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Inner-City Children Living With an HIV-Seropositive Mother: Parent–Child Relationships, Perception of Social Support, and Psychological Disturbance

Susan A. Reyland, Ph.D.,[1] **Thomas J. McMahon, Ph.D.,**[2,5]
Ann Higgins-Delessandro, Ph.D.,[3] **and Suniya S. Luthar, Ph.D.**[4]

Despite ongoing concern about the well-being of HIV-seronegative children living in urban poverty with a seropositive mother, very little is known about this expanding population of children. In this cross-sectional study, the psychosocial adjustment of 60 ethnic minority children 11 to 16 years of age who were living with an HIV-seropositive mother was compared with that of 108 children attending public school in the same community. Results of three multivariate analyses of covariance indicated that, after allowance for differences associated with age, gender, ethnicity, and family structure, the HIV-affected group confirmed (a) greater disturbance in the parent–child relationship, (b) less social support, and (c) greater disturbance in psychological functioning. Secondary analysis of the multivariate findings indicated that the differences were characterized primarily by (a) perception of more indifference and hostility in the mother–child relationship, (b) perception of less social support available from parents, friends, and teachers, and (c) less self-esteem. The findings suggest that HIV infection and concurrent problems may compromise parent–child relationships and perception of social

[1]NIDA Postdoctoral Research Training Fellow, Department of Psychiatry, Yale University School of Medicine, New Haven, CT.
[2]Assistant Professor, Department of Psychiatry and Child Study Center, Yale University School of Medicine, New Haven, CT.
[3]Associate Professor, Psychology Department, Fordham University, New York, NY.
[4]Professor, Department of Human Development, Teachers College, Columbia University, New York, NY.
[5]Correspondence should be directed to Thomas McMahon, Connecticut Mental Health Center, West Haven Mental Health Clinic, 270 Center Street, West Haven, CT 06516; e-mail: thomas.mcmahon@yale.edu.

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support in ways that leave older, seronegative children living with an infected mother at risk for psychological disturbance.

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Although there is consensus that children who experience the early loss of a parent represent a population at risk for poor developmental outcomes, much less is known about the psychosocial risks incurred by children living with a chronically ill parent (Armistead, Klein, & Forehand, 1995). What data are available suggest that, when compared with community controls, children living with a seriously ill parent tend to present with relatively poorer psychosocial functioning (Armistead et al., 1995). Moreover, since the beginning of the AIDS epidemic, researchers (e.g., Family Health Project Research Group, 1998; Schuster et al., 2000) have argued that HIV-seronegative children living with an infected mother represent a special group of children living with a chronically ill parent. Surveys (e.g., see Schable et al., 1995; Schuster et al., 2000; Smith et al., 1997) of treatment populations suggest that these children typically reside with a single, increasingly symptomatic mother whose primary risk factor for infection was heterosexual contact. Most of these families are living in poverty in the northeastern and southern regions of the country, and children of African American and Hispanic heritage tend to be disproportionately affected (Schable et al., 1995; Schuster et al., 2000).

Although new treatments have extended the life expectancy of infected individuals, children living with an HIV-seropositve parent must still cope with the threat of having one or, in many cases, both parents die prematurely. HIV infection also typically occurs in the context of other threats to the stability of family environments, particularly poverty and parental substance abuse (Schuster et al., 2000). In addition, anxiety and depression tend to be common in HIV-seropositive women, the progressive nature of the disease can contribute to physical and mental changes that compromise parenting, and social stigma associated with the disease seems to contribute to shame, secrecy, and social isolation. Surprisingly, although there has been extensive discussion (e.g., see Armistead & Forehand, 1995; Faithfull, 1997; Geballe & Gruendel, 1998; Geballe, Gruendel, & Andiman, 1995; Levine, 1996) of these concerns, research examining ways the disease process affects the well-being of children living with an infected parent is just beginning.

