforts used to manage challenging life events (40). Coping styles have been consistently related to adjustment (41). Active behavioral coping has been associated with fewer mental health symptoms (42); avoidance coping has been associated with psychiatric symptomatology among HIV+ adults (34,37,42). We hypothesized that HIV+ adolescents who demonstrate positive, active coping styles (problem-focused, seeking social support, spiritual hope) in contrast to avoidant or maladaptive styles (self-destructive, passive, depressive, problem avoidance) would demonstrate patterns similar to adults; that is, positive, active coping was hypothesized to be associated with less emotional distress.

Social Support

Social support is often associated with fewer mental health symptoms among HIV+ adults (14,42). Adolescents with smaller social networks are less knowledgeable about HIV, have more negative attitudes about safe sex, have lower self-efficacy about their ability to implement safe actions (43), and use condoms less often (44). With fewer social supports, adolescents are more likely to have casual sexual encounters and to have sexual partners who themselves have multiple partners (43). However, HIV+ adolescents probably became infected because the members of their social support networks engaged in high-frequency sexual and substance use risk acts (45). In particular, adolescent females who are HIV+ typically have had only one or two sexual partners (8,46), but they have been older partners who are at high risk for HIV. Therefore, the social support networks of youths living with HIV may not provide the buffering that has been found for HIV+ adults and non-infected adolescents. Therefore, this study examined the level and type of social support among HIV+ adolescents and the associated impact on emotional distress.

In summary, the level of emotional distress, health status, stress, and personal resources (self-esteem, coping, and social support) were documented among a cohort of youths living with HIV. Secondly, the relationships among these factors were examined, controlling for the adolescents' current health status. We predicted that stress would be associated with greater emotional distress and that self-esteem and active coping would be associated with less emotional distress. We had no clear hypothesis regarding the impact of adolescents' social support networks, given the likelihood that these networks are saturated with peers who frequently engage in high-risk sexual and substance use acts.

METHOD

Participants

Over a 14-month period (1994–1995), 149 youths who were seropositive for HIV and linked to adolescent clinical care sites in New York City, Los Angeles, and San Francisco were recruited. Parental consent was obtained if youths were under age 18 years and the parents were available to give consent (i.e. the youth was not homeless) and acting in the youth's interests (e.g. parents were aware of the youth's serostatus and sexual orientation and would not reject the youth at disclosure). There were seven recruitment sites across the three cities. Youths were recruited to participate in an intervention protocol; 27 youths refused to participate when approached by clinical staff, and 11 youths were evaluated by the clinical staff as too unstable, too young, or too ill to participate in the intervention. Each youth was paid a minimum of \$20 (\$25 in San Francisco, \$20 and a meal in New York City) to participate in a 2.5-hour interview at the time of recruitment into the study.

Assessments

After obtaining informed consent, data were collected by interviewers trained in psychosexual and substance abuse assessments, sexual abuse reporting procedures, research ethics, and emergency protocols for clinical care (such as suicide or medical referrals) (47,48). Interviewers collected the information using a computerized assessment instrument (i.e. the questionnaire was programmed on small laptop computers and interviewers were trained to enter responses directly into the laptop during face-to-face interviews with participants).

Emotional Distress: The Brief Symptom Inventory (BSI) (49) was administered to assess overall emotional distress. This 53-item scale covers nine primary symptom domains: somatization, obsessive-compulsiveness, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Participants reported the degree of distress for each symptom during the previous week on a scale from 0 (not at all) to 4 (extremely). Reliabilities in the current sample ranged from .66 for psychoticism to .87 for obsessive-compulsiveness. This is consistent with reliability coefficients established by Derogatis (49) of .71 for psychoticism to .85 on the depression dimension for a sample of 719 psychiatric outpatients. The mean of 53 items was calculated to measure overall emotional distress (Cronbach's $\alpha = .97$), as well as each subscale.

Physical Health Status: Participants were asked to report their current T-cell count and rated each of 23 physical symptoms (8) on a 1 (not at all) to 6 (extremely) Likert scale for the previous three-month period (Cronbach's $\alpha = .89$). A medical chart review was conducted after the three-month assessment; the youths' self-reports of T-cells correlated $r = .70$ with medical chart reports for a sample of 31 youths.

