Emotional Distress in Nonmetropolitan Persons Living With HIV Disease Enrolled in a Telephone-Delivered, Coping Improvement Group Intervention

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The study delineated depressive symptoms and modeled emotional distress in persons living with HIV disease in nonmetropolitan areas of 13 U.S. states. Participants ($N = 329$) were enrolled in a randomized clinical trial of a telephone-delivered, coping improvement group intervention, and 60% reported moderate or severe levels of depressive symptomatology on the Beck Depression Inventory. Structural equation modeling indicated that participants who experienced more severe HIV symptomatology, received less social support, and engaged in more avoidant coping also experienced more emotional distress (a latent construct comprising depressive symptoms and emotional well-being). Greater HIV-related stigma and rejection by family led to more emotional distress, with social support and avoidant coping mediating almost entirely the effects of the former 2 variables. The model accounted for 72% of the variance in emotional distress in nonmetropolitan persons living with HIV disease.

Key words: HIV, AIDS, nonmetropolitan, depression, symptom severity, social support

Since the initial appearance of HIV disease in the United States 20 years ago, myriad studies have characterized the psychosocial sequelae of this unpredictable illness.[1] Although not resolute, many studies have identified elevated rates of depression, anxiety, and suicidal ideation in HIV-infected persons (Bing et al., 2001; Kalichman, Heckman, Kochman, Sikkema, & Bergholte, 2000). However, a review of this literature also reveals that most AIDS mental health studies have relied almost exclusively on samples recruited from large AIDS epicenters, such as New York City, Chicago, and San Francisco.

The mental health needs of nonmetropolitan persons living with HIV disease remain poorly understood, and this oversight is un-fortunate for at least three reasons.[2] First, through December 2001, more than 49,300 persons were living in nonmetropolitan areas of the United States at the time of their AIDS diagnosis (Centers for Disease Control and Prevention, 2001). Second, HIV-related migration patterns from urban to nonmetropolitan areas (Buehler, Frey, & Chu, 1995) and the continued practice of high HIV-transmission risk behaviors in nonmetropolitan areas (Kelly et al., 1995) portend that many nonurban areas will experience more AIDS cases than ever before. Third, relative to their urban counterparts, HIV-infected persons in nonmetropolitan areas experience more loneliness, coping difficulties, barriers to health care and social services, and AIDS-related discrimination, all of which may magnify their need for mental health support services (Heckman et al., 1998).

Research characterizing suicidal ideation in the current study sample found high levels of AIDS-related stigma, few social support resources, and a reliance among participants on maladaptive coping strategies (Heckman et al., 2002). Many of the factors that were predictive of suicidal ideation in this sample are subsumed under Schmitz and Crystal's (2000) AIDS-specific model of emotional distress. Accordingly, Schmitz and Crystal's model

[1] The term *HIV disease* refers to the larger population of persons who are either living with HIV infection or who have progressed to AIDS.

[2] The Centers for Disease Control and Prevention defines *nonmetropolitan* as communities with 50,000 or fewer residents (Centers for Disease Control and Prevention, 2001).

may provide a viable conceptual framework by which to understand emotional distress in people living with HIV disease in nonmetropolitan areas.

Schmitz and Crystal's (2000) model posits that emotional distress is related to HIV-symptom severity, HIV-related stigma, family rejection, social support, and active and avoidant coping. The model also hypothesizes that more severe HIV symptomatology produces increased stress in one's social network and that this stress eventually diminishes the size of the informal support system. In addition, greater family rejection and discrimination due to one's HIV-seropositive status leads to further reductions in potential social support resources. The model also posits that one's coping style choice (i.e., active vs. avoidant coping) mediates the association between social support and distress; individuals who receive more social support are believed to engage in less avoidance coping. Although the model has explained a significant amount of variance in emotional distress in HIV-infected persons in urban areas, Schmitz and Crystal cautioned that relations among distress, coping, and social support may operate differently in nonmetropolitan areas, where fewer health care and social services are available.