At this time, researchers (e.g., Esposito et al., 1999; Forehand et al., 1997, 1998; Forsyth, Damour, Nagler, & Adnopoz, 1996) have begun to show that, like other children living with a chronically ill parent, children living with an HIV-seropositive parent are at risk for psychosocial difficulty. In a comprehensive examination of developmental outcomes, Forehand et al. (1998) recently found that, when compared with children living in the same community with a seronegative mother, African American children 6 to 11 years of age living with an HIV-seropositive mother demonstrated (a) more externalizing symptomatology,

(b) more internalizing symptomatology, (c) less social competence, and (d) less cognitive competence. At this time, there is also evidence from this project (Dorsey, Chance, Forehand, Morse, & Morse, 1999; Klein et al., 2000; Kotchick, Forehand, et al., 1997) and several others (e.g., see Armistead, Klein, Forehand, & Wierson, 1997; Forehand et al., 1997; Kotchick, Summers, Forehand, & Steele, 1997; Rotheram-Borus, Draimin, Reid, & Murphy, 1997; Rotheram-Borus, Robin, Reid, & Draimin, 1998; Rotherham-Borus & Stein, 1999; Steele, Tripp, Kotchick, Summers, & Forehand, 1997; Stein, Riedel, & Rotherham-Borus, 1999) that (a) parental disclosure, (b) perception of the illness, (c) severity of psychiatric distress in the parent, (d) parental substance abuse, (e) family composition, (f) quality of parent-child relationships, (g) social support, and (h) economic stress probably interact in complex ways to influence psychosocial outcomes for this vulnerable population of children.

However, comparative research done thus far has focused almost exclusively on the well-being of children 6 to 12 years of age (e.g., see Esposito et al., 1999; Forehand et al., 1997, 1998; Forsyth et al., 1996). Although Rotherham and her colleagues (Rotherham et al., 1997, 1998, 1999; Stein et al., 1999) have examined the correlates of psychosocial adjustment within a large cohort of adolescents living with an HIV-seropositive mother, researchers have not examined family process and psychological functioning in a comparative study of older, seronegative children living with an infected parent. Consequently, this study was designed to examine the potential impact of maternal infection on quality of parent-child relationship, perception of social support, and psychological disturbance within a sample of older, ethnic minority children living in urban poverty. After adjustment for the potential influence of age, gender, ethnicity, and family size, children living with an HIV-seropositive mother in the context of socioeconomic disadvantage were expected to report greater disturbance in the parent-child relationship, less perceived support, and more disturbance in psychological functioning when compared with children living in similar circumstances with a seronegative mother.

METHOD

Sample

The sample for this study consisted of 168 English-speaking children living in New York City. Participants living with an HIV-seropositive mother were recruited from a community-based, respite program that offered counseling, social, and recreational services to children whose HIV-infected mothers were receiving home health care. All 80 children attending this program at the time the study was done were invited to participate via announcement to the children during program hours and letter to their guardian. Sixty (75%) of the 80 children agreed to participate, provided written assent, and secured written parental permission.

Table I. Characteristics of the Sample

Construct dimension	Full sample	HIV+ mother	HIV- mother
Age	13.64 (1.67)	12.62 (1.58)	14.20 (1.43)
Gender			
Male	39.88 (67)	50.00 (30)	34.26 (37)
Female	60.12 (101)	50.00 (30)	65.74 (86)
Ethnic Heritage			
African-American	42.86 (72)	38.33 (23)	45.37 (49)
Hispanic	52.38 (88)	53.33 (32)	51.85 (56)
Other	4.76 (8)	8.33 (5)	2.78 (3)
Adults in Home	1.65 (0.90)	1.73 (0.84)	1.61 (0.93)
Children in Home	3.70 (2.15)	4.18 (2.74)	3.43 (1.75)

Note. $N = 168$. Values for Gender and Ethnic Heritage represent % (*n*); values for Age, Adults in Home, and Children in Home represent *M* (*SD*).

A comparison group of children not living with an HIV-infected mother was recruited from a public middle school and a public high school serving the same community. A stratified sampling of required English classes representing the academic tracks within both schools was randomly selected. All 225 students enrolled in those English classes at the time the study was done were invited to participate via announcement to the children during school hours and letter to their guardian. One hundred and forty-one (63%) of the 225 students agreed to participate, provided written assent, and secured written parental permission.

