

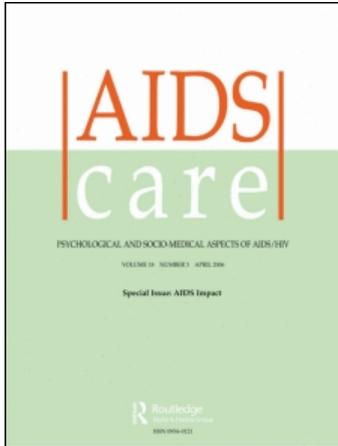
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Anxiety/stress among mothers living with HIV: effects on parenting skills and child outcomes

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Parental HIV infection has been associated with negative outcomes for children, and parenting skills appear to be one mechanism operating in that association. The present study focuses on the relations between maternal stress, parenting, and child functioning among families where the mother is living with HIV. Sixty-nine mothers with at least one child between six and 12 years old completed questionnaires at the baseline assessment of an intervention designed to facilitate maternal disclosure of HIV status. Respondents were assessed using multiple measures of stress/anxiety, parenting skills, and child outcomes, including the Parenting Stress Index, the RAND Mental Health Inventory, the Family Routines Questionnaire, and the Child Behavior Checklist. Covariance structural modeling was used to assess the variable relationships, with latent constructs created for maternal anxiety/stress, parenting skills, and child problem behaviors (both direct and indirect effects were evaluated, with a model-based bootstrap used to verify model stability). Results demonstrated that maternal stress was negatively associated with a broad range of parenting skills, and that parenting skills were negatively associated with child problem behaviors. Mothers living with HIV who are anxious about their own health and functioning, and who were more stressed in their parental role, were more likely to exhibit poorer parenting skills – specifically to engage children less frequently in family routines (e.g., eating meals together, having a bedtime routine), poorer parent–child communication, and poorer and less consistent parenting discipline. Not uncommonly, mothers living with HIV experience a range of stressors above and beyond those related to their illness (e.g., poverty, residence in high risk and low resource communities, discrimination). Results demonstrate the need for interventions designed to decrease maternal stress and enhance parenting skills for families affected by HIV.

Keywords: HIV; maternal stress; parenting; child functioning

Previous research proposes there are links between parental anxiety and stress with parenting behaviors, and between parenting behaviors and child outcomes (e.g., Pinderhughes, Dodge, Bates, Pettit & Zelli, 2000). Research suggests that anxiety/stress acts to negatively influence parenting behavior (e.g., Deater-Deckard & Scarr, 1996), such that high levels of parental distress can lead to parents with reduced responsiveness and a negative view of their parent role (e.g., Abidin, Jenkins & McGaughey, 1992; Gelfand, Teti & Fox, 1992), which in turn influences children's adjustment (Huth-Bocks & Hughes, 2008). Several studies have documented a relationship between parenting stress and parenting behaviors (e.g., Anthony et al., 2005; Reitman et al., 2001). For example, high levels of anxiety/stress have been associated with negative parenting practices and insufficient monitoring and control (Crnic & Low, 2002). Multiple studies show that parents who report elevated stress and describe their children as difficult tend to exhibit inconsistent discipline (e.g., Crawford & Manassis, 2001).

In a circular pattern, parental stress is increased when children act out (Morgan, Robinson & Aldridge, 2002), and parenting stress may exacerbate children's problem behaviors. Parents experiencing high levels of stress are likely to pay more attention to negative behavior and attribute them to the child rather than make situational attributions. Stress-related maternal anxiety also has been related to inconsistent discipline (Crawford & Manassis, 2001; Rodgers, 1998). These issues may be especially important among mothers living with HIV, who report that their greatest source of stress is combining the maternal with the psychological and medical demands of coping with a chronic, life-threatening condition.

While a large body of literature has established links between environmental stress and child and adolescent internalizing and externalizing symptoms (e.g., Grant et al., 2003), much less research has been conducted investigating stress within the parent–child relationship, and also with what has been termed “parenting stress” (e.g., Abidin, 1992; Deater-Deckard

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& Scarr, 1996). Parenting stress has been defined as the difficulty that arises from the demands of being a parent: as a construct it consists of multiple components, including characteristics of the child, the parent, and the context of the family (e.g., Reitman, Currier & Stickle, 2002; Webster-Stratton, 1990). Rodgers (1998) found that parenting stress both directly and indirectly affected parenting behavior. Moreover, Anderson (2008) found that parents in poor health reported significantly higher levels of parenting stress than healthier parents.

