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PSYCHOSOCIAL CORRELATES OF EMOTIONAL DISTRESS AND RISK BEHAVIOR IN AFRICAN-AMERICAN WOMEN AT RISK FOR HIV INFECTION

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We examined a model of stress and coping in 749 African-American women at risk for HIV infection. Women in the sample were either homeless, intravenous drug users (IVDUs) sexual partners of IVDUs, or prostitutes. A model was hypothesized based on stress and coping theory and research. Antecedents studied were personal resources, specifically self-esteem and available support. Mediators were threat appraisal and coping efforts. Outcomes studied were emotional distress and HIV risk behaviors. Structural equation modeling techniques were used to test hypothesized pathways between these variables. Forty-five percent of the variance in emotional distress in these women was explained by the model with self-esteem and avoidant coping the strongest predictors. Ten percent of the variance in risk behavior was explained by the model with emotional distress the strongest predictor. Direct and indirect pathways predicting risk behavior and distress are discussed. Implications of results for intervention and theory building are considered.

KEY WORDS: Emotional distress, risk behaviors, African-American women, HIV infection

Women and AIDS

Acquired Immunodeficiency Syndrome (AIDS) has a devastating effect on society, mainly because it is a fatal disease that affects individuals in their prime of life. The World Health Organization (WHO) has estimated that 8 to 10 million people worldwide have been infected with HIV as of 1989. Approximately 3 million are women, most of whom are from sub-Saharan Africa in their childbearing years (Chin, 1990). In sub-Saharan Africa, WHO estimates that by the end of 1992 over 600,000 cases of AIDS will occur in women (Chin & Mann, 1988). The majority of these women are expected to die within one year of diagnosis.

In the United States, over 20,000 women have been diagnosed with AIDS, making it one of the five leading causes of death among U.S. women between the ages of 15 and 44 years (CDC, 1992). African-American women are disproportionately affected by AIDS (Cochran, 1989; Mays, 1989). Although they represent only 12% of women in the U.S., 52% of all reported cases of AIDS are in African-American women. It is estimated that over half of African-American women (56%) are infected as a result of intravenous drug use, and another 34% as a result of unprotected sex with HIV infected individuals (CDC, 1992).

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The majority of women of color afflicted with AIDS are poor. Low-income women may be more likely to practice high-risk behaviors associated with AIDS as a result of high rates of depression, high levels of stress, and scarce personal and social resources (Cochran & Mays, 1989; Krueger, Wood, Diehr & Maxwell, 1990; Longshore, 1989; McLeod & Kessler, 1990; Nyamathi & Lewis, 1991). Low-income women are especially at risk due to higher rates of drug abuse, that involves both intravenous drug use with contaminated needles, and the association of crack cocaine use with prostitution and sexually transmitted diseases (Chaisson, Bacchetti, Osmond, Brodie, Sande, & Moss, 1989; Fullilove, Fullilove, Bowser, & Gross, 1990). In addition, poor women who are homeless are at high risk for HIV infection due to the inavailability of socioculturally appropriate AIDS education, low rates of condom use, high rates of prostitution, and many other factors (Christiano & Susser, 1989; Cochran & Mays, 1989; Krueger et al., 1990; Mays & Cochran, 1988).

Relationship of Resources to Distress and Risky Behavior

Research has demonstrated that personal resources of self-esteem, hardiness and mastery (Hobfoll, 1985; Muhlenkamp & Sayles, 1986), and the social resources of support (Cobb, 1976; Norbeck, 1986) have had beneficial effects on both emotional distress and positive health practices. Mastery and social support have been linked to less depressive symptomatology in a sample of shelter and street-based homeless women (La Gory, Ritchey, & Mullis, 1990). Mastery was also linked to less emotional distress in mothers of well, acutely ill, or chronically ill children (Hobfoll & Lerman, 1988).

The relationship of personal and social resources to risky behaviors is less defined. However, in a study of 581 homeless and drug-addicted women of color, Nyamathi (1991) reported women who were high in self-esteem, and stronger in sense of coherence reported significantly less emotional distress, and significantly fewer high risk behaviors, that included use of intravenous and non-intravenous drugs and unprotected sexual encounters.

Although much attention has been drawn to AIDS in women of color, there is inadequate theory-based testing of models explaining the mental health outcomes and health behaviors of these women. Little is known about the AIDS epidemic in low-income African-American women who are in particular at risk for HIV (Mays, 1989; Mays & Cochran, 1988). Those at particular risk are intravenous drug users, sexual partners of IVDUs, prostitutes, homeless women, and women with sexually transmitted diseases.

