

# Psychosocial Predictors of AIDS Risk Behavior and Drug Use Behavior in Homeless and Drug-Addicted Women of Color <sup>1</sup>

*Adeline Nyamathi, R.N., Ph.D., F.A.A.N.; Judith A. Stein, Ph.D.; and Mary-Lynn Brecht, Ph.D.*

## INTRODUCTION

The incidence of acquired immunodeficiency syndrome (AIDS) is increasing more rapidly among women than among men (Centers for Disease Control and Prevention 1995). Although injection drug use has been the main vector for human immunodeficiency virus (HIV) among women, increasing numbers of American women are contracting HIV as a result of heterosexual contact with an infected partner (Centers for Disease Control and Prevention 1996). African-American and Latino women account for more than 75 percent of AIDS cases among women (Centers for Disease Control and Prevention 1993). Unfortunately, little is known about the psychosocial and behavioral factors influencing the transmission of HIV in these women, the majority of whom are impoverished and socially disadvantaged (Ickovics and Rodin 1992).

Few theory-based models have been tested to assess the psychosocial predictors of health-seeking and coping behaviors of impoverished women of color at risk for AIDS. The purpose of the study described in this chapter was to examine a causal model of personal resources, threat appraisal processes, coping styles, and barriers to risk reduction as predictors of risk behavior among a group of women at high risk. This study represents a subsample of a larger study designed to assess the coping skills and health outcomes of homeless and drug-addicted women of color in Los Angeles (Nyamathi 1991, 1992; Nyamathi et al. 1993a). Risk behavior was defined to include (1) general AIDS risk behaviors such as multiple sexual partners, injection-drug-using sexual partners, and infrequent condom use and (2) specific risky drug use behaviors such as sharing needles.

## **THEORETICAL PERSPECTIVE**

The theoretical basis for the proposed hypothetical model includes key elements of the Comprehensive Health-Seeking and Coping Paradigm (CHSCP) (Nyamathi 1989) and the Health Belief Model (Rosenstock et al. 1988).

The CHSCP has previously served as a conceptual framework to guide the assessment and implementation of strategies related to the coping behaviors and health outcomes of impoverished women of color. In this model, which has been adapted from the Lazarus and Folkman (1984) Stress and Coping Paradigm and the Schlotfeldt (1981) Health-Seeking Paradigm, six components are predictors of risk behaviors. The first five components are personal resources, social resources, cognitive appraisal, coping behavior, and, in the case of Latinas, the sociodemographic factor of acculturation to the Anglo culture. The sixth predictor, barriers to condom use, is derived from the Health Belief Model (Rosenstock et al. 1988).

Personal resources include self-esteem and lack of emotional disturbance. It is well known that impoverished homeless and drug-abusing women report low self-esteem and a fair degree of emotional disturbance (Mondanaro 1987; Wofsy 1987). Researchers have found that women with higher self-esteem perceive fewer threats in their environment (Gass and Chang 1989), cope more adaptively (Gutierrez and Reich 1988; Tucker 1982), experience less emotional disturbance (Hobfoll 1988, pp. 261-268; La Gory et al. 1990; Nyamathi 1991), use condoms more often, and exhibit significantly fewer higher risk behaviors (Nyamathi 1991). Thus, it was hypothesized that women with higher self-esteem would have less emotional disturbance, perceive fewer threats in their environment, use more active coping and less avoidant coping, and report less sexual and drug use behavior and fewer barriers to protective behaviors, such as use of condoms. Moreover, as emotional distress has been found to be associated with higher levels of threat appraisal and avoidant coping (Nyamathi et al. 1993a) and higher rates of HIV risk behavior (Tucker 1982; Nyamathi 1992; Nyamathi et al. 1993a), it was hypothesized that women with higher emotional disturbance would report more threat appraisal, more barriers to condom use, more avoidant coping, and more risky behavior.

Social resources, such as social support, provide another important dimension influencing health-seeking behaviors and health outcomes.

Research has shown that women with higher self-esteem have more available social support (Hobfoll 1988, pp. 261-268; Muhlenkamp and Sayles 1986) because they are more effective in establishing supportive relationships and are more likely to perceive support whether it exists or not. Social support acts as a resource providing encouragement to the recipient and as such promotes health protection, a sense of belonging, feelings of personal efficacy (Kobasa et al. 1985; Muhlenkamp and Sayles 1986), reduced appraisal of threat (Gass and Chang 1989), more adaptive coping (Gutierrez and Reich 1988), and less emotional disturbance (Hobfoll 1988, pp. 261-268; La Gory et al. 1990). Thus, it was hypothesized that women with greater social support would have higher self-esteem; use more active coping and less avoidant coping; and report fewer risk behaviors, less perceived threat, fewer barriers to health-seeking behavior, and less emotional disturbance.

In this study, threat appraisal is defined more personally as degree of threat of losing self-respect, being considered useless, having insufficient money, and being involved in illegal activities (Nyamathi et al. 1993a). Researchers have demonstrated that persons who perceive fewer threats in their environment and who cope more adaptively experience lower levels of emotional distress (Fawzy et al. 1990; Namir et al. 1987) and engage in fewer risky behaviors (Nyamathi et al. 1993a). The impact of threat appraisal on barriers to condom use was likewise of interest in this study. Thus, it was further hypothesized that women with greater threat appraisal would report more barriers to condom use, more avoidant coping, and more risk behavior.

Coping responses are defined as the cognitive and behavioral efforts to manage internal or external demands seen as taxing or exceeding the resources of the person (Lazarus and Folkman 1984). These responses can be described as active or adaptive coping behaviors that manage problems or as avoidant behaviors that ease the emotional distress experienced. Research has outlined the relationship between personal resources and adaptive coping (Gutierrez and Reich 1988; Tucker 1982) and the relationship of adaptive coping with lower levels of risky behavior (Nyamathi et al. 1993b) and emotional distress (Fawzy et al. 1990; Namir et al. 1987).