Ethnic minorities, who are disproportionately represented among mothers with HIV, face additional challenges that can lead to increased parenting stress, which in turn can lead to poorer mental health outcomes. These challenges include stereotyping, and discrimination; however, ethnic groups may differ in the particular challenges they face and their adaptational responses to them (Bulcroft, Carmody & Bulcroft, 1996). For example, language barriers, not typically faced by African-American families, may reduce access to resources or limit parental involvement, such as in school activities, and Joshi and Gutierrez (2006) found that, in Hispanic families, length of residence in the USA was negatively related to parenting stress.

Mothers living with HIV and anxiety/stress

As Jenkins and Coons (1996) have noted, when HIV enters women's lives, it enters lives that most typically already contain other stressors, since HIV is disproportionately high among inner-city, poor women who may face difficulties related to employment, health care, providing food and shelter for themselves and their children, drug use, and violence. Catz, Gore-Felton and McClure (2002) found that women living with HIV had elevated levels of stress and anxiety, which in turn were associated with fewer active coping strategies, and perception of less social support. Brackis-Cott, Mellins, Dolezal and Spiegel (2007) found that Latina mothers with HIV and their children were at increased risk for anxiety symptoms, particularly in families where the mother was not born in the USA.

Parenting skills among families affected by maternal HIV may be especially critical for child outcomes. Several studies (e.g., Forehand et al., 1998) have demonstrated that parental HIV is associated with negative outcomes for children. Mothers living with HIV report compromised parenting skills across a variety of parenting domains. For example, low-income, HIV-infected African-American mothers were less likely to have a positive parent-child relationship and reported less parental supervision than a

comparison group of non-infected mothers (Kotchick et al., 1997). Mothers living with HIV have also reported more resentment toward their children (Semple, Patterson, Nannis, Grant & the HNRC Group, 1995) and increased conflict with them (Andrews, Williams & Neil, 1993). Not surprisingly, compromised parenting within a family affected by HIV has been associated with poorer child outcomes. Both parental monitoring and the mother-child relationship have been associated with internalizing and externalizing problems (e.g., Kotchick et al., 1997). Additionally, in a sample of mothers living with HIV with early/middle adolescents, among those families with more frequent family routines, over time, adolescents showed better outcomes (lower aggression, anxiety, depression, conduct disorder behaviors, and binge drinking, and increased self-concept; Murphy, Marelich, Herbeck & Payne, 2009).

Although many studies have shown links among subsets of the variables in the model proposed by Abidin et al. (1992) linking parental stress and anxiety, parenting skills, and child outcomes, the complete model has not yet been tested in families affected by maternal HIV. The present study used covariance structure modeling to investigate maternal stress, parenting skills, and child outcomes among mothers living with HIV who have healthy school-age children. The impact of race/ethnicity on the relationships among these variables was also examined.

Method

Participants

The Teaching, Raising, and Communicating with Kids (TRACK) project is an intervention for mothers living with HIV designed to assist them in disclosing their status to their young children. Mothers were assessed at baseline and at three-, six-, and nine-month follow-up interviews; they were randomly assigned to the three-session individual intervention or a control condition. The baseline data were used for this study.

Participants were 69 women with HIV/AIDS with children aged 6–12 ($M = 8.6$, $SD = 1.9$). This was considered the optimal age range for a disclosure intervention. Children in this age range are frequently unaware of their mother's HIV status (Murphy, Steers & Dello Stritto, 2001; Shaffer, Jones, Kotchick Forehand, & The Family Health Project Research Group, 2001), and Murphy, Roberts and Hoffman (2006) found that the age range in which most mothers with young children disclosed their HIV status to their children was 4–14. Moreover, research indicates that older children may experience more negative effects following disclosure compared to younger children

(Armistead, Klein, Forehand & Wierson, 1997; Rotheram-Borus, Draimin, Reid, & Murphy, 1997).