This research was designed to examine the psychosocial factors that influence the AIDS-risk behaviors and emotional welfare of African-American women who are drug addicted or homeless. It was part of an intervention project, the UCLA AIDS Nursing Network, that studied a larger sample of minority women in Los Angeles at risk of contracting AIDS (Nyamathi, 1991; Nyamathi & Lewis, 1991; Nyamathi & Vasquez, 1989).

Theoretical Framework and Hypotheses

The hypotheses in this study are based on theory and research on stress and coping broadly, and specifically, on Nyamathi's (1989) Comprehensive Health Seeking and Coping Paradigm (CHSCP). The CHSCP is a framework designed for use in

psychosocial intervention. It borrows factors from the stress and coping theory of Lazarus and Folkman (1984) and the paradigm of health-seeking behaviors of Schlotfeldt (1981) and serves as a guide for theory testing and clinical practice in the areas of coping and health outcomes. Twelve factors are included that are hypothesized to influence the coping and health outcomes of at-risk medical populations. The twelve components of the framework include situational and personal factors, coping resources, sociodemographic factors, cognitive appraisal, health goals of the client and health-seeking and coping behaviors. Nursing goals and strategies constitute a major component that can directly influence all other major components, including patient compliance, perceived coping effectiveness and immediate and long-term health outcome. The CHSCP poses numerous questions related to women at risk for HIV and AIDS. The primary questions addressed here are: (a) Are personal resources such as self-esteem or social support associated with coping, threat appraisal, and health outcomes in these women? and (b) Do coping responses and threat appraisal predict outcomes in this population? Answers to these two broad questions would indicate avenues of intervention to reduce risk and aid efforts to provide assistance to women in these groups.

Based on the CHSCP, several specific relationships among seven variables were hypothesized, resulting in a testable model. The seven variables were categorized into antecedents, mediators, or outcomes. The antecedent variables measured were the personal resources of self-esteem and social support. The mediators were threat appraisal and coping behavior. Threat appraisal and coping are defined based on Lazarus and Folkman (1984). Coping is cognitive and behavioral efforts to manage internal or external demands seen as taxing or exceeding the resources of the person. These responses are the active coping behaviors that manage the problem or avoidant behaviors, that ease the emotional distress experienced. More adaptive coping is referred here as active coping; escape-avoidant efforts (labeled here avoidant coping) were seen as less adaptive (Holahan & Moos, 1986, 1987; Suls & Fletcher, 1985). Threat appraisal was conceptualized as concerns about one's current life circumstances, particularly about one's safety, health or the safety or health of loved ones. The outcomes of interest are emotional distress and HIV risk behaviors.

Due to the cross-sectional nature of the data, causal relationships between model variables cannot actually be determined. Nonetheless, based on existing stress and coping literature, a series of hypothesized causal relationships between model variables were specified. It was hypothesized that women with higher self-esteem would have more available social support (Cobb, 1976; Hobfoll, 1988; Muhlenkamp & Sayles, 1986), because they are more effective in establishing supportive relationships, in soliciting social support, and because they are more likely to perceive support whether it exists or not. Furthermore, women with personal resources, either available support or strong self-esteem, were hypothesized to appraise fewer threats in their environment (Gass & Chang, 1989; Rhoads, 1983), to cope more adaptively (Gutierrez & Reich, 1988; Pearlin & Schooler, 1978; Rhoads, 1983; Tucker, 1982), and to experience less emotional distress (Hobfoll, 1988; La Gory et al., 1990; Reed & Moise, 1979). Moreover, women who perceived fewer threats and who coped more adaptively were hypothesized to experience lower levels of emotional distress (Cronkite & Moos, 1984; Fawzy, Cousins, Fawzy, Kemeny, Elashoff & Morton, 1990; Gass & Chang, 1989; Moos, 1986; Namir, Wolcott, Fawzy & Alumbagh, 1987; Norris & Murrall, 1984), and to engage in less risky behavior (Nyamathi, 1992). Finally, emotional distress was

expected to be associated with higher rates of HIV risk behavior (Tucker, 1982; Kreuger et al., 1990).

These hypotheses are summarized in Table 1 and portrayed in the path diagram in Figure 1. As can be seen in the figure, the personal resources of esteem and support are seen as promoting greater well-being by indirect as well as direct pathways, such as through influences on threat appraisal or coping (Dunkel-Schetter, Folkman, & Lazarus, 1987; Lazarus & Folkman, 1984; Muhlenkamp & Sayles, 1986; Norbeck, 1988; Panzarine, 1985; Riegel, 1989).