Recent testing of the CHSCP with a subsample of 749 African-American women was performed with structural equation modeling (Nyamathi et al. 1993a). In this study, 45 percent of the variance in

emotional distress was explained by the model, with self-esteem and avoidant coping being the strongest predictors; threat appraisal also contributed significantly. However, only 10 percent of the variance in risk behavior was explained, with emotional distress being the strongest predictor. Since only a small amount of variance in risk behavior was explained, the model was reconfigured with various risk behaviors conceptualized as outcomes and with emotional distress, renamed emotional disturbance, hypothesized as a predictor. The current study differs from the previous study in that it investigates ethnic differences among both African-American and Latino women and examines a full latent variable model with emotional disturbance as a predictor rather than as an outcome variable. Furthermore, to better understand the factors influencing health and risky behaviors, additional variables were added to this more elaborate model. These variables, which incorporate constructs of the Health Belief Model, include perceived susceptibility to AIDS and perceived barriers to condom use.

Thus, on the basis of empirical evidence and the theoretical perspectives of the CHSCP and the Health Belief Model, specific relationships among 9 variables (10 for Latinas) were hypothesized and tested within a causal model of latent constructs. These variables consisted of the personal resources of self-esteem and lack of emotional disturbance, social resources of support, threat appraisal, perceived barriers to condom use, coping behaviors, acculturation, and health outcomes of general AIDS risk behavior and specific drug use behavior. Although causality cannot be decisively determined because of the cross-sectional nature of the data, the specific hypotheses based on the theory and review of the literature are given below.

1. Self-esteem and social resources are associated with less emotional disturbance and predict less threat appraisal and fewer perceived barriers to condom use. Self-esteem and social resources are positively related to each other.
2. The personal resources of self-esteem and social resources predict more active coping, less avoidant coping, less general AIDS risk behavior, and less specific drug use behavior.
3. Emotional disturbance predicts more threat appraisal, more barriers to condom use, more avoidant coping, and greater general AIDS risk and specific drug use behaviors.

4. Greater threat appraisal is associated with more barriers to condom use, more avoidant coping, and greater general AIDS risk and specific drug use behaviors.
5. Coping style is associated with risk behavior. In particular, active coping predicts less general AIDS risk and specific drug use behavior, whereas avoidant coping has the opposite effect.

## **METHODS**

### **Subjects**

Baseline assessments were conducted among a set of African-American and Latino women selected for participation in a large-scale longitudinal research project on AIDS prevention and education. They were recruited through the directors of homeless shelters and drug recovery programs and were paid \$5 to participate in a 60-minute face-to-face interview (available in both Spanish and English). Subjects were assured of confidentiality and were interviewed by one of six trained African-American and Latino nurses and outreach workers. Interviewers and respondents were matched by race. The eligibility criteria were that the subject be (1) between the ages of 18 and 69 and (2) identified as a drug user, a sexual partner of an injection drug user, a prostitute, or a homeless individual housed in a shelter or a one-room occupancy building. Ninety-two percent of the women who met study criteria participated in the study. Six hundred ninety-one Latino and 2,019 African-American women were available for the latent variable analyses. The disparity in ethnic groups initially entering the study was due to the greater number of African-American nurses and outreach workers trained as interviewers and the smaller number of homeless shelters that house Latinas.

Preliminary comparisons showed substantive differences between the ethnic groups in various general AIDS risk behaviors, which are the focus of this research project. Therefore, it appeared prudent to analyze the groups separately, especially since the outreach component was designed to be culturally sensitive and to differ depending on the ethnicity of the recipient. In addition, the contribution of acculturation level to the variables under study among the Latinas could be assessed if the ethnic groups were studied individually. Since the two groups varied greatly in size, a random set of African-American women was selected

using a random number generation program (random set n=714) to make the degrees of freedom and fit indices more comparable between the two groups when testing the path models. A validation sample was also derived randomly from the remainder of the African-American women not included in the original random set (validation n=791) to test the feasibility and reliability of the parameters and the fit of the final path model developed for the African-American women.

Analysis of demographic characteristics of the entire sample revealed that the African-American women reported a mean age of 33, with a range of 17 to 63 years. The majority were Protestant (75 percent), unemployed (91 percent), and single (53 percent) or widowed, separated, or divorced (33 percent). The mean years of education completed was 12. Risky behaviors reported by the African-American women included using injected drugs (11 percent), using noninjected drugs (70 percent), trading sex for money or drugs (50 percent), and having a history of sexually transmitted diseases (STDs) (47 percent).

Latinas who were more acculturated, as indicated by their score above the median on the Acculturation Scale (Marin et al. 1987), reported a mean age of 32 (range 18 to 75 years) and were primarily Catholic (70 percent), unemployed (79 percent), and single (24 percent) or widowed, separated, or divorced (29 percent). The mean years of education completed was 11. Risky behaviors included using injected drugs (34 percent), using noninjected drugs (34 percent), trading sex for money or drugs (29 percent), and having a history of STDs (25 percent). Less acculturated Latinas reported a mean age of 31 (range 17 to 75 years) and were Catholic (72 percent), unemployed (88 percent), and more likely to be married (42 percent). The mean years of education completed was 7. Fewer reported risky behaviors in terms of using injected drugs (2 percent), using noninjected drugs (8 percent), trading sex for money or drugs (10 percent), or having a history of STDs (14 percent).

Furthermore, differences were apparent between ethnic groups. African-American women were more likely to report a history of STDs, use noninjected drugs, and have multiple partners than Latino women. More acculturated Latinas were more likely to be injection drug users than African-American women and less acculturated Latinas. On the other hand, less acculturated Latinas were more likely to be married and to be less educated than the other women. Finally, both more and less

acculturated Latinas were more likely to be employed and Catholic than African-American women.

### **Measures**

Multiple-indicator latent variables or factors were used in this study. The measures used to construct the latent variables are described below. The content validity of the scales and measures used in the interviews was previously established through review and consensus by a 12-member panel experienced in the areas of AIDS, ethnic/racial diversity, and coping (for more details, see Nyamathi et al. 1993a). Before the measurement model (confirmatory factor analysis [CFA]) and path models were tested with structural modeling, preliminary exploratory factor analyses were conducted to determine the optimum configuration for each latent construct. Items that were potential confounders between constructs were eliminated as described below. Alpha coefficients for constructs are reported in table 1.

**Self-Esteem.** The self-esteem latent construct was developed using responses to the Coopersmith (1967) Self-Esteem Inventory. The inventory was modified slightly to make it more understandable for this population (Nyamathi et al. 1993a). For instance, responses were coded “true” and “false” rather than “like me” and “unlike me.” To avoid overlaps between constructs, the authors deleted four items that related to the participants’ perception of their family’s social support and regard for them (e.g., “your family or friends usually think about your feelings”). Since the authors wanted all constructs to be latent factors with multiple indicators and factor analysis reported only one eigenvalue greater than one (eigenvalue 4.0), inventory items were combined randomly to create four composite indicators (Bentler and Wu 1993). These indicators were labeled Self 1, Self 2, Self 3, and Self 4.