At the time of data collection, all students recruited to represent this comparison group also completed a simple screening that asked about chronic medical illness within their family. The one child who confirmed HIV infection in a parent was excluded from the final sample. Thirty-one volunteers who were outside the age range of the HIV-affected group were also excluded leaving a community comparison group of 108 students 11 to 16 years of age living in the same community under circumstances otherwise similar to the HIV-affected group.

The demographic characteristics of the sample are summarized in Table I. As indicated, the participants averaged 13 years of age, and most were ethnic minority youth of Hispanic and African American heritage. A significant proportion (50%) of the sample was living in a single-parent home. As indicated in Table I, the comparison group had more girls ($X^2[df = 1; N = 168] = 3.98; p < .05$), they proved to be somewhat older ($F[1, 166] = 43.86; p < .05$), and they were living in family situations where there were fewer children in the home ($F[1, 166] = 4.72; p < .05$).

Measurement

Quality of Parent–Child Relationship

The Parental Acceptance-Rejection Questionnaire: Child Version (PARQ; Rohner, 1991) was used to measure quality of the parent-child relationship. The

PARQ is a 60-item questionnaire that measures children's perception of four dimensions of parental behavior: (a) warmth and affection (Warmth), (b) hostility and aggression (Hostility), (c) undifferentiated rejection (Rejection), and (d) parental indifference (Indifference). Parallel versions of the instrument are available to secure ratings of maternal versus paternal behavior. Participants in this study only rated quality of the mother-child relationship.

Sixty items representing the frequency of different parental behaviors are rated along a 4-point scale that ranges from *Almost Never True* to *Almost Always True*. The four subscales representing degree of parental acceptance versus rejection are comprised of 10 (Rejection), 15 (Hostility and Indifference), and 20 items (Warmth). Items representing each of the subscales are summed to produce a continuous score, and higher scores on all subscales represent greater disturbance in the parent-child relationship. The development, reliability, and validity of the measure have been described in detail by Rohner (1991), and the instrument has been used in similar research done across cultures with older children, adolescents, and adults (for a review, see Rohner, 2000). In this sample, coefficients alpha representing the internal reliability of the four dimensions ranged from .74 (Rejection) to .94 (Warmth).

Perception of Social Support

The Social Support Scale for Children and Adolescents (Harter, 1985) was used to measure perception of social support. The instrument is a 24-item scale that quantifies perception of social support available from parents (Parents), teachers (Teachers), close friends (Friends), and classmates (Classmates). Each item requires that respondents choose which of two statements is most true about them and then rate how true it is for them. Each item yields a score from 1 to 4, and the six items representing each subscale are averaged to yield a continuous subscale score that also ranges from 1 to 4. Higher scores represent greater perception of social support. The development, reliability, and validity of the scale have been described by Harter. In this sample, coefficients alpha representing the internal reliability of the subscales were .75 for the Friends subscale, .72 for the Parents subscale, .67 for the Teachers subscale, and .51 for the Classmates subscale.

Severity of Psychological Disturbance

The Personality Assessment Questionnaire: Child Version (Child PARQ; Rohner, 1991) was used to measure severity of psychological disturbance. The Child PAQ is a 42-item, self-report questionnaire designed to measure seven dimensions of psychological disturbance: (a) hostility and aggression (Hostility), (b) excessive dependency (Dependency), (c) negative self-esteem (Negative

Esteem), (d) sense of inadequacy (Inadequacy), (e) restriction of emotional response (Restriction), (f) emotional lability (Lability), and (g) negative world view (Negative View). Each subscale is comprised of six items that are rated along a 4-point scale that ranges from *Almost Never True* to *Almost Always True*. Items representing each of the subscales are summed to produce a continuous score, and higher scores reflect greater disturbance in psychological adjustment.

The Child Version of the Personality Assessment Questionnaire was chosen for use in this study because in other research done with culturally diverse samples of children and adolescents it has proven to be a reliable, valid measure of relatively stable disturbance in psychological adjustment occurring in response to chronic difficulty in a parent-child relationship (for reviews, see Rohner, 1991, 2000). In this sample, coefficients alpha representing the internal reliability of the subscales fell between .65 and .75 for all subscales except the Lability (.54) and Dependency (.60) subscales. These indices compared with, or exceeded, those obtained in research done with other samples (e.g., see Rohner, 1991).