Our primary objectives in the current study were to characterize depressive symptoms in intervention-seeking, nonmetropolitan persons living with HIV disease and determine whether Schmitz and Crystal's (2000) model—developed primarily with urban samples—generalizes to this group (see Figure 1 for the model and hypothesized relationships). To accomplish these aims, we examined preintervention data provided by 329 persons living with HIV disease in nonmetropolitan areas of 13 U.S. states who were enrolled in a randomized clinical trial of a telephone-delivered, coping improvement group intervention (Heckman et al., 1999). To the best of our knowledge, this is the largest and most geographically diverse sample of nonmetropolitan persons living with HIV disease assembled to date. All individuals in the current study

lived in communities of 50,000 residents or fewer that were located at least 20 miles (32.2 km) from a city of 100,000 or more residents. The cutoff of 50,000 residents was used because it is used by the Centers for Disease Control and Prevention (2001) to designate communities as "non-metropolitan." On the basis of Schmitz and Crystal's model, it was hypothesized that emotional distress would be influenced directly by HIV symptomatology, HIV-related stigma, rejection by family, social support, active coping, and avoidant coping. It was also hypothesized that social support would influence emotional distress via an indirect effect on participants' coping.

Method

Sample Characteristics

Participants (237 men and 92 women) were, on average, 41.9 years of age (SD = 8.3) and had completed 12.9 years of education. A total of 74% of participants were Caucasian, 17% were African American, 3% were Latino/Latina, 2% were Native American, and 4% were of other ethnicities (the modal other ethnicity was mixed). Fifty-three percent of participants lived in towns of 10,000 residents or fewer and the average participant lived 104.9 miles (168.8 km) from a city of 100,000 or more (Mdn = 71 miles [114.3 km]). Participants had been living with HIV disease for an average of 9.6 years; 46% had progressed to AIDS. A total of 83% of participants had annual incomes below $20,000. Relationship status of participants was 44% single, 23% partnered, 16% legally married, 15% legally divorced or separated, and 2% widowed. Of men, 74% self-identified as gay or bisexual and 26% self-identified as heterosexual, whereas 11% of women self-identified as lesbian or bisexual and 89% self-identified as heterosexual. A total of 81% of the participants had been prescribed antiretroviral therapy.

Procedure and Assessment Instrument

Participants were recruited through 27 different AIDS service organizations (ASOs) in nonmetropolitan areas of Ohio (27%, n = 89), Pennsyl-
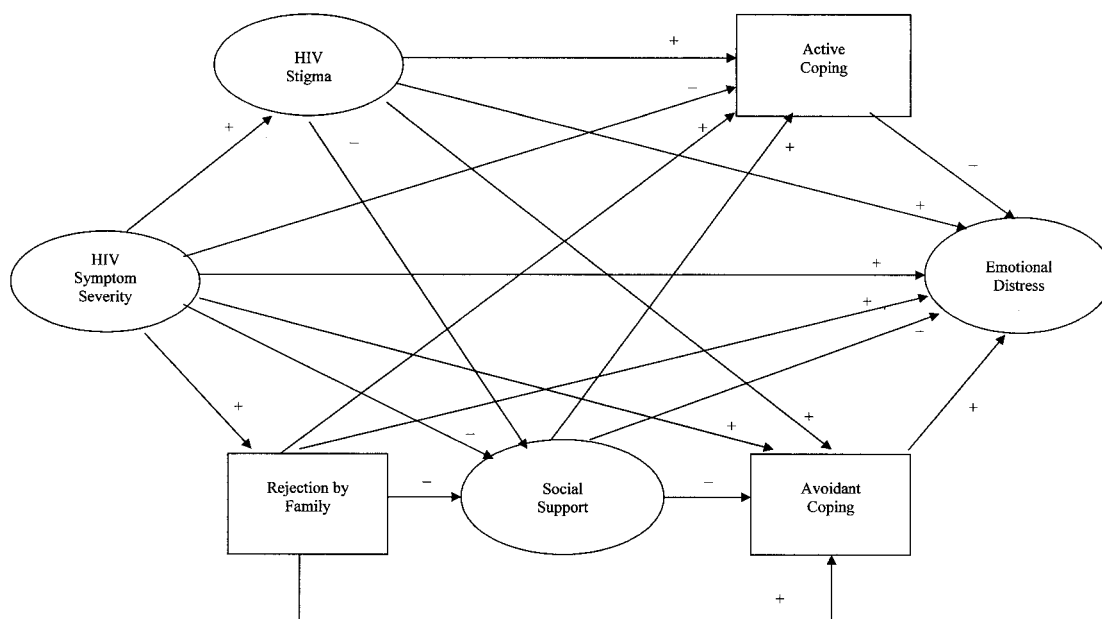