**Social Resources.** A social resources construct was indicated by the subjects’ rating of three attributes of each type of social support: availability (e.g., “Is there someone you can talk to or someone who will listen to you?”), use of such support (e.g., “How often did you actually use this support during the past 6 months?”), and quality of the support (e.g., “How effective was the support?”). There were seven types of social support items for each attribute; these were summed to create the three indicators.

**TABLE 1.** *Factor loadings of final confirmatory factor analysis model, summary statistics, and alpha coefficients for Latino (n=691) and African-American women (n=714)*

Latent and Manifest Variables	Factor Loadings*		Summary Statistics			
	Latinas	African-Americans	Latinas		African-Americans	
			Mean	Standard Deviation	Mean	Standard Deviation
Self-esteem ( $\alpha=0.79, 0.78$ )†						
Self 1	0.66	0.70	1.52	0.28	1.55	0.24
Self 2	0.68	0.61	1.51	0.26	1.45	0.25
Self 3	0.82	0.72	1.50	0.30	1.42	0.30
Self 4	0.58	0.63	1.61	0.26	1.63	0.26
Social resources ( $\alpha=0.87, 0.86$ )						
Available support	0.91	0.92	1.66	0.37	1.70	0.35
Use support	0.98	0.96	3.03	1.35	3.15	1.32
Quality of support	0.97	0.96	2.92	1.29	3.08	1.28
Emotional disturbance ( $\alpha=0.85, 0.78$ )						
CES-D	0.85	0.78	2.74	0.72	3.03	0.71
SCL-90	0.67	0.61	1.91	0.75	1.96	0.76
POMS	0.89	0.84	2.49	0.83	2.71	0.91
Threat appraisal ( $\alpha=0.73, 0.74$ )						
Threat 1	0.70	0.74	2.34	1.24	3.13	1.40
Threat 2	0.66	0.71	2.92	1.08	3.11	1.09
Threat 3	0.70	0.71	2.84	1.04	3.07	1.12
Barriers to condom use ( $\alpha=0.62, 0.58$ )						
Don't like	0.47	0.50	2.72	0.85	2.60	0.77
Deny need	0.73	0.68	4.03	1.27	4.23	1.19
Powerless	0.67	0.69	8.18	1.71	9.02	1.94
Active coping ( $\alpha=0.81, 0.75$ )						
Control	0.80	0.64	3.80	1.07	4.20	1.02
Find out	0.86	0.77	3.81	1.11	4.06	1.12
Find meaning	0.54	0.50	3.57	1.12	3.75	1.19
Think of a way	0.57	0.45	3.59	1.08	3.86	1.09
Avoidant coping ( $\alpha=0.65, 0.63$ )						
Laugh it off	0.43	0.35	2.46	1.27	2.86	1.29
Put out of mind	0.35	0.52	3.02	1.18	3.12	1.30
Daydream	0.56	0.56	2.87	1.29	3.17	1.23
Sleep	0.55	0.56	2.76	1.20	3.04	1.31
Go away	0.54	0.44	2.50	1.25	2.86	1.31



TABLE 1. (continued)

Latent and Manifest Variables	Factor Loadings*		Summary Statistics			
			Latinas		African-Americans	
	Latinas	African-Americans	Mean	Standard Deviation	Mean	Standard Deviation
General AIDS risk behaviors ( $\alpha=0.60, 0.59$ )						
AIDS Risk 1	0.61	0.48	1.76	0.62	1.79	0.61
AIDS Risk 2	0.53	0.38	2.14	1.01	2.42	1.10
Less condom use	0.22	0.64	3.56	0.96	3.86	1.10
Number sex partners	0.52	0.71	0.37	0.35	0.57	0.54
Partner shoots drugs	0.52	0.55	1.22	0.37	1.15	0.31
Specific drug use behaviors ( $\alpha=0.66, 0.48$ )						
Drug use	0.94	1.00	1.09	1.56	2.06	1.56
Injection drug use	0.71	0.45	0.34	0.75	0.17	0.55
Sharing	0.56	0.31	1.13	0.34	1.06	0.24
Acculturation	-	-	2.98	1.43	-	-

\*All factor loadings significant ( $p < 0.001$ ).

†Alpha coefficients for Latinas and African-American women, respectively.

KEY: CES-D=Center for Epidemiological Studies Depression Scale; SCL-90=Somatization Scale of the Somatic Complaint List; POMS=Profile of Mood States.

**Emotional Disturbance.** A latent variable of emotional disturbance during the previous 6 months was indicated by mean scores on three multiple-item scales with five-point Likert responses: the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff 1977), the Somatization Scale of the Somatic Complaint List (SCL-90-R) (Derogatis and Cleary 1977), and the Profile of Mood States (McNair et al. 1981). Two items were dropped from the original 20-item CES-D, one that was highly confounded with social support and another that greatly overlapped with self-esteem. In addition to the original 16-item subscale of the SCL-90-R, four items were added: loss of appetite, gastrointestinal problems, fatigue, and insomnia.

**Threat Appraisal.** A variable reflecting generalized threat appraisal or perception was developed for this model. Twenty-two items in the Inventory of Current Concerns (Weisman et al. 1980) and seven items from the primary appraisal instrument of Folkman and colleagues (1986) were factor analyzed. Eight items that involved broad personal concerns of the women (not involving children or other family

members) emerged as highly correlated with each other (e.g., upset about being very lonely, losing hope in the future). These eight items were summed randomly to create three generalized composite threat indicators, Threat 1, Threat 2, and Threat 3.

**Barriers to Condom Use.** A list of 14 reasons for not using a condom with her main sexual partner (not a client) was presented to the participants. Factor analysis indicated that there were three reliable factors. (A fourth factor consisting of two items indicating desire for a child by either the woman or her partner was not used in the barriers construct.) The first factor was dislike of condoms by either the woman or her partner. These two responses were summed to create an indicator called “don’t like.” The second factor consisted of three items indicating denial of the need to use a condom (e.g., “you feel you can’t get AIDS from your partner”). The three responses were summed to create an indicator, “deny need.” The third factor included seven items that suggested social and educational deficiencies and lifestyle difficulties and hardships. For example, this factor included fear of getting beaten up by the partner, not knowing how to use condoms, and inability to discuss condoms with the partner. This factor was labeled “powerless.”