Stress: The correlation between life events with a negative impact and mental health was established with adolescent samples in the development of the Life Events Checklist (50). After conducting focus groups and pilot interviews with youths living with HIV, this scale was modified to record the impact of 34 life events ranging from gaining a new friend to the death of a close friend. The impact of the event was rated on a 1 (very bad effect) to 4 (very good effect) scale. Because previous research has established the link between negative events and emotional

distress (51), the summary stress score reflecting the negative impact of the event was created by assigning the value of 2 for events rated with a very bad effect, 1 for a bad effect, and 0 for otherwise. These scores were then summed across 34 items (Cronbach's alpha = .66).

Personal Resources: The Rosenberg Self-Esteem scale was administered (test-retest reliability .85) (52). Ten statements were rated (e.g. "On the whole, you are satisfied with yourself") on a scale of 1 (strongly agree) to 4 (strongly disagree) (Cronbach's alpha = .87) and coded so that high scores reflected higher self-esteem.

The Dealing with Illness Inventory (34) was modified based on focus groups with youths living with HIV and consultation with clinical staff in each of the recruitment sites to generate a 76-item scale. Factor analysis using oblique rotation was conducted to identify seven theoretically meaningful factors. Items loading inconsistently or lacking face validity were excluded. A secondary factor analysis yielded two factors: negative and positive coping styles. The three subscales loading on the negative coping style factor were: self-destructive (six items; alpha = .80), depression/withdrawal (five items, alpha = .63), and problem avoidance (five items, alpha = .65). First-order factors loading on the positive coping style dimension were: spiritual hope (four items, alpha = .74), social support (five items, alpha = .78), active problem-solving (eleven items, alpha = .88), and passive problem-solving (eight items, alpha = .81). Two scores were calculated: (a) a count of the frequency of the use of each coping style; and (b) the mean frequency of use of each coping style where the frequency has been rated on a scale of 1 (never used) to 5 (always used). The exact items are available from the authors.

For the period covering the previous three months, each youth reported the first initials of each friend, family member, and romantic partner; the number of persons reported in each category were summed to yield three indices of the number of family, peers, and friends and one total index summing the total size of the youth's social network. They also reported the frequency of contact with each person listed as a member of their network on a scale of 1 (a few times a month) to 4 (every day); ratings of the intimacy of the youth's relationship with each person were made using a scale of 1 (not close to anyone) to 4 (good friends). Each member of the network was rated as to the frequency with which they engaged in unprotected sex and substance use, and the mean was calculated for the number of network members frequently engaging in risk acts. A count was made of the number of network members who were known to be HIV+.

Data Analysis: Differences in emotional distress, health status, stress, and personal resources associated with ethnicity and gender were examined using a 2 × 3 ANOVA. A regression model was fit with emotional distress as the dependent variable and self-esteem, coping, social support, and stress as predictors controlling for physical health status. Gender and ethnicity were initially included as independent variables in the regression analyses. However, these demographic variables were not related to emotional distress or the predictor variables in the regression and, therefore, were dropped from the analysis.

RESULTS

Description of Youths

Three-quarters of the youths were male, and most of them labeled themselves as gay or bisexual (98/112) or engaged in

same-gender sexual activity (7/112; total gay/bisexual males = 105/112). Most HIV+ females (25%, $N = 37$) reported themselves to be heterosexual (33/37). Overall, youths had a mean age of 21.1 years ($SD = 1.9$; range = 14 to 23). The females were significantly younger; the age gap was two years (20 versus 22 years old) and 60% were aged 20 or younger. In contrast, 23% of the males were aged 20 or younger. Overall, 33% of the youths were Latino, 22% were Anglo, 27% were African-American, and 18% were another ethnic group. Ethnicity varied significantly by gender ($\chi^2 = 19.1$, $df = 6$, $p < .004$) (e.g. 84% of females were Latina or African-American in contrast to 52% of males. Males were significantly more likely to be Anglo than the females (28% versus 5%). Youths' parents had typically graduated from high school (65% mothers, 79% fathers). The families' religious backgrounds were diverse (24% Jewish, 28% Catholic, 14% Protestant, 35% atheist, other). Most youths described themselves as spiritual or religious (62% females; 73% males), although few attended services (11%). Overall, about one-third of the youths considered themselves very poor, one-third described their economic and living situation resources as adequate, and one-third were comfortable. There did appear to be significant gender differences in economic resources: females were more likely to report themselves as living in comfortable situations. Youths' reports of basic resources such as water/heat (82%), adequate daily food (70%), and automobiles (38%) supported youths' global ratings of their economic resources. Almost all youths had been employed at some point over their life span, an activity that varied by gender (68% females; 94% males).