Procedure

Although the instruments used in this study were designed to be self-report measures, an interview format was used to collect the data. Each interview took approximately 75 minutes, and the interviews were conducted by an ethnically diverse group of undergraduate psychology students trained in standardized administration of the assessment battery. To facilitate participation by children who might have limited reading skills, each item was read aloud by the examiner and the response recorded on the interview form.

Data were collected from both groups simultaneously. Interviews done with the HIV-affected group were completed over the course of five consecutive Saturdays while participants were present at the community center for regularly scheduled programming. Interviews done with the community group were completed over the course of eight overlapping weeks during school hours. Participants received $5.00 compensation for time spent completing the assessment.

Data Analysis

Multivariate analysis of covariance techniques were used to test for between-group differences associated with HIV status of mother (HIV Status). Because there were some meaningful differences across the two groups, each construct was examined in a statistical model that included demographic characteristics of the child (Age, Gender, and Ethnicity) and two indices of family structure representing the number of adults (Adults in Home) and the number of children (Children in Home) in the home. Between-group differences in three multivariate constructs were explored: (a) quality of the parent-child relationship (Parent-Child

Relationship), (b) perception of social support (Social Support), and (c) severity of psychological disturbance (Psychological Disturbance).

For all three constructs, univariate analysis of covariance (ANCOVA) was used to further characterize the nature of significant multivariate effects. Two sets of univariate analyses were done. In the first set of analyses (Simple ANCOVA), the relationship between HIV Status and each dimension of a multivariate construct was examined in an ANCOVA that included Age, Gender, Ethnicity, Adults in Home, and Children in Home as the covariates. In the second set of analyses (Extended ANCOVA), the relationship between HIV Status and each dimension of a multivariate construct was examined in an ANCOVA that included Age, Gender, Ethnicity, Adults in Home, Children in Home, and the other dimensions of the multivariate construct as covariates. Statistically, this second set of univariate analyses represented a conservative test for a unique relationship between HIV Status and each dimension of a multivariate construct after adjustment for its relationship with the other dimensions of the dependent construct.

In both the multivariate and univariate analyses, eta squared (η^2) values were used to characterize strength of association between the covariates, HIV Status, and the dependent measures. Because the research hypotheses were all directional, a one-tailed test for statistical significance was used to test for differences associated with HIV Status. In the univariate analyses, a simple Bonferroni correction was used to hold the Type I error rate for each multivariate construct at .05.

RESULTS

Parent–Child Relationship

In the first multivariate analysis of covariance, there were no significant relationships involving quality of the parent-child relationship and any of the covariates. However, as indicated in Table II, there was a significant relationship

Table II. Results of Multivariate Analyses of Covariance

	Parent–Child relationship			Social support			Psychological disturbance		
Construct	*df*	Wilks' λ	*F*	*df*	Wilks' λ	*F*	*df*	Wilks' λ	*F*
Age	4, 157	.9771	0.92	4, 157	.9352	2.72*	7, 154	.9287	1.69
Gender	4, 157	.9858	0.57	4, 157	.9634	1.49	7, 154	.9579	0.97
Ethnicity	8, 314	.9525	0.97	8, 314	.9949	0.10	14, 308	.8625	1.69
Adults in Home	4, 157	.9979	0.08	4, 157	.9736	1.06	7, 154	.9660	0.77
Children in Home	4, 157	.9453	2.27	4, 157	.9317	2.88*	7, 154	.9800	0.45
HIV Status	4, 157	.8355	7.73††	4, 157	.7163	15.54††	7, 154	.9116	2.13†

Note. $N = 168$.
* $p < .05$ for two-tailed test of covariates.
† $p < .05$ for one-tailed test of HIV Status.
†† $p < .01$ for one-tailed test of HIV Status.

between quality of the parent-child relationship and HIV Status. HIV Status alone accounted for approximately 16% of the variance in a linear combination of the four dimensions of the construct. Standardized weights used to construct the eigenvector reflected greater disturbance in quality of the parent-child relationship within the HIV-affected group. Results of the univariate analyses summarized in Table III indicated that the multivariate finding was accounted for primarily by significant differences in perception of hostility and indifference that remained significant after adjustment for correlation among the different dimensions of the construct. Least square means indicated that, across the two univariate covariance models, the HIV-affected group reported significantly greater perception of hostility and indifference in their relationships with their mothers.