**Coping.** A 30-item version of the Jalowiec Coping Scale (Jalowiec and Powers 1981) assessed coping strategies used by the participant to “get one’s life together” in the past 6 months rated on a five-point Likert scale (“never” to “always”). Two of the five resultant factors were hypothesized to reflect active coping and avoidant coping. Active coping was indicated by four questionnaire items: “try to have some control over the problem,” “find out more about the problem so you can handle it better,” “try to find meaning in the problem,” and “think of different ways to handle the problem.” Avoidant coping was indicated by five items: “laugh it off,” “try to put the problem out of your mind,” “daydream,” “go to sleep,” and “go away.”

**General AIDS Risk Behaviors.** Five items associated with AIDS risk were used as indicators of risky behavior. One item was an assessment by the women of their chances of contracting the AIDS virus on a 1-to-4 scale (AIDS Risk 1). A second was how often they think about the possibility of becoming infected with the AIDS virus on a 1- to 4-scale (AIDS Risk 2). Another indicator, less condom use, was a scaled variable based on responses to three questions about sexual activity: without a condom in the past 6 months, without a condom with a

special partner, and without a condom with others. A fourth indicator was the number of sexual partners the women had in the past 6 months. Since the raw scores for this variable varied widely, and qualitatively and psychologically there was a greater difference between zero and 10 than there would be between 90 and 100, the log of the response was used for this item. The fifth item was whether, in the past 6 months, her sexual partner(s) "shot" drugs (injection drug use).

**Specific Drug Use Behaviors.** Three indicators associated with the woman's drug use were used for this construct. One indicator, drug use, was a sum of responses to use of nine categories of drugs: heroin or other narcotics, cocaine, amphetamines, hallucinogens, other barbiturates, nitrite or other inhalants, marijuana, "designer drugs," and alcohol. Another indicator, injection drug use, was the sum of responses to items questioning injection ("mainlining") of heroin, cocaine, amphetamines, hallucinogens, and other drugs. The third indicator was the response (yes or no) to whether she was sharing needles or other equipment with others, including her partner.

**Acculturation Level.** For the Latinas, the mean value on a 12-item acculturation scale reflecting language preference and country of origin of most of her friends was used as an indicator of acculturation level (Marin et al. 1987). Scores ranged from 1 to 5 (language questions: 1=Spanish only, 5=English only; friend questions: 1=all from my native country, 5=all from this country); a higher mean score was interpreted as greater acculturation.

### **Analyses**

All latent variable analyses were performed using the EQS structural equations modeling program (Bentler 1992). To specify a predictive model with correlated cross-sectional data, the authors used the technique of covariance structure modeling with latent variables. This technique allows one to evaluate "causal" hypotheses with correlational nonexperimental data. The causal hypothesis can be rejected statistically, but it cannot be unequivocally proven. This is especially the case with cross-sectional data because some alternate models might also be plausible (MacCallum et al. 1993). However, to the extent that the proposed model fits the empirical data and can be appropriately supported or justified theoretically, stronger conclusions can be drawn than

can be considered in most nonexperimental research (Bentler and Stein 1992).

The closeness of the hypothetical model to the empirical data was evaluated through goodness-of-fit indices, including chi-square/degrees of freedom ratios and the Comparative Fit Index (CFI), which ranges from zero to 1. A chi-square value of no more than twice the degrees of freedom in the model generally indicates a plausible model. The CFI is based on the improvement in fit of the hypothesized model over a model of complete independence or uncorrelatedness among the measured variables and adjusts for sample size (Bentler 1990, 1992). Values of 0.9 or higher are desirable and indicate that 90 percent or more of the covariation in the data is able to be reproduced by the hypothesized model (Bentler and Stein 1992).

**Confirmatory Factor Analyses.** Initial CFAs were performed with each hypothesized latent construct predicting its manifest indicators. All latent constructs were intercorrelated without any imputation of causality among them. This analysis tested the adequacy of the factor structure (measurement model) and assessed associations among the nine latent variables. In the CFA for the Latinas, the manifest variable of acculturation level was correlated with each latent variable. In addition, the factor structure and relationships among the latent variables for the two ethnic groups (excluding acculturation) were compared with multiple group analyses.

**Path Model.** Once a well-fitting CFA model was developed for each group, a predictive path model was explored in which self-esteem, social resources, and emotional disturbance were intercorrelated background factors that were hypothesized to predict threat appraisal, barriers to condom use, active coping, avoidant coping, AIDS risk behavior, and specific drug use behavior. In turn, threat appraisal was conceptualized as a mediating variable that predicted barriers to condom use, active and avoidant coping, and the AIDS and specific drug use behaviors. In turn, barriers to condom use, active coping, and avoidant coping were conceived as further predictors of the outcomes of AIDS risk and specific drug use behaviors. For the Latinas, the manifest indicator of acculturation level was a further covariate with the three predictor constructs and another predictor of the mediating and outcome latent variables. Nonsignificant paths and covariances were dropped gradually, following the procedure of MacCallum (1986), until a final model

emerged with all remaining paths having parameter estimate/standard error ratios of at least 2:1, which corresponds to a z-score of 2.00. The authors did not want to capitalize on marginally significant paths in samples of such a large size. Modification indices from the Lagrange Multiplier (LM) test (Chou and Bentler 1990) were examined to determine whether any additional paths or covariances between error residuals should be included. These were included only if they were theoretically plausible.

## RESULTS

### Confirmatory Factor Analysis

Table 1 presents the factor loadings for the final CFA model for the two ethnic groups. The factor loadings were similar across the groups for most of the latent constructs, although multiple group analyses revealed some substantive differences between the groups (see details below), and the goodness-of-fit indices indicated that the hypothesized factor structure was feasible for both groups. In addition, all manifest variables loaded significantly ( $p < 0.001$ ) on their hypothesized latent factors. Table 2 presents the correlations among the latent variables.