Figure 1. Hypothesized relationships among emotional distress, coping, and support in nonmetropolitan persons living with HIV disease.

vania (11%, $n = 36$), Virginia (10%, $n = 33$), New York (10%, $n = 33$), Wisconsin (7%, $n = 23$), Rhode Island (7%, $n = 23$), Michigan (5%, $n = 16$), Minnesota (5%, $n = 16$), West Virginia (5%, $n = 16$), Arizona (4%, $n = 13$), Indiana (3%, $n = 11$), Montana (3%, $n = 11$), and Alaska (3%, $n = 9$). All ASOs provided HIV-related services to both HIV-seropositive and seronegative persons, such as HIV counseling and testing, primary prevention interventions, and mental health services.

To recruit participants, ASOs disseminated recruitment-related brochures to their HIV-infected nonmetropolitan clients and displayed print materials in their agency that described the study. Between July 1999 and June 2002, eligibility-screening interviews were conducted with 360 individuals. Of those interviewed, 329 satisfied the following inclusion criteria: (a) 18 or more years of age; (b) provision of informed consent; (c) a self-reported diagnosis of HIV/AIDS; and (d) residence in a community of 50,000 or fewer residents that was at least 20 miles (32.2 km) from a city of 100,000 or more residents. No inclusion or exclusion criteria related to psychological functioning were used. Of the 360 potential enrollees, 16 were excluded from the study because they lived in communities exceeding 50,000 residents, and 15 individuals who had satisfied inclusion criteria withdrew from the study prior to completing a baseline survey. Therefore, the study assessed 91% of all persons who sought to enroll into the program.

Participants completed the self-administered baseline survey in their place of residence and returned it to the study institution via regular mail. A $30 incentive payment was provided upon receipt of the survey. Psychometric characteristics of study measures are based on data collected in the current study.[3] All measures used a retrospective recall period of the past 7 days. The survey took approximately 1 hr to complete and assessed each construct described below.

Outcome Variable—Emotional Distress

Depressive symptomatology was assessed using the 21-item Beck Depression Inventory (BDI; Beck & Steer, 1993) as well as a 14-item version of the BDI that we shortened to assess only cognitive–affective symptoms of depression. The 14-item version of the BDI was used to minimize overlap between HIV manifestation, medication side effects, and somatic symptoms of depression. Both versions of the BDI demonstrated excellent psychometric properties (21-item BDI: $\alpha = .90$, $r_{tt} = .76$; 14-item BDI: $\alpha = .88$, $r_{tt} = .73$). The 6-item Emotional Well-Being subscale of the Functional Assessment of HIV Infection (FAHI) Scale (McCain & Cella, 1995) was used in conjunction with the 14-item BDI to construct the latent outcome variable of emotional distress. Each of the 6 items (sample items: "I feel sad," and "I worry about dying") used a 5-point Likert-type scale ($0 = Not at all$ to $4 = Very much$) and was scored so that higher values indicated poorer emotional well-being ($\alpha = .83$, $r_{tt} = .71$).