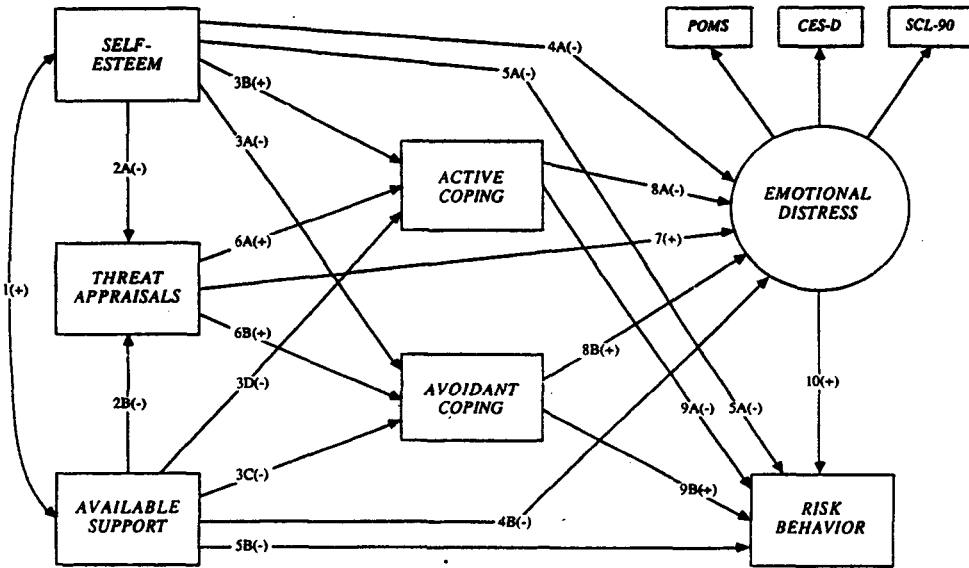


Figure 1 Hypothesized Response Model for Distress and HIV Risk Among Low Income African-American Women.
 Note: The plus and minus signs indicate direction of hypotheses.

METHOD

Subjects

As part of a large scale research project, African-American women who were residents of ten homeless shelters and eleven drug rehabilitation programs were solicited for participation in an AIDS education program. From participating sites, a convenience sample of 749 African-American women who met the following eligibility criteria were recruited: (a) aged 18-69; (b) native English speaker and (c) identified as a drug user, a sexual partner of an IV drug user, a prostitute or homeless individual housed in a shelter or a one-room occupancy building.

The 749 participants ranged in age from 18 to 69, with a mean age of 33 years (*SD* = 8.05). The women were primarily Protestant (77%), with others of Catholic (7.6%), Agnostic (4.5%), Christian (1.7%) or other religious orientation (9.2%).

Table 1 Summary of Hypotheses

-
1. Self-esteem and social support will be positively associated.
 2. Women with greater personal resources will appraise less threat in their environment.
 - A. Self-esteem predicts lower threat appraisal.
 - B. Social support predicts lower threat appraisal.
 3. Women with greater personal resources will cope more adaptively.
 - A & B. Self-esteem predicts more active and less avoidant coping.
 - C & D. Social support predicts more active and less avoidant coping.
 4. Personal resources will be associated with lower emotional distress, primarily through indirect pathways of threat appraisal and coping, but also directly.
 - A. Self-esteem predicts lower emotional distress.
 - B. Social support predicts lower emotional distress.
 5. Personal resources will be associated with less risk behavior.
 - A. Self-esteem predicts less risk behavior.
 - B. Social support predicts less risk behavior.
 6. Greater threat appraisal will be associated with more avoidant coping and more active coping.
 7. Threat appraisal is associated with greater emotional distress.
 8. Coping is associated with emotional distress.
 - A. Problem-focused coping predicts less emotional distress.
 - B. Emotion-focused coping predicts more emotional distress.
 9. Coping is associated with risk behavior.
 - A. Problem-focused coping predicts less risk behaviors.
 - B. Emotion-focused coping predicts more risk behaviors.
 10. Emotional distress predicts more risky behavior.
-

Note. These hypotheses are numbered for clarity in Figure 1 as above.

One-half (52.6%) of the women were never married, 14.7% were married and 32.7% were widowed, divorced or separated. Years of education ranged from 2 years to 22 years, with a mean of 12.2 ($SD = 1.85$). The majority of the women were unemployed (91%).

In terms of risk behaviors, which were not mutually exclusive categories, 10.8% (81) of the women reported shooting drugs, 11.1% (83) having a sex partner who shoots drugs, 42% (313) having been diagnosed with a sexually transmitted disease (STD) and 39% (292) having had sex for money or drugs. When asked if they had been homeless within the last six months, 72.2% (540) answered in the affirmative.