**Latinas' CFA.** The initial CFA, with all covariances between constructs included, had the fit indices  $\chi^2(483, n=691)=1,703.92$ , CFI=0.88, indicating a fit not as good as desired. After the addition of seven theoretically defensible covariances between error residuals and one complex factor loading based on suggestions from the LM test, the chi-square value decreased substantially, and the CFI improved considerably:  $\chi^2(475, n=691)=1,080.46$ , CFI=0.94. The chi-square/degrees of freedom ratio was very close to the 2:1 criterion, and the CFI was well over 0.90. The complex factor loading allowed "less condom use" to load on barriers to condom use as well as its initially hypothesized latent factor of AIDS risk behavior.

**African-American Women's CFA.** The initial CFA, performed with the randomly selected set of African-American women, was the same initial model that was hypothesized for the Latinas except that acculturation was not included as an additional covariate with the latent factors. Results showed only a moderate fit:  $\chi^2(459, n=714)=1,325.96$ , CFI=0.90. With the addition of six correlated error residuals and the same complex factor loading that was added for the Latino women ("less

**TABLE 2.** *Correlations among latent variables for Latino (n=691) and African-American women (n=714)\**

Latent Variable	1	2	3	4	5	6	7	8	9
Self-esteem		.29 <sup>c</sup>	-.78 <sup>c</sup>	-.51 <sup>c</sup>	-.30 <sup>c</sup>	.24 <sup>c</sup>	-.40 <sup>c</sup>	-.39 <sup>c</sup>	-.20 <sup>c</sup>
Social resources	.34 <sup>c</sup>		-.26 <sup>c</sup>	-.07 <sup>a</sup>	-.04 <sup>c</sup>	.23 <sup>c</sup>	-.08 <sup>a</sup>	-.11 <sup>b</sup>	-.10 <sup>b</sup>
Emotional disturbance	-.76 <sup>c</sup>	-.33 <sup>c</sup>		-.73 <sup>c</sup>	-.28 <sup>c</sup>	-.14 <sup>b</sup>	.51 <sup>c</sup>	-.44 <sup>c</sup>	-.13 <sup>b</sup>
Threat appraisal	-.58 <sup>c</sup>	-.21 <sup>c</sup>	.83 <sup>c</sup>		.31 <sup>c</sup>	.05	.41 <sup>c</sup>	.46 <sup>c</sup>	.11 <sup>b</sup>
Barriers to condom use	-.06 <sup>c</sup>	.12 <sup>b</sup>	.11 <sup>a</sup>	.23 <sup>c</sup>		-.08	.14 <sup>b</sup>	.74 <sup>c</sup>	.08 <sup>a</sup>
Active coping	.19 <sup>c</sup>	.30 <sup>c</sup>	-.03	.09 <sup>a</sup>	.16 <sup>c</sup>		.05	-.20 <sup>c</sup>	-.15 <sup>c</sup>
Avoidant coping	-.30 <sup>c</sup>	.04	.41 <sup>c</sup>	.36 <sup>c</sup>	.05	.27		-.22 <sup>c</sup>	.02
General AIDS risk behaviors	-.43 <sup>c</sup>	-.11 <sup>b</sup>	.52 <sup>c</sup>	.55 <sup>c</sup>	.39 <sup>c</sup>	-.02	.23 <sup>c</sup>		.20 <sup>c</sup>
Specific drug use behaviors	-.23 <sup>c</sup>	.05	.29 <sup>c</sup>	.36 <sup>c</sup>	.13 <sup>b</sup>	.14 <sup>b</sup>	.29 <sup>c</sup>	.52 <sup>c</sup>	
Acculturation†	-.05	.24 <sup>c</sup>	.15 <sup>c</sup>	.14 <sup>c</sup>	.19 <sup>c</sup>	.31 <sup>c</sup>	.28 <sup>c</sup>	.31 <sup>c</sup>	.42 <sup>c</sup>

\*Latinas below diagonal, African-American women above diagonal.

†Latinas only.

<sup>a</sup>p<0.05

<sup>b</sup>p<0.01

<sup>c</sup>p<0.001

condom use” on barriers to condom use), the fit improved substantially:

$\chi^2(452, n=714)=851.20, CFI=0.96$ . The CFI was quite high, and the chi-square/degrees of freedom ratio was less than 2:1. The randomly derived validation subsample (n=731) was also tested with the final factor model to be sure that the authors were not capitalizing on chance relationships in the data that generated the significant supplementary correlated error residuals. The fit indices were also good for the validation subsample  $\chi^2(452, n=731)=923.08, CFI=0.95$ ; the supplementary covariances and the complex factor loading added for the final model were equally significant in the validation sample.

**Multiple Group Comparisons.** The initial factor structure (measurement model) of the two ethnic groups was compared with a multiple group comparison analysis. The chi-square difference between a model with the factor loadings constrained to equality between the groups and a nonconstrained model was 270.91 with 33 degrees of freedom. This is a significant difference and indicates that the factor structures were not comparable in all respects across the groups. The LM test reported that six factor loadings were contributing in particular to the significant difference between the two factor structures. These included all three

indicators on the specific drug use behaviors factor (drug use, injection drug use, and sharing needles), less condom use and number of sexual partners on the general AIDS risk behaviors factor, and “try to have control over the problem” on the active coping factor. When the constraints on these indicators were dropped, the chi-square/degrees of freedom ratio for the chi-square difference improved considerably, although it was still significant (90.75, degrees of freedom=27). It was concluded that there were important behavioral differences between the two groups, especially on the AIDS risk and drug use behavioral measures. These results provided further justification for the separate analyses by ethnic group.

### **Path Analysis**

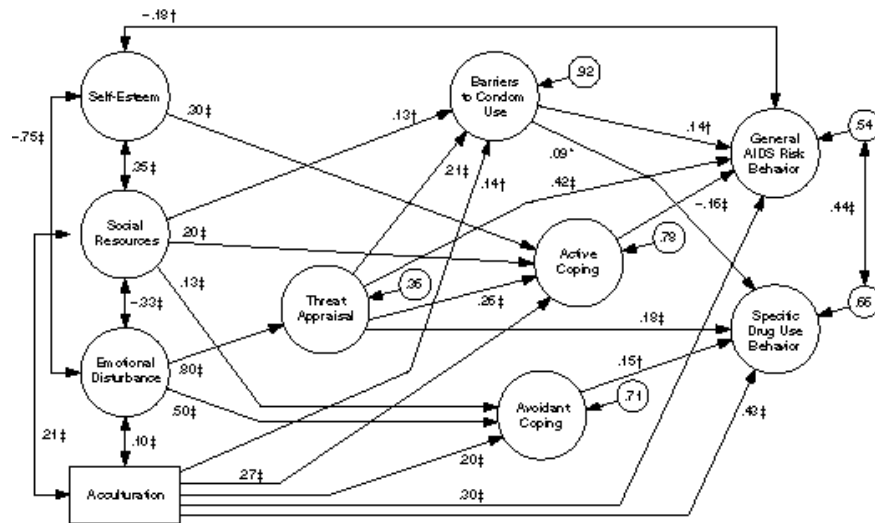
**Latinas.** The fit of the final path model for the Latinas was quite good:  $\chi^2(492, n=691)=1,013.16$ , CFI=0.95. Figure 1 presents the final path model with all significant paths and covariances included (for readability, manifest indicators are not depicted).