Surprisingly, a significant difference in perception of rejection also emerged in the Extended ANCOVA, but the direction of the effect was opposite that predicted. That is, after statistical adjustment for the relationships between Rejection and the other dimensions of Parent-Child Relationship, the HIV-affected group reported less perception of rejection. When compared with the results of the Simple ANCOVA, the direction of the effect actually reversed itself. In the zero-order correlation matrix, there was little association between Rejection and HIV Status, and there were strong zero-order relationships involving this dimension and the other dimensions of the construct. There were also strong associations between this dimension and the other three dimensions of the construct in the Extended ANCOVA. Taken together, these results suggest that this particular finding is one of those inconsistent, spurious outcomes that sometimes emerge when this approach to secondary analysis of multivariate findings is used (for discussion, see Tabachnick & Fidell, 1996).

Social Support

In the second multivariate analysis of covariance, there were significant associations involving perception of social support and Age, Children in Home, and HIV Status. Age and Children in Home accounted for 6% to 7% of the variance in a linear combination of the four dimensions of Social Support. HIV Status accounted for approximately 29% of the variance, and standardized weights used to construct the eigenvector reflected less perceived support within the HIV-affected group.

Results of the univariate analyses indicated that perception of support available from parents and teachers increased as age increased and perception of support available from teachers increased as the number of children in the home increased. As indicated in Table III, univariate analyses also reflected marked differences in perception of social support associated with HIV Status. Least square means indicated that perception of social support available from all sources was significantly lower within the HIV-affected group, and significant differences in perception of

Table III. Results of Univariate Analyses of Covariance

	Simple ANCOVA				Extended ANCOVA			
Construct Dimension	HIV+ Mother	HIV- Mother	*df*	*F*	HIV+ Mother	HIV- Mother	*df*	*F*
Parent–Child Relationship								
Warmth	67.94 (1.55)	70.47 (1.42)	1, 160	2.17	70.27 (1.23)	68.51 (1.11)	1, 157	1.51
Hostility	25.60 (1.09)	21.63 (1.00)	1, 160	10.78†	24.58 (0.71)	22.66 (0.66)	1, 157	5.37†
Rejection	16.83 (0.82)	15.90 (0.75)	1, 160	1.07	15.16 (0.54)	16.88 (0.50)	1, 157	7.53
Indifference	27.40 (1.16)	21.75 (1.07)	1, 160	19.27†	26.03 (0.84)	22.39 (0.75)	1, 157	14.93†
Social Support								
Parents	2.84 (0.10)	3.52 (0.09)	1, 160	36.82†	3.06 (0.09)	3.41 (0.08)	1, 157	9.84†
Teachers	2.67 (0.09)	3.28 (0.09)	1, 160	31.22†	2.84 (0.10)	3.19 (0.09)	1, 157	8.35†
Friends	2.77 (0.11)	3.41 (0.10)	1, 160	29.61†	2.96 (0.10)	3.33 (0.09)	1, 157	9.00†
Classmates	2.76 (0.09)	3.03 (0.08)	1, 160	6.67†	2.99 (0.09)	2.90 (0.08)	1, 157	0.58
Psychological Disturbance								
Hostility	13.05 (0.64)	12.36 (0.59)	1, 160	0.94	12.88 (0.55)	12.52 (0.50)	1, 154	0.34
Dependency	17.19 (0.57)	17.18 (0.52)	1, 160	0.00	17.34 (0.59)	17.26 (0.52)	1, 154	0.01
Lability	15.41 (0.53)	14.94 (0.49)	1, 160	0.62	15.12 (0.41)	15.34 (0.31)	1, 154	0.21
Restriction	12.86 (0.54)	11.95 (0.49)	1, 160	2.35	12.11 (0.43)	12.11 (0.33)	1, 154	0.10
Inadequacy	11.38 (0.56)	10.48 (0.51)	1, 160	2.11	10.52 (0.40)	10.71 (0.36)	1, 154	0.18
Negative Esteem	11.16 (0.53)	9.37 (0.48)	1, 160	9.25†	10.62 (0.35)	9.50 (0.32)	1, 154	8.35†
Negative View	13.19 (0.64)	13.52 (0.58)	1, 160	0.21	12.45 (0.54)	13.72 (0.48)	1, 154	4.53