Measures

Measures used in testing the structural model are described below. Content validity of these measures was established by careful review and agreement (95%) of a 12-member expert panel consisting of researchers, academicians, statisticians, and practitioners experienced in the areas of AIDS, ethnic/racial diversity and coping. All measures were modified and revised to be culturally sensitive by the first author. In addition, the validity and reliability of these measures were evaluated during pretesting. Finally, a priori item selection and factor analyses were conducted for several instruments in order to eliminate potential confounds between measures.

Self-Esteem. Self-esteem was measured using a revised version of the Coopersmith (1967) 25-item Self-Esteem Inventory (SEI). Revisions, designed to make the instrument more understandable in this population, included substituting response categories of "Like me" and "Unlike me" with "True" and "False", altering the wording of six items, dropping two items, and adding one item resulting in a 24-item scale. Inspection of the self-esteem scale revealed that eight items were confounded with depression, social support, or other variables in the model. In order to eliminate this confounding, these items were excluded and an exploratory factor analysis was performed on the remaining 16 items. This analysis revealed that one factor had an eigenvalue greater than 1.00 (eigenvalue 2.54) and accounted for approximately 15% of the variance. Seven items loaded over .40 and were retained for a self-esteem index. Items loading on the self-esteem variable (from highest to lowest) were "You have a low opinion of yourself," "You often wish you were someone else," "Most people are better liked than you are," "You find it hard to talk in front of a group," "Your body is ugly," "You are not as nice looking as other people," and "It's pretty tough to be you." Items were reversed and summed such that a higher score on this variable represented greater levels of self-esteem. The internal consistency for this variable was .71.

Available Support. Subjective available support was measured with a social support scale previously used to study persons with AIDS or ARC (Zich & Temoshok, 1987). Women were given a list of seven types of help/support and asked to indicate if they had received each type of support in the last 6 months (1 = *yes*, 0 = *no*). Types of support included whether there was someone who "understands your problems or feelings," "explains or shows you how they dealt with problems like you have," "you can turn to when you need help with chores, getting around," "you can talk to or who will talk to you," "gives you advice about how to solve a problem," "gives you confidence," and "will help you change your problem (e.g., health care agencies, community services)." Responses to these items were summed to create an index of available support with higher values representing higher levels of support. This variable had an internal reliability coefficient of .88.

Threat Appraisal. A measure of threat appraisal was created by the a priori selection of 14 items from two instruments, one assessing perceptions of threat and the other designed to measure current concerns. Four items were taken from an adapted form of the original 13-item Folkman, Lazarus, Dunkel-Schetter, et al. (1986) primary appraisal instrument. Using a 5-point Likert scale (1 = *not at all*, 5 = *extremely*) women were asked to think about their most serious problem and indicate how concerned they were about the "safety and health of child/partner," "happiness of your child/partner," "own health or safety," and "having enough money." Ten items were taken from a 40-item measure assessing current concerns developed for this study based on the Inventory of Current Concerns (ICC, Weisman, Worden, & Sobel, 1980) but revised to reflect current concerns of high risk minority women such as those involving homelessness and survival (Nyamathi & Flaskerud, 1992). This measure has four subscales, ¹ two of which were relevant for this paper: a homelessness factor (7 items) and a parenting factor (3 items). Using a 5-point Likert scale (1 = *not at all*, 5 = *a great deal*), subjects indicated how worried or upset they were about each concern during the previous six months. Homelessness items included "where you will be sleeping tonight," "having to move from place to place," "where you will be getting your next meal", "not having your own place", "needing work," "finding a job," and "your health." Parenting

items included “how your children are doing,” “your children’s health,” and “concern that your children get a good start in life.”

All 14 items were subjected to an exploratory factor analysis with oblique rotation. Although results revealed a two-factor solution (eigenvalues 3.90, 1.77 respectively) accounting for nearly 41% of the variance, these two factors were moderately correlated ($r = .30$). A second analysis revealed that all items loaded above .40 on one factor that accounted for 28% of the variance.² The mean of these items was computed to form one variable, such that higher scores indicated that these women’s concerns were appraised as more threatening. This index had an internal reliability coefficient of .83.

Coping. A 30-item adapted version of the Jalowiec Coping Scale (JCS, Jalowiec & Powers, 1981) was used to assess coping strategies used for “getting one’s life together” in the last six months. In order to construct a coping variable, 13 items that were confounded with available support, psychological distress, and AIDS-related risk behavior were first removed from the index. The remaining 17 items were then subjected to a factor analysis with an orthogonal rotation.³ Results revealed that two factors had eigenvalues greater than 1.00 (2.61, 1.60) accounting for nearly 25% of the variance. The first factor, labeled *active coping*, consisted of 6 items that loaded over .45 and had an internal reliability coefficient of .76. Items loading on the active coping variable (from highest to lowest) were “Find out more about the problem so you can handle it better,” “Think of different ways to handle the problem,” “Try to have some control over the problem,” “Try to find meaning in the problem,” “Hope that your problem will get better,” and “Draw on past ways of doing things to help you handle the problem.”