Predictor Variables

HIV-symptom severity. One item that used a 5-point scale assessed limitations in daily activity due to one's HIV disease ($1 = I am HIV-positive but I have no symptoms$ to $5 = Because of my symptoms, I am in bed more than half of my waking hours$; $r_{tt} = .67$). Four items from the Physical Well-Being subscale of the FAHI (McCain & Cella, 1995) assessed HIV symptomatology. Each item (items: "I had pain," "I felt sick," "I had nausea," and "I had side effects from treatments") used a 5-point Likert-type scale ($0 = Not at all$ to $4 = Very much$) to assess symptom severity ($\alpha = .81$, $r_{tt} = .72$).

HIV stigma. Two multi-item measures assessed perceptions of HIV-related stigma. The 2-item Barriers Due to Stigma subscale of the Barriers to Care Scale (Heckman et al., 1998) assessed the extent to which stigma and discrimination prevented participants from receiving health care and social services (items: "Community residents stigma against people living with HIV/AIDS" and "The level of HIV-related knowledge among community citizens"). Both items used a 4-point Likert-type scale to assess whether HIV-related stigma impeded access to services ($1 = No problem at all$ to $4 = Major problem$; $\alpha = .88$, $r_{tt} = .73$). Participants also

completed 2 items that assessed levels of stress produced by discrimination they experienced (Sikkema et al., 2000). Each item (items: "Discrimination due to HIV/AIDS" and "Discrimination due to one's sexual orientation") used a 5-point Likert-type scale ($1 = Not a problem$ to $5 = Most serious problem$) to assess the problem severity of each stigma-related stressor ($\alpha = .71$, $r_{tt} = .63$). Both scales were scored so that higher values indicated greater perceptions of stigma.

Rejection by family. Rejection by family members was assessed using the Support From Family subscale of the Provisions of Social Relations Scale (PSRS; Turner, Frankel, & Levin, 1983). Each of the 6 items (sample item: "My family lets me know that I am a worthwhile person") used a 5-point Likert-type scale ($1 = Very much like me$ to $5 = Not at all like me$) to assess support provided by family members. Items were scored so that higher values indicated more rejection by family ($\alpha = .88$, $r_{tt} = .77$).

Social support. Three multi-item scales assessed social support. The Support from Friends subscale of the PSRS (Turner et al., 1983) used 9 items (sample item: "I feel very close to some of my friends") to assess support received from friends ($\alpha = .89$, $r_{tt} = .72$). A 10-item version of the UCLA Loneliness Scale (sample item: "I lack companionship") used a 4-point Likert-type scale ($1 = Never$ to $4 = Often$) to assess perceptions of loneliness ($\alpha = .83$, $r_{tt} = .70$; Russell, Peplau, & Cutrona, 1980). Finally, the 6-item Social Well-Being subscale of the FAHI (sample item: "I felt distant from my friends") assessed participants' sense of social well-being. This latter scale used a 5-point Likert-type scale ($0 = Not at all$ to $4 = Very much$) and demonstrated good psychometric properties ($\alpha = .83$, $r_{tt} = .68$).

Coping style choice. The Ways of Coping Checklist (WOCC; Folkman & Lazarus, 1980) assessed cognitive and behavioral responses used to cope with disease-related stress. A principal-components analysis conducted with all WOCC items yielded two factors (eigenvalues > 1.5) that were used to form two factor scales measuring coping style choice. The Active Coping Scale consists of 14 items (sample items: "I made a plan of action and followed it" and "I knew what had to be done, so I doubled my efforts to make things work") and was scored so that higher values indicated more frequent use of active coping ($\alpha = .93$, $r_{tt} = .68$). The Avoidant Coping Scale consists of 11 items (sample items: "I wished that the situation would go away or somehow be over with" and "I refused to believe that it had happened") and was scored so that higher values indicated greater use of avoidant coping ($\alpha = .87$, $r_{tt} = .66$).

Demographics. Participants provided their age, sex, race, education, income, employment status, relationship status, sexual orientation, population of community of residence, and distance from their town of residence to a city of 100,000 or more residents.