The average age of mothers was 37.5 years ($SD = 7.3$, age range = 24–54 years), and 81.2% self-identified as Latina, 15.9% as black, 1.4% white, and 1.4% black and other. Among those who were born outside of the USA (76.8%), the average number of years since the mother came to live in the USA was 16.1 ($SD = 7.2$). Almost half (42.0%) had never been married, and 24.6% were currently married; 39.1% were currently living with a spouse or male partner (i.e., the study child's father, stepfather, or a boyfriend). Mothers had been aware of their HIV status for (on average) 11–12 years. Mean average CD4 cell count for mothers (based on self-report; 62% reporting) was 599.02 ($SD = 358.76$), with a median of 580. Mean average viral load (65% reporting) was 1543.87 ($SD = 4882.80$), with a median of 50 (a value of 50 was indicative of undetectable viral load, noted by 62% of those reporting). Almost half (49.2%) reported the study child's father was also HIV-positive.

Only 5.8% of the mothers had one child, while most were caring for multiple children (24.6% had two children, 37.7% had three children, and 31.9% had four or more children). Mothers had completed an average of 8.7 ($SD = 3.9$) years of school, and the average monthly take-home pay of all working members in households was US\$1222 ($SD = US1016). Approximately one-third (37.7%) of the mothers were employed in the past 30 days. Little to no substance use was reported by the mothers in this sample. None of the women reported ever using drugs other than marijuana (e.g., heroin, methamphetamine, and cocaine). Only 8.7% ever used marijuana, and 2.9% used in the past 90 days. More than two-thirds (68.1%) abstained from alcohol use in the past three months; of those who reported any alcohol use, most (77.3%) reported drinking less frequently than once per week, and the mean number of drinks consumed was 2.1 ($SD = 0.9$).

Procedures

Procedures were approved by UCLA's Institutional Review Board. Recruitment sites included Los Angeles area HIV/AIDS primary care and service organizations; these sites displayed English and Spanish language flyers in waiting rooms, distributed them to potentially eligible mothers, and/or obtained verbal permission for UCLA interviewers to contact potential participants.

Inclusion criteria were: mother is HIV-positive, has a well (non-HIV infected) six- to 12-year-old child who does not know her HIV status, and is English or

Spanish speaking. Informed consent was obtained prior to the interviews, which were conducted in the mother's home. Interviews were administered using a computer-assisted interviewing program on laptops. Spanish-speaking mothers were administered the interviews in Spanish by a bilingual interviewer. After the completed appointment, mothers were paid US\$45.

Measures

Anxiety/parental stress

As noted in the introduction, in this study maternal anxiety/stress was conceptualized as including multiple constructs (per Reitman et al., 2002; Webster-Stratton, 1990), both characteristics of the parent and the child. Three measures were utilized to assess anxiety and parental stress.

Anxiety. The anxiety subscale of the Rand Mental Health Inventory (Veit & Ware, 1983) was used; higher scores indicate higher anxiety (e.g., "During the past month how often did you get rattled, upset, or flustered?"). For the current sample, Cronbach's α was 0.86.

Health-related anxiety. The Health-Related Anxiety Scale (Murphy, Durako, et al., 2001) includes four-items covering sleep, appetite, desire to socialize, and concentration difficulties due to thinking about HIV/AIDS and health, with higher scores indicating higher health-related anxiety (e.g., "During the past week: You were thinking about HIV infection/AIDS and your health, and because of that you had trouble sleeping – either getting to sleep or sleeping through the whole night"). Scores ranged from 1 = not at all to 5 = always. Higher health anxiety has been found among HIV-positive African-American mothers who exhibited greater illness, compared to other ethnic groups experiencing lower illness level (Murphy, Marelich, Dello Stritto, Swendeman & Witkin, 2002). Cronbach's α in this sample was 0.91.

Parenting stress. The Parenting Stress Index (Abidin, 1990) was developed for early identification of stressful parent-child systems. Mothers completed the difficult child subscale, which assesses how difficult the mother perceives it is to get her child to do something or stop doing something; and how frequently she is bothered by things the child does. Mothers were asked how strongly they agree or disagree with statements such as, "My child turned out to be more of a problem than I had expected" or "My child makes more demands on me than most children." Cronbach's α in our sample is 0.89.