The second factor, labeled *avoidant coping*, consisted of 6 items that loaded over .38 and had an internal reliability coefficient of .64. Items loading on the avoidant coping factor (from highest to lowest) were “Try to put the problem out of your mind,” “Daydream,” “Laugh it off, since things could be worse,” “Go to sleep, things will be better in the morning,” “Get prepared to expect the worst,” and “Go away for awhile.” These two factors were used in the analyses. For each one, higher scores represent more frequent coping attempts.

Emotional Distress. Three multiple-item scales were used to reflect a latent variable of emotional distress: the Profile of Mood States (POMS, McNair, Looor, & Droppleman, 1981), the Center for Epidemiological Studies Depression Scale (CES-D, Radloff, 1975, 1977), and the Somatization Scale of the Somatic Complaint List (SCL-90-R, Derogatis & Cleary, 1977), which is usually associated with complaints related to emotional distress. A revised version of the POMS (39-items) was used (6 items were deleted, 5 were revised, and 11 were added) leading to a 44-item general measure of emotional distress. Subjects rated how often they experienced each mood during the previous six months using a 5-point Likert scale (1 = *not at all*, 5 = *extremely*). The POMS score was created by first reversing the direction of positive mood items (e.g., vigor subscale items) and then computing the mean of all 44 items. The internal reliability coefficient of this variable was .96.

The CES-D is a 20-item measure that assesses depression. Subjects were asked to report how often they felt depressive symptoms (e.g., “Your sleep was restless” “You felt depressed”) in the previous six months using a 5-point Likert scale (1 = *never*, 5 = *always*). In order to form a depression score to be used in the latent variable, six items that were confounded with available support or self-esteem were deleted. A mean score was derived to form a depression score which had a coefficient alpha of .83.

Somatic complaints were assessed with a modified version of a subscale of the SCL-90. Four items (loss of appetite, gastrointestinal problems, fatigue, and the inability to sleep) were added to the original 16-item somatization scale. Subjects were asked to rate how bothered or distressed they were by each somatic complaint during the last six months using a 5-point Likert scale (1 = *not at all*, 5 = *extremely bothered*). The internal reliability coefficient for this variable was .91.

Risk Behaviors. In order to assess the degree to which subjects engaged in behaviors that put them at increased risk for AIDS, subjects were asked if during the previous six months they had (a) used intravenous drugs, (b) used other drugs, (c) engaged in unprotected sex, (d) had a sexually transmitted disease, or (e) had a sexual partner who was an intravenous drug user. Each behavior was rated as *yes* (1) or *no* (0). These items were not expected to be highly intercorrelated because health risk behaviors tend to be independent (Harris & Guten, 1979; Mechanic, 1979). The average inter-item correlation was .12 (range .02 to .32). These five items were summed to form a composite index of high risk behavior, with higher values indicative of greater HIV-risk.

Procedure

Subjects were recruited through the directors of homeless shelters and drug recovery programs. Appointment times were set up for the women by African-American nurses who administered the instruments. After the study was explained, informed consent was obtained and confidentiality assured by coded questionnaires and Certificate of Confidentiality obtained for all participating subjects. The complete interview, consisting of a structured questionnaire, required approximately 60 minutes to administer. Respondents were paid \$5 for their time. Ninety-two percent of the women who met study criteria participated in the study.

RESULTS

Overview of Analysis

The hypothesized model (see Figure 1) represents a set of regression equations testing the specific hypotheses. This model also specifies that the POMS, CES-D, and SCL-90 are hypothesized to load onto one latent factor of emotional distress. Analysis of the hypothesized model was performed using EQS (Bentler, 1985). This technique tests a series of regression equations simultaneously and generates an estimated covariance matrix of the hypothesized relationships between the variables in the model. All variables were examined first for departures from normality and were determined to be normal (See Table 2). Goodness of fit analyses were performed to ensure adequate fit of the model.⁴ Table 3 presents zero-order correlations among variables.