On average, youths had tested seropositive for HIV more than two years earlier; 7% had tested within the previous three months and 69% had tested more than one year earlier. Youths were diagnosed a mean of 29.5 months prior to recruitment ($SD = 24.5$, range = 0 to 145 months). Most youths appeared to contract HIV through their sexual behavior. Injecting drug use was reported by 18.1% of youths at some point, with males far more likely to have been injecting drug users (23.22% males; 5.4% females). The youths were not similar in their history of transmission behaviors across recruitment sites; for example, youths in San Francisco were more likely to be injecting drug users compared to youths in New York City and Los Angeles.

Current Emotional Distress, Physical Health Status, Stress, and Personal Resources

Emotional Distress: The mean scores for the total and subscale scores for emotional distress on the BSI are summarized in Table 1 ($M = 0.937$; $SD = 0.697$; range = 0.038–3.66.) There were no significant ethnic differences or variations due to gender for the global severity index or for any subscale score (somatization, obsessive-compulsiveness, interpersonal sensitivity, anxiety, hostility, phobic anxiety, paranoid ideation, or psychoticism). On a 0-to-4 scale, the mean of 0.937 indicated that youths experienced "a little bit" of emotional distress. There was no one subscale that emerged with more frequent symptomatology; the mean distress for the somatization subscale was relatively low compared to other subscales.

To examine the relative level of emotional distress of this group compared to uninfected, non-clinical samples of adolescents, t-tests (assuming possible unequal variances) (53) were performed between the scores of the youths living with HIV and those of the adolescent reference group used for norming the BSI (49). Two subscale scores were significantly higher for the youths living with HIV compared to the reference group:

TABLE 1

Means and Standard Deviations for the Brief Symptom Inventory Total Score and the Nine Subscales for HIV-Seropositive Females and Males

Inventory Scores	Females (N = 37)		Males (N = 112)		Overall (N = 149)	
	M	SD	M	SD	M	SD
Global Severity Index	1.0	(0.8)	0.9	(0.6)	0.9	(0.7)
Subscales						
Somatization	0.7	(0.8)	0.6	(0.6)	0.6	(0.7)
Obsessive-Compulsive	1.2	(1.0)	1.0	(0.9)	1.1	(0.9)
Interpersonal Sensitivity	1.0	(1.0)	0.9	(0.8)	0.9	(0.9)
Depression	1.0	(1.0)	0.9	(0.8)	1.0	(0.8)
Anxiety	0.8	(1.0)	0.9	(0.8)	0.9	(0.9)
Hostility	1.2	(1.0)	0.9	(0.9)	1.0	(0.9)
Phobic Anxiety	1.0	(1.0)	0.8	(0.7)	0.8	(0.8)
Paranoid Ideation	1.2	(1.0)	1.1	(0.9)	1.1	(0.9)
Psychoticism	0.7	(0.8)	0.8	(0.7)	0.8	(0.7)

(a) the depression subscale ($t = 2.1, df = 164.2, p < .04; M = .96$ versus $.82; SD = .83$ versus $.79$); and (b) the phobic anxiety scale ($t = 4.7, df = 159.5, p < .00001; M = .85$ versus $.54; SD = .78$ versus $.64$).

Physical Health Status: Table 2 presents the prevalence of each major physical symptom and the overall distress level associated with these physical symptoms experienced by youths living with HIV. Overall, youths reported a mean of 3.8 symptoms ($SD = 3.9$) in the previous three months, symptoms that resulted in a general distress level of 2.0 ($SD = 0.7$). On a scale of 1 to 6, a 2 represents mildly distressed. There were no significant differences in the number of symptoms or the levels of distress by gender; however, African-American ($M = 1.6$) and Latino youths ($M = 1.2$) reported significantly fewer symptoms than youths of other ethnic groups ($M = 2.3; F(2,146) = 6.7, p < .002$). The most common physical symptoms experienced were fatigue (32%), trouble sleeping (27%), headache (28%), and runny nose/sinus problems (28%). Youths were least likely to be distressed by pneumonia (3%), hair loss (5%), eye problems (11%), or bruising (11%). The mean number of lifetime illnesses was 1.7 diseases ($SD = 1.6$). Youths on average reported current T-cell counts of 516 ($SD = 352, median = 484, range = 4-2800$); 17.3% of youths reported T-cell counts of 200 or less, which would qualify them for an AIDS diagnosis. There were no significant ethnic or gender differences in T-cell counts.