Statistical Analysis

Depressive symptoms were characterized using descriptive statistics for the 21-item BDI and the 14-item Cognitive–Affective subscale of the BDI. Full information maximum likelihood estimation in LISREL (Version 8.52) was used to fit Schmitz and Crystal's (2000) model. The model was deemed adequate if the root-mean-square error of approximation (RMSEA) was less than .05 and if the ratio of the chi-square goodness-of-fit statistic to its degrees of freedom was less than 3.0. Structural equation modeling (SEM) also delineated bivariate correlations and total, direct, and indirect path coefficients among variables.

Results

Depressive Symptoms in Intervention-Seeking Nonmetropolitan Persons With HIV/AIDS

Using cutoff values recommended by Beck and Steer (1993) for the 21-item BDI, we found that 17% of participants had minimal

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[3] Test–retest reliability coefficients (r_{tt}) were obtained using data provided by 114 no-treatment control group participants who provided pre- and postintervention assessments separated by a 10-week period.

or no depression (BDI scores of 0–9), 23% had mild depression (BDI scores of 10–16), 41% had moderate depression (BDI scores of 17–29), and 19% had severe depression (BDI scores of 30–63). The sample's mean BDI score was in the moderate range ($M = 20.1$), with no differences between men ($M = 19.7$) and women ($M = 20.9$), $F(1, 311) = 0.95$, $p > .30$, or between Caucasian ($M = 20.3$) and African American, Latino/Latina, Native American, and Other participants ($M = 19.0$), $F(1, 309) = 0.41$, $p > .10$. An analysis of variance also indicated that depressive symptoms were comparable in heterosexual men ($M = 19.8$, $n = 46$), heterosexual women ($M = 19.1$, $n = 57$), and gay men ($M = 20.5$, $n = 118$), $F(2, 218) = 0.35$, $p > .70$.

A second descriptive analysis characterized depressive symptoms using only cognitive–affective items of the BDI. This subscale was used to minimize overlap among HIV disease manifestation, treatment side effects, and somatic symptoms of depression. This analysis, which identified the proportion of participants who exceeded an interpolated clinical cutoff on the 14-item BDI, indicated that 58% of participants reported elevated symptoms of depression.[4] Similar to the full BDI, cognitive–affective symptoms of depression did not vary by gender, race, or sexual orientation (all ps > .15).

Modeling Emotional Distress in HIV-Infected Nonmetropolitan Persons

We used SEM to identify bivariate correlations among variables (predictors of emotional distress) and tested whether Schmitz and Crystal's (2000) model explained emotional distress in HIV-infected nonmetropolitan persons. Table 1 contains the means and standard deviations of each observed variable and the variance–covariance matrix of all observed variables. As predicted by Schmitz and Crystal, emotional distress was negatively correlated with social support, $r(329) = -.66$, $p < .01$, and positively correlated with avoidant coping, $r(329) = .64$, $p < .01$; HIV symptom severity, $r(329) = .58$, $p < .01$; rejection by family members, $r(329) = .40$, $p < .01$; and HIV-related stigma, $r(329) = .46$, $p < .01$. Emotional distress was not associated with active coping, $r(329) = .05$, $p > .10$. SEM analyses indicated that Schmitz and Crystal's model provided an excellent fit to study data, RMSEA = .038, FIML $\chi^2(72, N = 329) = 106.4$, $p < .01$, and χ^2 to df ratio = 1.48.

Direct effects of predictor variables on emotional distress. Figure 2 displays the significant direct effects resulting from the structural analysis; nonsignificant effects have been omitted for simplification. SEM indicated that three variables exhibited significant direct effects on emotional distress. As we expected and as shown in Figure 2, participants who reported elevated levels of emotional distress also had more severe HIV symptomatology ($\beta = .30$, $p < .01$), received less social support ($\beta = -.46$, $p < .01$), and engaged in more avoidant coping ($\beta = .32$, $p < .01$). The set of predictor variables accounted for 72% of the variance in the latent measure of emotional distress.