Model Testing and Results for Specific Hypotheses

The model in Figure 1 fit the data very well ($\chi^2(14) = 36.3, p < .001, CFI = .99$) with the χ^2 :df ratio quite acceptable (less than 3:1) and a very high CFI (a value of 0 reflects no fit and 1 represents perfect fit). Structural models may also be evaluated

Table 2 Summary of Variables and Descriptive Statistics

Variables	#Items	Mean	SD	Range	Skewness	Kurtosis
Self-Esteem	7	4.13	2.0	0 to 7	.31	-.93
Available Support	7	4.58	2.5	0 to 7	-.68	-.99
Primary Appraisal	14	2.64	.88	1 to 5	-.24	-.57
Active Coping	6	4.15	.71	1 to 5	-1.0	-.90
Avoidant Coping	6	2.98	.77	1 to 5	-.01	-.09
POMS	44	1.53	.95	1 to 5	.21	-.84
CES-D	14	1.75	.55	0 to 4	-.48	-.16
SCL-90	20	1.03	.82	0 to 4	.91	.36
Risk Behaviors	5	2.27	1.0	0 to 5	.06	-.15

Table 3 Zero-Order Correlation Matrix for Model Variables

Variable	1	2	3	4	5	6
1. Self-Esteem	—	—				
2. Available Support	.17	—				
3. Primary Appraisal	-.18	-.12	—			
4. Active Coping	.18	.14	.24	—		
5. Avoidant Coping	-.30	.00	.16	—	—	
6. Emotional Distress Latent Variable	-.57	-.21	.37	-.08	.41	—
7. Risk Behaviors	-.15	-.02	.06	-.14	-.16	.27

by how well they explain the variance in outcome measures. The model explains 45% of the variance in emotional distress and 10% of the variance in risk behaviors. In addition, 14% of the variance in active coping and 10% of the variance in avoidant coping were explained. The statistical significance of the factor loadings, correlations, and path coefficients were determined by critical ratios on unstandardized coefficients. Figure 2 depicts the model results. For ease of interpretation, only significant associations are represented.

As indicated in Figure 2, 14 of the 19 hypothesized pathways were significant and in the direction predicted. The two antecedent personal resource variables (social support and self-esteem) were positively correlated as hypothesized (Hyp. 1).

Emotional distress was predicted by lower self-esteem (Hyp. 4A), more appraised threat (Hyp. 7), and more avoidant coping (Hyp. 8B). Contrary to prediction, greater available social supports was associated with more emotional distress (Hyp. 4B). There was no evidence for hypothesis 8A, linking active coping to distress. Self-esteem also influenced emotional distress indirectly via its relationships with threat appraisal and avoidant coping. Lower self-esteem was associated with more threatening appraisals (Hyp. 2A) and more avoidant coping (Hyp. 3B), both of which were associated with higher levels of emotional distress (Hyps. 7, 9B).

Risk behavior was predicted by greater emotional distress (Hyp. 10), more avoidant coping (Hyp. 9B), and less active coping (Hyp. 9A). There was no

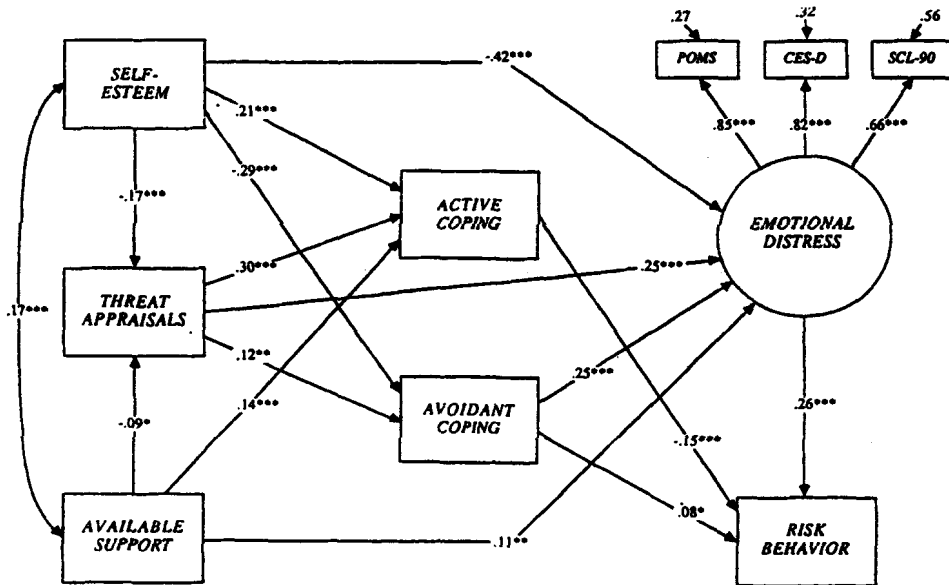


Figure 2 Final Model for Distress and HIV Risk Among Impoverished African-American Women. Note: Path coefficients are standardized and significance levels were determined by critical ratios on unstandardized coefficients: * $p < .05$; ** $p < .01$; *** $p < .001$.

evidence, however, for direct effects of self-esteem or available support on risk behavior (Hyps. 5A, 5B). Instead, self-esteem and available support were related to risk behavior indirectly. Women with more self-esteem used more active (Hyp. 3A) and less avoidant coping (Hyp. 3B), each of which was associated with less risk behavior, as noted above. Also, women with more available support used more active coping which was associated with less HIV risk behavior (Hyp. 3D). In addition, personal resources were indirectly associated with HIV risk behavior through associations with emotional distress. Women with less esteem and less available support had more emotional distress (Hyps. 4A, 4B), with distress predicting risk behavior, as described above.