Parenting skills

Three parenting skills measures were utilized in the present study.

Parent–child communication. Mothers completed the parent–child communication scale (Miller, Forehand & Kotchick, 1999). Higher scores indicate better communication. In this sample, two negatively worded items functioned poorly and were dropped. Items included, “When [Child] asks questions, s/he gets honest answers from you.”; “You sometimes don’t listen to [Child],” and, “It is easy for [Child] to discuss all his/her true feelings with you.” Cronbach’s α for the current sample was 0.77.

Family routines. A subset of 11 questions from The Family Routines Questionnaire (FRQ; Jensen, James, Boyce & Hartnett, 1983) was administered to mothers (e.g., “In our family, the whole family eats dinner together”). Higher scores equal more frequent involvement in each family routine. The Cronbach’s α for this sample was 0.71.

Parenting dimensions inventory (PDI). The parenting dimensions inventory (PDI) assesses different dimensions of parenting, and has been used in a number of parenting studies (Slater & Power, 1987). The instrument assesses constructs of parental support, control, and structure. The Type of Control subscale was used to assess the extent mothers would be likely to use seven methods of discipline in five hypothetical situations: ignoring (letting the situation go), physical punishment, isolating, material/social consequences, reasoning, scolding, and reminding. Examples of hypothetical situations were, “child has been disruptive at school” and “child becomes ‘sassy’ while you discipline him/her.” Parents select the method of discipline that most closely applies to their behavior (not at all like me = 1; exactly like me = 6). In a previous study, reasoning and ignoring methods were chosen for analyses because they were determined to be positive responses to certain misbehaviors and had a similar direction of effect (McLearn, Minkovitz, Strobino, Marks & Hou, 2006). Therefore, these analyses examine the extent that mothers employed the reasoning and the ignoring methods of discipline.

Child behavior problems

Three subscales from the Child Behavior Checklist (CBCL, Achenbach, 1991) were completed by the mother: the 20-item Aggressive Behavior subscale (e.g., cruelty, bullying, or meanness to others; destroys things belonging to his/her family or others) the 13-item Delinquent Behavior subscale (e.g., truancy, skips school; lying or cheating), and the 14-item Anxiety/Depression subscale (e.g., cries a lot; nervous,

high-strung, or tense). Higher scores indicate more problem behaviors. In our sample, Cronbach’s α s were 0.90, 0.68, and 0.84, respectively.

Spanish translation of measures

Standard Spanish versions were used when available (i.e., Parenting Stress Index, CBCL). The other measures were translated by the Worldwide Translation Center (WTC) in San Diego, CA. A team of three translators (one translator and two editors) conducts the translations and analyzed the measures for accuracy, grammar, and style. Additionally, a blind back-translation was conducted by a translator at UCLA, using procedures described by Marin and Marin (1991).

Mother–child demographics

Mother’s race/ethnicity was utilized, as was child age.

Analysis

Covariance structural modeling was used to assess the variable relationships, with latent constructs created for maternal anxiety/stress, parenting skills, and child problem behaviors. Maternal anxiety/stress was expected to predict parenting skills, which in turn would predict child problem behaviors. Maternal race/ethnicity and child age were applied to all levels of the model as background factors. Figure 1 illustrates the final model (see figure note for paths added beyond the initial hypothesized model). Analyses were conducted using EQS (Bentler, 2006) and a Sobel test extension was used to assess indirect effects. Given the small sample size, model stability was verified through a bootstrap procedure (cf. Bentler, 2006) requesting 500 samples with the N set at the sample size.