Note. $N = 168$. Values for HIV+ and HIV- mother represent least square means (*SE*). The Simple ANCOVA includes adjustment for Age, Gender, Ethnicity, Adults in Home, and Children in Home. The Extended ANCOVA includes adjustment for Age, Gender, Ethnicity, Adults in Home, Children in Home, and the other dimensions of the multivariate construct. Daggers (†) denote statistically significant one-tailed tests for group differences after simple Bonferroni correction for number of dimensions per construct.

support available from parents, teachers, and friends remained after adjustment for correlation among the different dimensions of the construct.

Psychological Disturbance

In the final multivariate analysis of covariance, there were no significant associations between severity of psychological disturbance and any of the covariates. There was, however, again a significant relationship involving HIV Status that accounted for approximately 9% of the variance in a linear combination of the seven dimensions of Psychological Disturbance. Standardized weights used to construct the eigenvector reflected greater disturbance in psychological functioning within the HIV-affected group. Results of the univariate analyses indicated that the multivariate association involving HIV Status was accounted for primarily by a significant difference in Negative Esteem. As noted in Table III, least square means indicated that the HIV-affected group reported significantly more Negative Esteem and the difference remained significant after adjustment for correlation among the different dimensions of the construct.

DISCUSSION

When examined within the broader literature on the impact of HIV infection on family functioning, the results of this study suggest that maternal infection represents global risk for (a) poorer parent-child relationships, (b) compromise of social support, and (c) greater disturbance in psychological functioning among ethnic minority children living in urban poverty. This triad of findings raises questions about ways this chronic, socially stigmatized illness and the problems that typically accompany it affect the social environments of children such that risk for psychological maladjustment increases. Within the growing literature on family functioning and the psychosocial adjustment of children living with an HIV-seropositive parent, the results also highlight a number of conceptual and methodological issues that need to be considered in the design of future research.

Within this sample, children living with an HIV-seropositive mother confirmed perceptions of greater indifference and greater hostility in the parent-child relationship that is consistent with other research documenting an association between parental infection and some compromise of parent-child relationships (e.g., see Forehand et al., 1997; Kotchick, Forehand, et al., 1997). Although causality cannot be clearly documented, the finding raises questions about ways HIV infection and related problems affect quality of parent-child interaction such that children begin to perceive their infected parent as unavailable, indifferent, and more hostile. Although several authors (e.g., Armistead & Forehand, 1995) have hypothesized that physical deterioration associated with the disease may impact quality of parent-child relationships, research done thus far suggests that this compromise of

parent-child relationships is more likely associated with the presence of concurrent problems like parental substance abuse, changes in the quality of marital relationships, psychiatric distress, and concern about social stigma (Armistead et al., 1997; Demi, Bakeman, Sowell, Moneyham, & Seals, 1998; Kotchick, Forehand, et al., 1997; Rotheram-Borus et al., 1998).

Consistent with perceptions of more difficulty in the parent-child relationship, children living with an HIV-seropositive mother also reported less social support in their relationships with parents, teachers, and friends. Again, although the research design does not allow for causal attribution, the results raise questions about ways psychosocial aspects of the disease process might contribute to isolation from important sources of emotional and instrument support, and they are again consistent with other research indicating that HIV infection seems to compromise social support available to both infected parents and their seronegative children (e.g., see Forehand et al., 1997; Klein et al., 2000). The finding is of concern given the critical role social support seems to play in the promotion of positive emotional-behavioral adjustment during adolescence (e.g., see Taylor, 1996; Wasserstein & La Greca, 1996; Wills & Cleary, 1996). While it is not clear what psychosocial process may have contributed to this particular sample of children feeling estranged from important sources of social support, the finding becomes even more important when considered with the results of other research indicating that perception of adequate social support helps children living with a psychiatrically or medically ill parent maintain positive psychosocial functioning over time (e.g., see Garber & Little, 1999).