In addition to the direct and indirect pathways predicting risk behavior and emotional distress, there was support for several other hypotheses involving the associations of personal resources (self-esteem, available support), threat appraisal, and coping. Women with more available support were less likely to appraise the conditions of their lives as threatening. The relationship between available support and avoidant coping was not significant (Hyp. 3C). As predicted, women who appraised greater threats in their lives reported using more active and avoidant coping methods (Hyps. 6A, 6B).

DISCUSSION

A hypothesized stress and coping model predicting HIV risk behaviors and emotional distress in African-American women who were recruited from high risk populations (IV drug users, partners of IV drug users, homeless women, and prostitutes) was tested. The model included the personal resources of self-esteem and available support, and the proposed mediators of threat appraisal and coping. Emotional distress and risk behaviors were the outcomes. These variables were

assessed reliably and with careful attention to eliminating any potential confounds. The model fit the data very well, predicting a fairly large percent of the variance in these outcomes. Fourteen of 19 hypotheses were supported.

Women in this sample who had lower self-esteem, more appraised threats, and who used more avoidant coping were more likely to experience emotional distress. The relationships between self-esteem, and emotional distress were direct and indirect. Significant indirect pathways suggested that coping efforts and threat appraisals mediated the relationships between self-esteem, and emotional distress.

Women who experienced more emotional distress were more likely to engage in behaviors that placed them at risk for HIV infection. Furthermore, women who engaged in active coping were less likely to engage in risk behavior, whereas those who utilized avoidant coping were more likely to engage in risk behavior. The relationship between personal resources and risk behavior were indirect as well as direct, and were mediated by threat appraisal and coping. Women who had higher self-esteem and more available support were less likely to appraise the conditions of their lives as threatening, and used more active coping. Women who perceived greater threat in their environment utilized more of both forms of coping.

These results are consistent with earlier studies (Hobfoll, 1988; La Gory et al., 1990) in the finding that the relationship between support and distress was weaker than that between self-esteem and distress. This may suggest that importance of self-esteem as a central construct in stress and coping processes. However, it is also possible that the health benefits of social support seen in general population studies (House, Umberson, & Landis, 1988) are not as potent for individuals who are poor.

Extreme levels of stress and difficulty in coping may burden and impair support systems. Support providers may become overwhelmed by the enormous need for assistance (Dunkel-Schetter & Wortman, 1982; Hobfoll & Lerman, 1989; Nyamathi, 1991) and supportive resources may become exhausted. Unusually abundant and exceptionally skillful support may be necessary to counter the extremely adverse circumstances of poor women. Yet, they are unlikely to have such support. Still another possibility is that the providers of support for this population may be supportive of maladaptive behaviors such as IV drug use and having sex for drugs. A woman whose partner or primary social contacts are engaging in high-risk behaviors is unlikely to receive support for her own risk-reduction. Instead, she probably receives peer support and temptation to continue her high-risk activities.

Nonetheless, women with the greater available support in this sample did evidence greater self-esteem and more active coping, which may imply that support was beneficial in some respects. However, these results are consistent with other interpretations as well, such as that adaptive coping may elicit more social support (Dunkel-Schetter et al., 1987). This alternative would earmark coping as a useful point of intervention. Further detailed studies of social support processes in this population that include measures of social network norms and of social influences on risk behaviors are recommended, ideally with prospective designs and based on theoretical frameworks.

These coping results replicate those of Namir et al. (1987), who found that active-behavioral coping was associated with higher self-esteem, and avoidance coping was associated with lower self-esteem, greater concerns, and lower rates of depression in a sample of men with AIDS. However, neither that study nor ours permits firm inferences about direction of causality. The reported results are

consistent with the conclusion that greater personal resources result in lower threat appraisals and more adaptive coping, and that adaptive coping reduces emotional distress, but such conclusions are not warranted given the cross-sectional nature of the data. Alternative models may also provide a good fit to the data. It may be, for example, that instead of avoidant coping leading to increased distress, distress may lead to more avoidant coping (Cronkite & Moos, 1984), or, a bidirectional causal relationship may be most accurate. In general, the strength of the conclusions that can be drawn from structural models is enhanced when longitudinal designs are employed and when tests of relationships between variables assessed on different occasions are conducted (Breckler, 1990).