Stress: Youths experienced a mean of 2.9 events with an average negative impact of 4.1 (range 0 to 26). There were no significant ethnic or gender differences in the overall number of events or in the negative impact of events. Stressful events with the highest prevalence in the past three months were death of a friend (26%) and violence in the neighborhood (e.g. 31% of youths had heard gun shots on their block and 38% reported drug deals on their block). Family stressors were relatively infrequent: 5% had a parent die, 11% had problems with a sibling or an injured family member, 13% of the families had a drug problem in the previous three months, and 14% had a personal injury. Stressors with friends ranged from 14% to 19%; 5% of the youths were robbed and another 5% were physically assaulted.

TABLE 2

Self-Reports of Prevalence, Mean Number, and Level of Distress Associated with Physical Health Symptoms During the Previous Three Months and Lifetime Illnesses for HIV-Seropositive Females and Males

	Females (N = 37)	Males (N = 112)	Overall (N = 149)
Health symptoms			
Physical pain	19%	19%	19%
Coughing/wheezing	22%	19%	20%
Nausea, vomiting, abdominal pain	24%	16%	18%
Rash, itching, or other skin problems	27%	19%	21%
Fatigue, weakness	32%	32%	32%
Dizziness	22%	13%	15%
Fever, night sweats, shaking, chills	8%	18%	15%
Loss of appetite	14%	18%	17%
Trouble sleeping	22%	29%	27%
Eye problems	14%	11%	11%
Headache	27%	28%	28%
Dry or painful mouth, trouble swallowing	11%	13%	12%
Chest pain/tightness	19%	10%	12%
Difficulty breathing or catching breath	16%	12%	13%
Runny nose, sinus trouble	38%	25%	28%
Muscle aches; joint, bone pain	19%	19%	19%
Pain, numbness, or tingling in hands or feet	8%	13%	12%
Overall discomfort	19%	16%	17%
Easy bruising	24%	6%	11%
Sore throat	8%	16%	14%
Hair loss	8%	5%	5%
Pneumonia	3%	3%	3%
Weight loss	16%	11%	12%
M # of Symptoms (SD)	4.2 (4.6)	3.7 (3.7)	3.8 (3.9)
M level of Symptom Distress (SD)*	2.0 (0.8)	2.0 (0.7)	2.0 (0.7)
M Disease Count (SD)	1.5 (1.3)	1.8 (1.6)	1.7 (1.6)
M T-Cell Count (SD)	491 (287)	523 (369)	516 (352)

* Symptom distress is based on a scale where 1 = not at all distressed and 6 = extremely distressed.

Personal Resources: Self-esteem scores ($M = 3.0, SD = 0.5$) were similar to those of uninfected adolescents (52) and were similar across gender and ethnic groups.

Youths were in regular contact with their families and friends. Approximately half of the youths in the sample had weekly contact with their mother (48%) and friends (77%); only 14% had weekly contact with their father. Good friendships were less common; less than a quarter rated themselves as having good friends (23%); 11% did not feel close to anyone. Almost all youths had people they valued or felt were important in their life; many of these were not rated as positive influences, however. Friends were often substance abusers (23.2%) and frequently had unprotected sex (19.6%). On average, each youth knew twelve other friends who were living with HIV. Drug users had the most infected friends; young females knew the fewest HIV+ persons ($M = 9$). There were no significant ethnic or gender differences in number of friends. However, there were

TABLE 3
Multiple Regressions of Physical Health, Personal Resources, and Stress on Brief Symptom Inventory

Independent Variable	b	Beta	t-Statistic (p-value)	Change in R ² upon Entry
Physical health				.272***
Symptom level	0.3125	0.3287	5.364 (.000)	
T-cell count	0.0003	0.1672	2.836 (.005)	
Personal resources				.263***
Self-esteem	-0.4936	-0.3473	-5.023 (.000)	
Positive coping	0.0749	0.0806	1.295 (.198)	
Negative coping	0.2653	0.2169	3.028 (.003)	
Stress in response to life events	0.0370	0.2075	3.472 (.001)	.040***
Constant	0.7249		1.749 (.083)	
F-statistic (d.f.)				28.698*** (6,127)
R ²				.576
R ² adjusted				.555

*** *p*-value < .001.

significant gender differences in the number of important friends ($F(2,146) = 6.44, p < .002$); females had more friends ($M = 7.6, SD = 5.4$) than did males ($M = 4.7, SD = 3.7$). Almost all youths had had romantic relationships in their lifetime (89%), and more than half had had a romantic relationship in the previous three months (54%), a pattern that was similar across genders.