Indirect and total effects of predictor variables on emotional distress. As shown in Table 2, SEM also delineated the total and indirect effects of predictor variables on emotional distress. These analyses showed that approximately 50% of the total effect of HIV symptom severity on emotional distress (.28/.58, $p < .01$) was delivered through other predictor variables in the model. Furthermore, approximately 74% of the total effect of HIV stigma on emotional distress (.20/.27, $p < .05$) and 100% of the total effect of family rejection (.29/.29, $p < .01$) was delivered via intervening variables in the model. In a result consistent with Schmitz and Crystal's (2000) model, participants who received more social support also engaged in less avoidance coping, which may have ameliorated emotional distress in participants.

Discussion

Many individuals in this sample of intervention-seeking, nonmetropolitan persons living with HIV disease reported elevated levels of depressive symptoms. Whether assessed using total BDI scores or a modified version of the inventory that assessed only cognitive–affective symptoms of depression, data indicated that approximately 60% of participants reported moderate or severe levels of depressive symptomatology. This finding is troubling given consistent and positive correlations between depressive symptoms and treatment nonadherence (Catz, Kelly, Bogart, Benotsch, & McAuliffe, 2000), suicidal ideation (Kalichman et al., 2000), more rapid progression to AIDS (Leserman et al., 1999), and mortality (Ickovics et al., 2001) in HIV-infected persons.

A comparison of findings from the current study with those in similar research portends that depressive symptoms in this population may be relatively high. Research characterizing depressive symptoms in HIV-seronegative persons in nonmetropolitan areas reports rates of depression ranging from 5% to 31% (Muntaner & Barnett, 2000), far less than that observed in the current sample. However, it should be noted that several factors complicate efforts to contrast depressive symptoms in this sample with those of other relevant comparison groups. For example, research on depression in HIV-infected persons uses a variety of assessment methodologies, ranging from an actual diagnosis of depression based on face-to-face interviews to the use of self-administered measures of depressive symptoms. These disparate methods complicate cross-study comparisons. Furthermore, estimating rates of depressive symptoms in nonmetropolitan persons living with HIV disease based on this study may be imprudent because participants had self-enrolled into a mental health intervention. Future research that delineates rates of depressive symptoms in larger and probability-based samples of nonmetropolitan persons living with HIV disease would contribute significantly to the AIDS mental health literature.

Nonetheless, several conclusions can be reached with relative certainty based on study findings. First, the high levels of depressive symptoms observed in participants indicate that AIDS mental health practitioners who offer mental health services to nonmetropolitan persons living with HIV disease are likely to enroll large numbers of individuals with depressive disorders—even if these programs do not use formal inclusion criteria vis-à-vis psychological functioning. Second, study findings support research demonstrating high levels of depressive symptoms in people living with HIV disease in nonmetropolitan areas. Ullrich, Lutgendorf, and Stapleton (2002) found that the average level of depression in

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[4] The clinical cutoff for depression on the Cognitive–Affective subscale of the BDI was interpolated using the following formula: $16/63 = x/42$. The former ratio represents the recommended clinical cutoff of 16 when all 21 BDI items are used (for a total possible score of 63), whereas 42 represents the total possible score on the 14-item Cognitive–Affective subscale of the BDI. In the above equation, $x = 10.7$; thus, a clinical cutoff of 11.0 was used for the cognitive–affective subscale.

Table 1
Variances and Covariances of Observed Variables in Structural Analysis Modeling Emotional Distress in 329 HIV-Infected Persons in Nonmetropolitan Areas