In the model for the Latinas, self-esteem and social resources were positively related, and both were negatively related to emotional disturbance. Threat appraisal was directly predicted solely by greater emotional disturbance. Barriers to condom use were predicted by greater social resources, greater threat appraisal, and greater acculturation. Active coping was predicted by greater self-esteem, greater social resources, greater threat appraisal, and higher acculturation. Avoidant coping was predicted by greater social resources, greater emotional disturbance, and higher acculturation.

General AIDS risk behavior among the Latinas was predicted by greater barriers to condom use, less self-esteem, greater threat appraisal, less active coping, and higher acculturation. Specific drug use behavior was predicted by threat appraisal, avoidant coping, and higher acculturation. Specific drug use and general AIDS risk behaviors were positively related.

**African-American Women.** The path model for the African-American women is presented in figure 2. The fit of the model is also quite good, with  $\chi^2(469, n=714)=859.08$ , CFI=0.96.

Self-esteem and social resources were positively correlated as expected; both of these resources were negatively correlated with emotional



**FIGURE 1.** Final structural model and standardized estimates for Latinas. Large circles designate latent variables; rectangle represents single-indicator construct of acculturation; small circles indicate residual variances. Path coefficients are indicated with single-headed arrows; double-headed arrows represent correlations between constructs.

\* $p < 0.05$

† $p < 0.01$

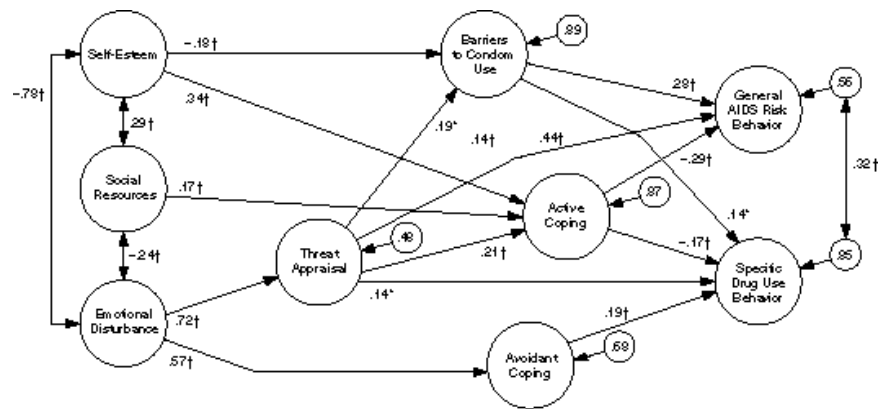
‡ $p < 0.001$

disturbance. Threat appraisal was predicted by greater emotional disturbance. There was no significant predictive path between self-esteem and threat appraisal, although they were highly correlated in the CFA. That relationship was mediated by emotional disturbance.

Barriers to condom use were predicted by less self-esteem and greater threat appraisal. Active coping was predicted by greater self-esteem, greater social resources, and greater threat appraisal. Avoidant coping, on the other hand, was significantly predicted only by greater emotional disturbance.

General AIDS risk behavior was predicted by greater barriers to condom use, greater threat appraisal, and less active coping. Avoidant coping was not a significant predictor of general AIDS risk behavior but did significantly predict more specific drug use behavior.





**FIGURE 2.** Final structural model and standardized estimates for African-American women. Large circles designate latent variables; small circles indicate residual variances. Path coefficients are indicated with single-headed arrows; double-headed arrows represent correlations between constructs.

\* $p < 0.01$

† $p < 0.001$

The final model was also tested with the validation sample for the African-American women. The fit indices were good, with  $\chi^2(469, n=731)=948.23$ , CFI=0.95. One predictive path that was significant for the original sample was not significant for the validation sample: the predictive path of barriers to condom use on specific drug use behavior. Considering the large number of parameters estimated in the model, having one discrepancy is not unsatisfactory or unexpected.

## DISCUSSION

The primary objective of this study was to evaluate the role of personal and social resources, threat appraisal processes, coping styles, and barriers to risk reduction as predictors of AIDS risk and drug use behaviors in impoverished women at risk for AIDS. The theoretical model of relationships among various psychosocial characteristics was effective in predicting risky AIDS behaviors among two groups of women at high risk for AIDS. As predicted by the hypothesized model, self-esteem was associated with social resources, and self-esteem and social

resources were inversely associated with emotional disturbance for both African-American and Latino women. Greater self-esteem and social resources also directly predicted active coping for both groups. Active coping was, in turn, associated with fewer general AIDS risk behaviors for both ethnic groups and less specific drug use behavior among the African-American women. Among Latinas, self-esteem directly influenced general AIDS risk behaviors and also indirectly through active coping. Social resources, on the other hand, influenced AIDS risk behavior indirectly through barriers to condom use and active coping. Social resources also influenced specific drug use behavior indirectly through barriers to condom use and avoidant coping.

Neither self-esteem nor social resources significantly predicted threat appraisal in the women. Certainly one implication of this is that threat appraisal is more strongly associated with other more important factors such as emotional disturbance, which also had strong and independent effects on risk behavior. Although causal implications are not possible because of the cross-sectional nature of the data, results may indicate that health care practitioners and social scientists should assist in reducing the emotional-disturbance level of impoverished women. Lowered emotional disturbance may subsequently lessen threat appraisal and its association with adverse behaviors. Further research is warranted on this relationship.