Positive coping styles were more common than negative coping styles among youths living with HIV: youths reported a mean count of 8.8 positive actions out of a potential 11; 2.6 of 4 actions were reported for spiritual acts; 3.3 of 5 social support actions were reported; and 5.5 of 8 passive problem-solving actions were reported. Fewer negative styles were reported, with a mean of 1.5 of a potential 6 self-destructive actions; 2.6 of 5 depressive acts; and 3.3 of 5 avoidance actions. The mean frequency rating of coping (i.e. frequency rated on a 1–5 scale) also indicated that positive styles were reported as used significantly more frequently than negative styles using the matched paired T-tests ($t(df = 148) = 10.6, p < .0005$). The means indicate that youths reported using positive coping styles often ($M = 2.8$) and negative coping styles sometimes ($M = 2.0$). Among the seven coping factors, the only significant gender difference was on the spiritual/hope dimension ($F(1,146) = 3.6, p < .03$); females scored significantly higher ($M = 3.0$) than males ($M = 2.4$). Significant ethnic differences were found for the style of spiritual/hope coping ($F(2,146) = 3.2, p < .043$) with youths of African-American ($M = 2.8$) and Latino youths ($M = 2.7$) utilizing this strategy more than youths of other ethnic groups ($M = 2.3$). Similar patterns of ethnic differences were found for passive problem-solving ($F(2,144) = 3.4, p < .035$) and problem avoidance ($F(2,145) = 6.6, p < .002$); African-American and Latino youths reported these styles more often than youths of other ethnic groups.

Predicting Emotional Distress

Results of the hierarchical regression of physical health status, personal resources, and stress on emotional distress are presented in Table 3. The overall model is significant ($F(6,127) = 28.7, p < .0000$). The predictors explain 55.5% of the variance in emotional distress as measured by the BSI score. The number of physical symptoms and T-cells are positively associated with emotional distress; as a block, the factors explain 27.2% of the variance in the mean emotional distress. After controlling for physical health status, personal resources are also significantly associated with emotional distress; as a block, personal resources explain an additional 26.3% of the variance in emotional distress. A negative coping style is associated with significantly higher levels of emotional distress, whereas higher self-esteem is associated with less emotional distress. Positive coping style is not significantly associated with emotional distress. Stress, due to life events having a negative impact, is associated with higher levels of emotional distress; stress explains an additional 4.0% of the variance in the mean BSI score after controlling for physical health status and the effects of personal resources.

A separate model was estimated using number of friends and friendship strength as personal resources. These network variables were not significantly associated with emotional distress.

DISCUSSION

This study described the level of emotional distress, physical health, personal resources, and stress among youths living with HIV who are linked to medical care. In addition to the level of distress, the prediction of distress by physical health status, stress, and personal resources were examined among youths living with HIV.

Even though the youths living with HIV had been linked to care for about two years, this was a relatively healthy group of adolescents. More than 80% had T-cell counts over 200, 46% had T-cell counts over 500, and 6% had T-cell counts over 1000. Although the youths had two to three physical symptoms in the previous three months, these were not associated with high levels of distress, but were rated at a level that reflected the irritations of daily life (e.g. headache, trouble sleeping, fatigue). Severe symptoms were reported infrequently.

Surprisingly, the overall level of emotional distress among HIV+ adolescents was not significantly higher than in an uninfected sample of adolescents used by Derogatis (49) to norm the BSI. Emotional distress appeared relatively low with only depression and phobic anxiety significantly higher among youths living with HIV compared to the uninfected reference group (49). However, being HIV+ and symptomatic was significantly associated with higher rates of emotional distress, as would be expected from the data on HIV+ adults (29). This relationship suggests that psychotherapeutic interventions may be increasingly important as the adolescents become symptomatic, and that programs designed for these youths should monitor their emotional distress as they become increasingly ill.

Overall, youths living with HIV in our sample reported a substantial number of potential personal resources. Their self-esteem was similar to youths in other national studies (52). They reported relatively frequent contact with family and friends. Youths continued to have romantic relationships. Positive coping styles were more frequently endorsed than negative coping styles. In particular, youths used problem-focused actions, sought social support, and evidenced spiritual hope more often than self-destructive, depressive, and avoidant coping styles.

There were few differences in the youths' personal resources based on their gender or ethnicity, only coping styles varied significantly by ethnicity; African-American and Latino youths were more likely to rely on spiritual coping, passive problem-solving, and problem avoidance compared to youths of other ethnic groups. These differences are consistent with normative differences in religious, group-oriented, and activity-focused values observed among ethnic groups in the United States in very different domains (56). These differences suggest that the process of adaptation to serostatus is likely to vary for youths of different ethnicities (57).