One of the primary contributions of this research is that it begins to pinpoint mechanisms whereby personal resources such as self-esteem or available support influence well-being and health behaviors. Consistent with the CHSCP and other theories (e.g., Hobfoll, Nadler, & Lieberman, 1986; Lazarus & Folkman, 1984; Taylor 1989; Taylor & Brown, 1988), these results suggest that personal resources such as social support and self-esteem are beneficial to well-being and health, in part because they lead to less appraisal of threat, more adaptive coping, and less emotional distress. Evidence suggestive of the mechanisms whereby self-esteem and support have beneficial effects is valuable because it increases our understanding of stress and coping processes and suggests avenues of intervention. Coping behavior, for example, may be much easier to alter than social support or self-esteem. In fact, if more adaptive coping behavior can be promoted with beneficial effects on emotional well-being, a woman's basic sense of self-worth may be improved as a by-product. This may also lead in the long run to more abundant and effective social support available to women in this HIV group. Thus, coping behavior may represent a window of opportunity in designing interventions for this population. Whether threat appraisal can be altered, and how, is less clear but bears consideration.

Although a larger portion of variance in outcome measures was predicted by the model, specific path coefficients were moderate, and individually, the variables accounted for relatively small amounts of variance. In particular, only a small amount of variance in risk behavior was explained. Additional variables besides those studied here may be worthy of consideration in attempting to account for variation in these outcomes in the future.

One other limitation of the findings deserves mention. Social desirability response bias may have influenced some of the results. Individuals likely to overestimate feelings of self-esteem, for example, may also under-report feelings of emotional distress. This is unlikely to fully account for results, but may have contributed in part.

From a policy perspective, research on stress in low income women and women of color that is theoretically grounded and systematic is rare (cf. Smyth & Williamson, 1991; Tucker, 1982). Continued investigation is essential to provide a clearer understanding of the psychosocial factors influencing the health outcomes of African-American women and other women of color who are at risk for HIV infection. Intervention research in this population is challenging because of barriers to access programs, such as lack of transportation and child care, and due to limited community resources to fund such programs. However, avenues of intervention such as the provision of social support, esteem enhancement, and coping skill instruction are indicated. We hope this paper served to stimulate further research

and intervention regarding AIDS risk-reduction in vulnerable populations and to promote a greater understanding of basic stress and coping processes.

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Footnotes

¹ A factor analysis of the 40-item ICC also revealed a four factor solution in this sample. Prior to performing this analysis, 16 items that were confounded with available support, psychological distress, and risk behavior were removed. A factor analysis with oblique rotation revealed that these factors accounted for approximately 41% of the variance (eigenvalues over 1.0). Items loading over .40 were retained to yield four concern factors: self-efficacy (10 items), morale (6 items), homelessness (7 items), and parenting (3 items).

² Results from the first factor analysis revealed two factors. The first factor, appraisal of threat to the safety and health of child, partner, and self, consisted of 5 items that loaded over .50 and had an internal reliability coefficient of .82. The second factor, appraisal of threat related to homelessness, consisted of 6 items that loaded over .40 and had an internal reliability coefficient of .80. In order to examine if both variables should be included in our model, two steps were taken. First, zero-order correlations with all other variables in the model were examined and found to be very similar. Second, a path model using both variables was performed and indicated that the variables acted similarly and, in some instances,

led to reduction in coefficients due to shared variance between these two measures of primary appraisal. On the basis of these results, we concluded that one measure of primary appraisal was justified and contributed to a more parsimonious model.

³ A factor analysis of these items with oblique rotation provided an identical solution. The two coping factors were correlated .12.

⁴ It is important to note that the model tested in the present study was not a saturated model (all possible paths included). Although such a model would have been easier to find an acceptable fit, our goal was not to engage in an exploratory analysis of the relationships between variables, but instead, test a model based on a priori hypotheses derived from stress and coping literature.

In order to determine whether the hypothesized model is an acceptable representation of the data, the estimated covariance matrix is evaluated against the actual sample covariance matrix through the use of several goodness-of-fit statistics. Although a common index is the probability value associated with a chi-square statistic, large sample sizes often preclude a non-significant chi-square (Newcomb, 1990). Alternatively, the ratio of the chi-square statistic to the degrees of freedom (χ^2/df) and the Comparative Fit Index (CFI, Bentler & Bonett, 1980) are more appropriate indices for evaluating the fit of a model with a large sample. Parameter estimation was performed using maximum likelihood method which assumes multivariate normal distribution of the data.