The fact that lower self-esteem predicted barriers to condom use among African-American women, whereas social resources predicted barriers to condom use among Latinas, points to important cultural differences that should guide the educational and outreach efforts of practitioners and social scientists. These findings suggest the importance of a theoretical distinction between personal and social resource variables. These resources differed in function from each other and between the two ethnic groups. For instance, self-esteem enhancement to increase condom use may be an important intervention for impoverished African-American women. However, the evidence suggests that social resources inhibit risky behaviors among African-American women but predict more barriers to condom use among Latinas. This relationship may be understood from the traditional sociocultural and religious norms among Hispanics, which forbid or strongly discourage use of condoms (Marin 1989; Marin and Marin 1992). Thus, culturally specific interventionists might consider including direct attention to

reducing barriers to condom use among African-American women through self-esteem enhancement. Although there is little empirical research on impoverished women with which to compare these findings, Tashakkori and Thompson (1992) reported that self-esteem was associated with intentions to take precautions against contracting AIDS among young African-American men in college. However, for Latinas, family and community education may be necessary to encourage reduction of barriers to condom use. Moreover, because barriers to condom use were predicted by greater threat appraisal and higher acculturation among Latinas, support is provided for interventions, directed at more acculturated women, that target cognitive appraisal processes and enhance socially approved self-efficacy skills in risk reduction, rather than employing threat appeals (Jemmott et al. 1992; Ripplettoe and Rogers 1987).

Moreover, the sexual partner's support for condom use was significantly related to increased condom use intentions. Longitudinal studies are now warranted to study the impact of such interventions on actual condom use, particularly with objective measures such as new incidence of STDs, pregnancy, and HIV seropositivity.

The two types of coping styles also function quite differently from each other and relatively differently in the two groups. For Latinas, more background factors, such as acculturation and emotional disturbance, predicted more avoidant coping than for African-Americans; active coping predicted less general AIDS risk behavior; and avoidant coping predicted more specific drug use behavior. For the African-American women, an active coping style predicted less general AIDS risk and specific drug use behaviors, and an avoidant style predicted more specific drug use behavior. A previous intervention directed at coping enhancement has demonstrated improved coping responses (Nyamathi et al. 1993c); designing culturally sensitive coping enhancement training may prove worthwhile.

The finding that drug use behavior was predicted by high threat appraisal and avoidant coping for both groups is supported by other researchers who report that impoverished women cope with stresses by using drugs (Hser et al. 1987; Reed and Moise 1987, pp. 114-128). However, higher acculturation was also a predictor for specific drug use and general AIDS risk behaviors among Latinas. Higher acculturation may be a "mixed blessing" for Latino women who may not yet have

replaced traditional standards and values with those equal to what they have given up to become more Americanized. As these analyses suggest, higher acculturation, although positively associated with more active coping and greater social resources, is also associated with more specific drug use and more general AIDS risk behaviors. Less acculturated Latinas may be more responsive to their societal proscriptions against the use of drugs and promiscuous behavior, particularly during the childbearing and childrearing phases of their lives. Thus, the impoverished and yet more acculturated Latino and African-American women may be the ones to target for educational outreach about negative consequences of drug addiction on fetal and neonatal development (Madden et al. 1986), parenting dysfunction, and loss of custody of their children (Miller and Downs 1993).

#### NOTE

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#### REFERENCES

- Bentler, P.M. Comparative fit indexes in structural models. *Psychol Bull* 107:238-246, 1990.
- Bentler, P.M. *EQS Structural Equations Program Manual*. Los Angeles: BMDP Statistical Software, 1992.
- Bentler, P.M., and Stein, J.A. Structural equation modeling in medical research. *Stat Meth Med Res* 1:159-181, 1992.
- Bentler, P.M., and Wu, E.J.C. *EQS/Windows User's Guide*. Los Angeles: BMDP Statistical Software, 1993.
- Centers for Disease Control and Prevention. *HIV/AIDS Surveillance Rep* 5(1), April 1993.
- Centers for Disease Control and Prevention. *HIV/AIDS Surveillance Rep* 7(2), 1995.
- Centers for Disease Control and Prevention. Update: Mortality attributable to HIV infection among persons aged 25-44 years, United States, 1994. *MMWR Morb Mortal Wkly Rep* 45:121-125, 1996.
- Chou, C.P., and Bentler, P. Model modification in covariance structure modeling: A comparison among likelihood ratio, Lagrange Multiplier, and Wald tests. *Multivariate Behav Res* 25:115-136, 1990.

- Coopersmith, S. *The Antecedents of Self-Esteem*. San Francisco: W.H. Freeman, 1967.
- Derogatis, L., and Cleary, P. Confirmation of the dimensional structure of the SCL-90: A study in construct validation. *J Clin Psychol* 33:981-989, 1977.
- Fawzy, F.I.; Cousins, N.; Fawzy, N.W.; Kemeny, M.E.; Elashoff, R.; and Morton, D. A structured psychiatric intervention for cancer patients: Changes over time in methods of coping and effective disturbance. *Arch Gen Psychiatry* 47:720-725, 1990.
- Folkman, S.; Lazarus, R.S.; Dunkel-Schetter, C.; De Longis, A.; and Gruen, R. Dynamics of a stressful encounter: Cognitive appraisal, coping, and encounter outcomes. *J Pers Soc Psychol* 50:992-1003, 1986.
- Gass, K., and Chang, A. Appraisals of bereavement, coping, resources, and psychosocial health dysfunction in widows and widowers. *Nurs Res* 38:31-36, 1989.
- Gutierrez, S., and Reich, J. Attributional analysis of drug abuse and gender: Effects of treatment and relationship to rehabilitation. *J Soc Clin Psychol* 7:176-191, 1988.
- Hobfoll, S. Stress resistance in times of illness: Further applications of the models of ecological congruence and conservation of resources. In: Hobfoll, S., ed. *The Ecology of Stress*. New York: Hemisphere, 1988.
- Hser, J.I.; Anglin, M.D.; and McGoethlin, W. Sex differences in addict career. I. Initiation of use. *Am J Drug Alcohol Abuse* 13(1&2):33-57, 1987.
- Ickovics, J., and Rodin, J. Women and AIDS in the United States: Epidemiology, natural history, and mediating mechanisms. *Health Psychol* 11:1-16, 1992.
- Jalowiec, A., and Powers, M.J. Stress and coping in hypertensive and emergency room patients. *Nurs Res* 30:10-15, 1981.
- Jemmott, J.B.; Jemmott, L.S.; and Fong, G.T. Reductions in HIV risk-associated sexual behavior among black male adolescents: Effects of an AIDS prevention intervention. *Am J Public Health* 82:372-377, 1992.
- Kobasa, S.C.; Maddi, S.R.; Puccetti, M.C.; and Zola, M. Effectiveness of hardiness, exercise, and social support as resources against illness. *J Psychosom Res* 29:525-533, 1985.
- La Gory, M.; Ritchey, F.; and Mullis, I. Depression among the homeless. *J Health Soc Behav* 31:87-101, 1990.
- Lazarus, R.S., and Folkman, S. *Stress, Appraisal, and Coping*. New York: Springer, 1984.
- MacCallum, R. Specification searches in covariance structure modeling. *Psychol Bull* 100:107-120, 1986.