Results

Variable correlations, means, and standard deviations are presented in Table 1 (a derived covariance matrix was used for subsequent modeling analyses). To evaluate the proposed covariance structural model, error variances for endogenous variables were allowed to vary and given a start value of five. Disturbance terms for the latent constructs were allowed to vary and given starting values of five, and one path for each construct was set to 1.0 for identification purposes. In the initial and final model evaluations, the disturbance term variance for parenting skills approached zero, and thus was fixed at 0.001 (Byrne, 1994). Model fit was assessed using chi-square, the Comparative Fit Index (CFI), the Non-Normed Fit Index (NNFI), the Incremental Fit Index

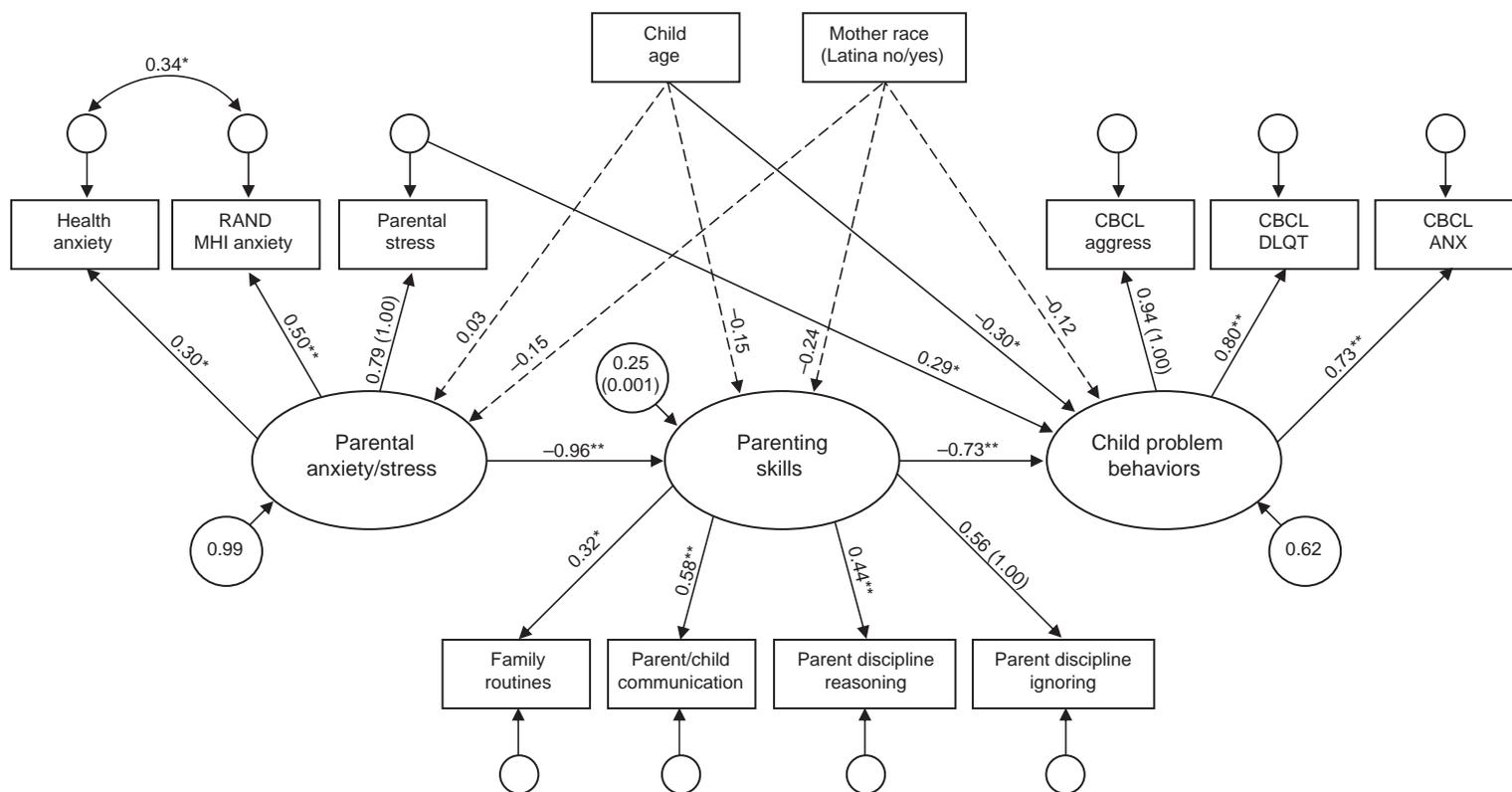


Figure 1. Final covariance structural model of child problem behaviors, with child/mother demographics, parental anxiety/stress, and parenting skills as predictors. Note: Initial model did not include covariance between health anxiety and RAND MHI Anxiety, nor specific variance path from parental stress to child behavior problems. Standardized path parameters are presented. Path parameters within parentheses indicate path was set to 1.00. The disturbance term for parenting skills was set at 0.001. Solid lines indicate significant paths, while dashed lines indicate non-significant paths. * $p < 0.05$; ** $p < 0.01$.