In addition to differences in quality of parent-child relationships and perception of social support, this HIV-affected group of children also demonstrated greater disturbance in psychological adjustment characterized primarily by markedly less self-esteem. When considered with the results of other research (e.g., see Forehand et al., 1998), the finding suggests that risk for psychosocial maladjustment in children living with an HIV-seropositive parent extends through late childhood into early to middle adolescence. However, although the HIV-affected group demonstrated significantly less self-esteem, differences in other dimensions of psychological disturbance were much less pronounced and at odds with the results of recent work done with younger children (e.g., see Forehand et al., 1998). Although direct comparisons with the findings of Forehand et al. cannot be made because different measures were used, the results of research done with children living with a parent ill with cancer suggest that, when compared with younger children, older children and adolescents should actually present with higher levels of psychological disturbance (e.g., see Compas et al., 1994).

Despite being limited primarily to some compromise of self-esteem, the finding still highlights need to better understand ways the disease process and related problems contribute to psychological disturbance in children living with an infected parent. Several mechanisms of influence may be involved. First, because social perceptions of individuals with HIV infection tend to be largely negative,

adolescents may feel stigmatized by association with an HIV-infected parent, internalize negative social valence, and begin feeling badly about themselves. Although this potential mechanism of influence has not been explored with affected children, several authors (e.g., Alonzo & Reynolds, 1995; Lawless, Kippax, & Crawford, 1996) have described the process of internalization for infected women, and there is evidence that stigmatization may affect the psychological well-being of both HIV-seropositive women and their primary caretakers (Demi, Bakeman, Moneyham, & Sowell, 1997; Demi et al., 1998; Miles, Burchinal, Holditch-Davis, Wasilewski, & Christian, 1997). The research done by Miles et al. suggests that, even when considered with perception of social support, concern about social stigma may be a more important influence on psychological adjustment.

In addition, mechanisms involving changes within the immediate social environment may also influence the psychological well-being of children living with an HIV-seropositive mother. As the disease process affects quality of parent-child relationships and perception of social support available from friends and other adults, deterioration of psychological functioning may follow in response to these changes. Concurrent differences in perceptions of the parent-child relationship and the availability of social support suggest this may be true, but the cross-sectional nature of the research design precludes documentation of causal links. Nevertheless, research done with other populations suggests that changes in perception of social support and parent-child relationships do often precede deterioration of psychological functioning during early adolescence (e.g., see Garber & Little, 1999; Wills & Cleary, 1996).

Although the findings outlined above extend understanding of the psychosocial adjustment of children living with an HIV-seropositive mother, there are a number of limitations that merit discussion. First, the HIV-affected sample was a self-selected group of children who were both aware of their mother's medical condition and receiving supportive intervention. As such, they may not represent the general population of ethnic minority children living in urban poverty with an HIV-seropositive mother. In addition, because research indicates that most HIV-seropositive parents do not disclose the nature of the illness to their children (Armistead et al., 1997; Armistead, Tannebaum, Forehand, Morse, & Morse, 2001; Murphy, Steers, & Dello Stritto, 2001; Rotheram-Borus et al., 1997), this group of children may also have been different from others because of their awareness of their mother's medical condition. Unfortunately, the inconsistent nature of research findings (e.g., see Armistead et al. 1997, 2001; Murphy et al., 2001; Rotheram-Borus et al., 1997) concerning ways knowledge of parental infection may influence the psychosocial adjustment of children makes it difficult to judge what the implications of this defining characteristic might be.

Furthermore, because information about other threats to the well-being of children that tend to be present in the lives of HIV-seropositive individuals was not available, the possibility exists that, rather than being directly related to HIV

infection, these differences may be actually be associated with conditions that predated infection or conditions occurring concurrently. In particular, substance abuse is common among HIV-seropositive women, and maternal substance abuse represents significant risk for compromise of psychosocial adaptation in older children and adolescents (e.g., see Luthar, Cushing, Merikangas, & Rounsaville, 1998). Other research also indicates that children living with a seriously depressed parent tend to be at risk for poorer psychosocial outcomes (for a review, see Cummings & Davies, 1994), and HIV-seropositive women are often significantly depressed (e.g., see Siegel, Karus, Raveis, & Hagen, 1998). Consequently, because additional data were not available, it was not possible to distinguish the effects of parental substance abuse, psychiatric distress, object poverty, and other threats to normative child development from those associated specifically with the disease process.