- MacCallum, R.C.; Wegener, D.T.; Uchino, B.N.; and Fabrigar, L.R. The problem of equivalent models in applications of covariance structure analysis. *Psychol Bull* 114:185-199, 1993.
- Madden, J.D.; Payne, T.F.; and Miller, S. Maternal cocaine abuse and effects on the newborn. *Pediatrics* 77:209-211, 1986.
- Marin, B.V., and Marin, G. Predictors of condom accessibility among Hispanics in San Francisco. *Am J Public Health* 82(4):592-595, 1992.
- Marin, G. AIDS prevention among Hispanics: Needs, risk behaviors, and cultural values. *Public Health Rep* 104(5):411-415, 1989.
- Marin, G.; Sabogal, R.; Marin, B.; Otero-Sabogal, R.; and Perez-Stable, E. Development of a short acculturation scale for Hispanics. *Hispanic J Behav Sci* 9:183-205, 1987.
- McNair, D.; Lorr, M.; and Droppleman, L. *Profile of States*. San Diego, CA: Educational and Industrial Testing Service, 1981.
- Miller, B.A., and Downs, W.R. The impact of family violence on the use of alcohol by women. *Alcohol Health Res World* 17(2):137-143, 1993.
- Mondanaro, J. Strategies for AIDS prevention: Motivating health behavior in drug dependent women. *J Psychoactive Drugs* 19(2):143-149, 1987.
- Muhlenkamp, A.F., and Sayles, J.A. Self-esteem, social support, and positive health practices. *Nurs Res* 35:334-338, 1986.
- Namir, S.; Wolcott, D.; Fawzy, F.; and Alumbaugh, M. Coping with AIDS: Psychological and health implications. *J Appl Soc Psychol* 17:309-328, 1987.
- Nyamathi, A. Comprehensive health seeking and coping paradigm. *J Adv Nurs* 14(4):281-290, 1989.
- Nyamathi, A. Relationship of resources to emotional distress, somatic complaints, and high-risk behaviors in drug recovery and homeless minority women. *Res Nurs Health* 14(4):269-277, 1991.
- Nyamathi, A. A comparative study of factors relating to HIV risk level of black homeless women. *J Acquir Immune Defic Syndr* 5:222-228, 1992.
- Nyamathi, A.; Bennett, C.; Leake, B.; Lewis, C.; and Flaskerud, J. AIDS-related knowledge, perceptions, and behaviors among impoverished minority women. *Am J Public Health* 83:65-71, 1993c.
- Nyamathi, A.; Leake, B.; Flaskerud, J.; Lewis, C.; and Bennett, C. Outcomes of specialized and traditional AIDS counseling programs for impoverished women of color. *Res Nurs Health* 16:11-21, 1993b.
- Nyamathi, A.; Stein, J.A.; and Brecht, M.L. Psychosocial predictors of AIDS risk behavior and drug use behavior in homeless and drug-addicted women of color. *Health Psychol* 14(3):265-273, 1995.
- Nyamathi, A.; Wayment, H.; and Dunkel-Schetter, C. Psychosocial correlates of emotional distress and risk behavior in African-American women at risk for HIV infection. *Anxiety Stress Coping* 6:133-148, 1993a.

- Radloff, S. The CES-D scale: A self-report depression scale for research in the general population. *Appl Psychol Meas* 1:385-401, 1977.
- Reed, B., and Moise, R. Implications for treatment and future research. In: *Addicted Women: Family Dynamics, Self Perceptions, and Support Systems*. DHEW Publication No. (ADM)80-762. Washington, DC: Supt. of Docs. U.S. Govt. Print. Off., 1987.
- Rippletoe, P.A., and Rogers, R.W. Effects of components of protection-motivation theory on adaptive and maladaptive coping with a health threat. *J Personal Soc Psychol* 52:596-604, 1987.
- Rosenstock, I.; Strecher, V.; and Becker, M. Social learning theory and the health belief model. *Health Educ Q* 15:175-183, 1988.
- Schlotfeldt, R. Nursing in the future. *Nurs Outlook* 29:295-301, 1981.
- Tashakkori, A., and Thompson, V.D. Predictors of intention to take precautions against AIDS among black college students. *J Appl Soc Psychol* 22(9):736-753, 1992.
- Tucker, B.M. Social support and coping: Applications for the study of female drug abuse. *J Soc Issues* 38:117-137, 1982.
- Weisman, A.; Worden, J.; and Sobel, H. *Psychosocial Screening and Intervention With Cancer Patients: Research Report*. Cambridge, MA: Shea Bros., 1980.
- Wofsy, C.B. Human immunodeficiency virus infection in women. *JAMA* 257:2074-2076, 1987.

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#### **AUTHORS**

Adeline Nyamathi, R.N., Ph.D., F.A.A.N.  
Associate Professor  
School of Nursing  
University of California, Los Angeles  
(310) 825-8405 (Tel)  
(310) 206-7433 (Fax)  
anyamathi@sonnet.ucla.edu (E-mail)

Judith A. Stein, Ph.D.  
Research Psychologist  
University of California, Los Angeles  
Department of Psychology  
(310) 825-1396 (Tel)  
(310) 206-4315 (Fax)  
jastein@ucla.edu (E-mail)

Mary-Lynn Brecht, Ph.D.  
Principal Statistician  
School of Nursing  
University of California, Los Angeles  
(310) 825-5114 (Tel)  
(310) 206-7433 (Fax)  
lbrecht@sonnet.ucla.edu (E-mail)

10833 Le Conte Avenue  
Los Angeles, CA 90024-6918



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