Although evidencing a number of strengths, youths living with HIV also face a number of challenges on a daily basis. Youths reported frequent stressful life events, an average of 2.9 significant events in the previous three months, with substantial negative impact (4.1 on a 6-point scale). Violence appeared to permeate their living environments: 26% had a friend die, 19% had friends injured, drug deals and gun shots were common, and 11% had a murder in their neighborhood. Without a control group of uninfected youths at the same recruitment sites, it is difficult to assess how typical these reports are among disenfranchised adolescents in these AIDS epicenters. In addition, although youths received frequent support from family, friends, and romantic partners, their support networks consisted of family and friends who were using drugs and having unprotected sex. It is not clear whether the support received from these persons would serve to reduce youths' emotional distress and help them establish and maintain healthy lifestyles. Therefore, youths living with HIV evidenced factors that would be likely to buffer emotional distress (e.g. self-esteem, social support,

positive coping styles), as well as factors that would be associated with higher emotional distress (e.g. stressful life events, negative coping styles, friends and family who engage in HIV-related risk acts).

Prior to hypothesizing the implications of these findings, the limitations of the sample should be recognized. Although it is estimated that thousands of adolescents are HIV+, only a small percentage are linked to medical care. The seven collaborating hospitals/community-based agencies in this study are among the largest adolescent medical programs in the country serving youths living with HIV and include two community-based adolescent AIDS social service programs that target youths at highest risk for HIV (gay/bisexual males and homeless youths). In addition, youths were recruited from the major AIDS epicenters; only a few other cities (Miami, Atlanta, Chicago) would be likely to have sufficient numbers of youths living with HIV identified to have been able to participate in this project. Yet, recruiting over a one-year period in three major epicenters resulted in a sample of 149 youths, a small number compared to the anticipated large number of infected, but unidentified, youths living with HIV.

Because so few youths are identified as HIV+, it is likely that this sample is biased in some fashion. The demographics of this sample reflect the gender, ethnic, and age profiles published by the Centers for Disease Control and Prevention (CDC) (15,54) for youths with AIDS aged 15–24 years. Almost all the males either labeled themselves as gay or bisexual or had same-gender sexual activity (105/112). Nationally, very few young HIV+ adolescents are identified and linked to care (7,8), and there were fewer younger adolescents in this sample. However, this sample of youths living with HIV had been linked to care for about two years, so the youths were younger when initially linked to the hospital/community agency. Finally, similar to the national data, most youths were African-American (27%) or Latino (33%); females in particular were from these ethnic groups (82%). New York City's policy regarding HIV testing at childbirth and abortions is likely to be responsible for the larger number of young women recruited in New York City. Other than the similarity in basic demographic features to national data, we do not know how this sample is biased. There does appear to be a cross-section in socioeconomic status, with poor youths overrepresented, particularly among young women. This pattern is also consistent with national data. However, the few numbers of youths living with HIV who are linked to medical care and the recent prophylactic treatments available for HIV+ persons (e.g. 55) suggest that the role of HIV testing among youths at high risk for HIV should be examined.

Given these limitations, a number of hypotheses were confirmed. As noted above, physical health status was significantly associated with emotional distress; personal resources operated as mediators of emotional distress; and stressful life events had additional, independent effects on emotional distress. Some specific hypotheses were not confirmed: among personal resources, social support—measured by the number of friends and strength of friend network—did not affect emotional distress; nor did a positive coping style buffer emotional distress. Self-esteem as a personal resource had a strong buffering influence on severity of emotional distress. In contrast, a negative coping style (self-destructive, problem avoidant, depression/withdrawal) was associated with greater emotional distress, similar to HIV+ adults (34,37,42) and uninfected adolescents (41). Again, consistent

with the data on HIV+ adults (33) and uninfected adolescents (30), coping style was directed primarily at responding to stressful life events, and frequent stressful life events were significantly associated with increased emotional distress. However, unlike research with HIV+ adults (14,42) and uninfected adolescents (43), social support and positive coping styles were not associated with decreased emotional distress. These findings suggest that when designing interventions for youths living with HIV there are a number of strategies that may influence emotional distress. For example, techniques for enhancing self-esteem (58) and coping skills (59) have been previously demonstrated to be effective and may be applicable for youths living with HIV. Future research must focus on evaluating whether similar strategies are indeed effective for youths living with HIV.

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