Table 1. Correlation matrix, means, and standard deviations for measured variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mother/child demographics												
(1) Child age	1.00											
(2) Mother's race (0 = Non-Latina, 1 = Latina)	0.00	1.00										
Anxiety/parental stress												
(3) RAND mental health inventory	0.02	-0.08	1.00									
(4) Health-related anxiety	0.01	-0.05	0.43	1.00								
(5) Parenting stress index	0.03	-0.12	0.40	0.24	1.00							
Parenting skills												
(6) Parent-child communication	-0.11	-0.05	-0.27	-0.16	-0.43	1.00						
(7) Family routines	-0.06	-0.03	-0.15	-0.09	-0.24	0.19	1.00					
(8) PDI reasoning	-0.08	-0.04	-0.21	-0.12	-0.33	0.26	0.14	1.00				
(9) PDI ignoring	-0.10	-0.05	-0.26	-0.16	-0.41	0.32	0.18	0.25	1.00			
Child behavior problems												
(10) CBCL aggressive behavior	-0.16	-0.05	0.32	0.19	0.67	-0.36	-0.20	-0.27	-0.35	1.00		
(11) CBCL delinquent behavior	-0.13	-0.04	0.27	0.16	0.57	-0.30	-0.17	-0.23	-0.29	0.75	1.00	
(12) CBCL anxiety/depression	-0.12	-0.04	0.25	0.15	0.52	-0.28	-0.15	-0.21	-0.27	0.68	0.58	1.00
<i>M</i>	8.62	0.81	22.68	6.17	31.29	24.41	32.09	1.35	1.44	1.46	1.16	1.37
<i>SD</i>	1.93	0.39	8.62	3.46	10.07	3.69	6.01	0.21	0.22	0.36	0.19	0.34

Note: Correlations larger than |0.23| (in bold) are significant at $p < 0.05$ (two-tailed).

(IFI), and the Root Mean Squared Error of the Approximation (RMSEA).

Initial model results (Figure 1 without modifications; see figure note) resulted in a chi-square value of 148.72 ($df = 49$), with a CFI of 0.53, an IFI of 0.57, an NNFI of 0.37, and a RMSEA of 0.173 (90% CI = 0.140–0.203), all indicating poor fit. Modifications to the model were undertaken to improve fit through evaluations of the standardized residuals and the addition of within-construct error variances. Two model additions were made – an error covariance was added between health anxiety and the RAND anxiety measures, and a specific variance path (Bentler, 1990) was added to capture unaccounted for variance in the parenting stress subscale to predict child problem behaviors.

The revised model (Figure 1) with the two additional paths showed good fit, with a chi-square of 55.13 ($df = 47$), a CFI of 0.96, an IFI of 0.97, an NNFI of 0.95, and a RMSEA of 0.050 (90% CI = 0.000–0.098). A model-based bootstrap with 384 converged replications (out of 500) verified fit, with all final model fit indices falling within the 95% confidence range of the bootstrap models, as did the final model unstandardized parameter estimates. Overall, maternal anxiety/stress has a direct negative association with parenting skills; higher levels of maternal anxiety/stress are associated with poorer parenting skills. In addition, parenting skills have a direct negative association with child behavior problems; better parenting skills were related to fewer child problem behaviors. Younger children were noted having more behavior problems, and the unaccounted variance in the parenting stress subscale (as a measure of specific variance) had a positive association with the child behavior problems construct.

Indirect associations were assessed through EQS for the exogenous predictors mother's race/ethnicity, child's age, and the parental anxiety/stress latent construct on child behavior problems. Maternal anxiety/stress was found to have a significant indirect association (through parenting skills) on the child behavior problem construct (standardized indirect coefficient = 0.70, $p < 0.001$), suggesting that as maternal anxiety/stress increases, child behavior problems are indirectly increased. Age and race did not yield significant indirect findings.