Absence of information about stage of mother's illness also precluded examination of the extent to which physical deterioration may be influencing these findings. However, research concerning psychosocial changes associated with physical deterioration as the disease progresses is presently inconclusive. Several researchers (e.g., Armistead et al., 1997; Forehand et al., 1997; Rotheram-Borus et al., 1998) have failed to find relationships involving severity of HIV disease, parent-child relationships, and the psychosocial adaptation of children. Severity of disease has also not correlated strongly with the psychosocial adjustment of children in work done with other populations (e.g., see Compas et al., 1994; Kotchick, Summers, et al., 1997). However, there is other evidence that severity of illness may indirectly influence the psychosocial adaptation of children by impacting the psychological well-being of the parent and family functioning (Demi et al., 1998; Dorsey et al., 1999; Miles et al., 1997; Steele, Forehand, & Armistead, 1997; Stein et al., 1999). Moreover, in one of the few projects to include severity of disease and concurrent problems in the statistical model, Rotherham and Stein (1999) found that, with statistical control for the potential influence of maternal substance abuse, severity of HIV disease was directly linked with compromise of psychosocial functioning within a large sample of teens living with an HIV-seropositive mother.

Finally, despite efforts to secure an appropriate comparison group from the same community, the available comparison group proved to be somewhat different than the affected group. In general, members of the comparison group were somewhat older, there were more girls, and there were fewer children living in their home. Although analysis of covariance techniques allow for statistical adjustment for these differences, it is important to acknowledge that developmental differences associated with age, gender, and family structure not represented in the statistical model may account for the differences noted. It is also possible that the relatively poor reliability of several measures may have influenced the findings.

In addition to expanding understanding of the psychosocial adjustment of children living with an HIV-infected mother, the results of this study highlight several issues that need to be considered in the design of future research done

with this population. First, there is need to seriously consider ways to recruit large, more representative samples of children living with an HIV-seropositive parent and rigorously matched samples of community controls so the impact of age, gender, ethnicity, family structure, and stage of illness can be both examined and adequately controlled for. Second, although a series of studies done by Armistead, Forehand, and colleagues (Armistead et al., 1997; Dorsey et al., 1999; Kotchick, Forehand, et al., 1997) using correlational research designs have begun to identify potential mechanisms of influence, there is need to examine the relative contribution of multiple mechanisms within the same study using longitudinal designs (Family Health Project Research Group, 1998).

Third, there is clear need to begin untangling the relative effects of potential confounds within samples of HIV-affected families so that the impact of the disease process per se can be isolated from the impact of risks that predated infection, particularly risks associated with parental substance abuse. In addition, although there appears to be common risks for poor developmental outcomes among children living with a chronically ill parent, there is need to more clearly document ways the impact of this disease differs from that of other diseases that also threaten the well-being of parents. Lastly, as research done with HIV-seropositive parents expands, there is need to better understand ways gender of affected parent interacts with other factors to determine outcomes for children. Although the work of Forehand and his colleagues (Armistead et al., 1997; Forehand et al., 1997) offers insight into the world of HIV-seropositive fathers with hemophilia, little is known about the psychosocial adjustment of children with HIV-seropositive fathers with other risks for infection.

Clearly, movement from HIV infection to death from AIDS is a complex biopsychosocial process that affects both infected individuals and those close to them. For a number of years, there has been concern about the expanding population of children living in poverty with an HIV-seropositive parent. At this time, there is accumulating evidence that this is a population of children at heightened risk for poor developmental outcomes, but questions remain about complex mechanisms of causal influence over time. As improved medical treatment extends life expectancy, there needs to be better understanding of ways this complex disease process affects children living with an HIV-seropositive parent so that community-based intervention can more effectively support these children as they also struggle to cope with changes in their lives precipitated by the diagnosis, treatment, and progression of this socially stigmatized illness.

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