Discussion

In this sample of mothers living with HIV and their well, young children, maternal anxiety/stress had a direct association with parenting skills. Those mothers who were more anxious about their own

health and functioning, and more stressed in their parental role, were more likely to exhibit poorer parenting skills – specifically reporting they engaged children less frequently in family routines, had poorer parent–child communication, and had less consistent discipline. These findings are consistent with literature on general population parent samples, although this study indicates a broad range of parenting skills are affected by maternal anxiety/stress. This range of deficits indicates a strong need for parenting interventions for mothers living with HIV. Having entered the third decade of the AIDS epidemic, growing numbers of children are living with an infected mother. Few interventions, other than for prevention or medication adherence, are available for women living with HIV. The current study identified several points of intervention for mothers living with HIV and their school-age children. Parenting interventions need to provide parents with information on: (1) how their psychological distress can affect family functioning and child outcomes; (2) strategies and support for dealing with their psychological distress; (3) skills for implementation of family routines, and assistance with strategies for older children or other support figures to maintain family routines and monitoring if the mothers are unable to do so (e.g., during times of illness, hospitalization, or fatigue); and (4) strategies for how mothers can improve parent–child communication.

The parenting skills construct had a direct negative association with child outcomes, as would be expected. The significant indirect association of the latent construct of maternal anxiety/stress on child outcomes indicates that interventions to assist mothers in coping with anxiety and stress would not only benefit the mothers, but will also benefit their children.

Interestingly, no effects for mother's ethnicity/race were found. This may be due to the fact that maternal anxiety/stress overrides this factor; however, it also may be that this sample was not diverse enough to illuminate any ethnic/race differences. The majority of the mothers (81%) in this sample were Latina, and many of them were Spanish speaking. In the introduction, it was noted that Latina mothers in one study were found to have increased anxiety, relative to African-American mothers, particularly if mothers were not born in the USA (Brackis-Cott et al., 2007). In the current study's sample, 76.8% of the mothers were born outside of the USA. Previous studies have found that different cultures have different levels of parental discipline; for example Forehand and Kotchick (1996) noted that Asian American families believe in strict discipline, and Native American families in

little discipline. Race/ethnic differences have been found in the relations between physical discipline and child externalizing behavior problems (Lansford, Deater-Deckard, Dodge, Bates & Pettit, 2004; Polaha, Larzelere, Shapiro & Pettit, 2004). Given the disproportionately high rates of HIV infection among Latina and African-American women, further studies on parenting and child functioning in the context of HIV among racially/ethnically diverse samples need to be conducted to determine whether there are variations in relations of maternal anxiety/stress with parenting and child outcomes. However, because this study utilized a primarily Latina sample, many of whom are immigrants to the USA, this study fills a significant gap in the literature.

One limitation to the current study is the small sample size, which was addressed initially by limiting the number of measured variables in the model, and post hoc by utilizing a bootstrap procedure to assess the stability of the final model parameters and fit statistics. As this was a pilot study, with a small sample size, further examination of the associations of parental anxiety, stress, parenting skills, and child outcomes among mothers with HIV to replicate and confirm these results using larger sample sizes and a longitudinal study design is warranted.

Additionally, whether participants experienced current or previous domestic violence was not assessed in this study, and should be considered in future analyses. Although the majority of the women in this study were not currently living with a male partner, domestic violence may have been associated with the constructs examined in this study. Another caveat is that the sample included only mothers who had not yet disclosed their HIV status to their children, and consisted of primarily Latina mothers. The generalizability of the study findings should be considered within those parameters. Further, although all mothers were HIV-positive, we did not assess whether mothers had ever been diagnosed with AIDS – those with an AIDS diagnosis may experience greater anxiety/stress due to their diagnosis status. In addition, as noted earlier, average take-home pay of the households in this study was less than US\$1300 per month, placing these families at low socioeconomic status, which may further add to maternal anxiety/stress. Future research may wish to consider a wider-range of socioeconomic status families to evaluate such effects. Finally, although the current model is indicative of sequential influence across latent constructs, data were taken from the same time-point – thus, the current study's results should only be interpreted as suggestive.

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