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Family Rejection	42.27														
2. Barriers Due to Stigma	2.46	5.57													
3. Stress Due to Discrimination	3.44	2.20	5.50												
4. Social Well-Being	−4.06	−0.36	−0.41	0.88											
5. Support From Friends	−2.38	−0.31	−0.40	0.40	0.72										
6. Loneliness	2.02	0.36	0.30	−0.38	−0.28	0.40									
7. Active Coping	−0.79	0.38	0.18	0.12	0.14	−0.06	0.58								
8. Avoidant Coping	0.89	0.57	0.37	−0.19	−0.14	0.15	0.32	0.53							
9. Cognitive–Affective Symptoms	17.40	6.46	3.69	−3.25	−3.00	2.74	−0.04	2.93	61.65						
10. Poor Emotional Well-Being	1.70	0.85	0.47	−0.32	−0.30	0.26	0.07	0.36	5.69	1.03					
11. Limits due to symptoms	0.69	0.17	0.23	−0.02	−0.14	0.03	0.05	0.13	1.73	0.31	1.75				
12. Had nausea	1.14	0.52	0.48	−0.18	−0.22	0.13	0.05	0.19	3.37	0.53	0.52	1.74			
13. Had pain	1.37	0.75	0.64	−0.19	−0.12	0.18	0.08	0.22	2.80	0.46	0.45	0.71	1.80		
14. Side effects	1.50	0.67	0.59	−0.30	−0.18	0.17	0.16	0.26	3.43	0.53	0.64	1.01	0.79	2.22	
15. Felt sick	1.29	0.92	0.77	−0.20	−0.18	0.16	0.11	0.29	4.18	0.68	0.63	1.17	0.93	1.28	1.71
M	15.79	4.68	7.90	2.17	3.58	2.41	1.43	1.57	12.73	1.69	2.47	1.57	2.06	1.72	1.77
SD	6.50	2.36	2.35	0.939	0.849	0.631	0.757	0.728	7.91	1.01	1.32	1.32	1.34	1.49	1.31

Note. Variances are printed in the diagonal of the matrix.

people living with HIV disease in communities of 50,000 residents or fewer was considerably higher than a threshold for probable clinical depression. Third, SEM demonstrated that Schmitz and Crystal's (2000) AIDS-specific model of emotional distress, originally developed with urban samples of HIV-infected persons, appears to generalize to nonmetropolitan persons living with HIV disease, explaining almost three fourths of the variance in emotional distress in participants. In a result consistent with Schmitz and Crystal's model, participants who experienced high levels of emotional distress also reported more severe HIV symptomatology, less social support, and greater use of avoidance coping. In addition, and similar to findings in Schmitz and Crystal's research, lower levels of social support in HIV-infected individuals were associated with higher perceptions of discrimination and greater rejection by family members. These findings underscore the need for culturally contextualized mental health interventions that can reduce the physical sequelae of HIV disease, foster more adaptive coping strategies in response to HIV-related distress, and increase access to social support resources in this population. As in Schmitz and Crystal's research, social support appears to play a particularly prominent role in the life quality and adjustment efforts of men and women living with HIV disease.

Mental health interventions delivered via telephone or Internet technology offer great potential to increase social support and enhance the coping skills of nonmetropolitan persons living with HIV disease (Rounds, 1988). Although these interventions lack some of the interpersonal benefits of face-to-face group work, interventions of this genre may be necessary for geographically isolated persons living with HIV disease—for at least two reasons. First, limited transportation and physical disabilities preclude many nonmetropolitan persons from traveling to face-to-face support groups. Second, HIV-infected nonmetropolitan persons may be reluctant to participate in local mental health support services because of fears related to stigma and limited anonymity. Accordingly, the extent to which empirically validated, supportive-coping interventions (Folkman et al., 1991) delivered via teleconference or Internet technology can facilitate the adjustment efforts of nonmetropolitan persons living with HIV disease warrants additional investigation.

The current study has several limitations. Because most participants were residents of eastern and midwestern states, study findings may not generalize to other geographic areas of the United States. All participants were recruited through ASOs and had enrolled into a mental health intervention. As such, the study most likely oversampled persons experiencing distress and overestimated levels of depressive symptoms. Study findings also generalize only to individuals who were sufficiently motivated to seek enrollment into a mental health intervention. Our operational definition of *nonmetropolitan* is also open to interpretation; an alternative definition may have yielded different findings. Because this research used a cross-sectional design, no cause–effect inferences can be made, and the role of bidirectionality must be considered. For example, it is unclear whether less social support produces more emotional distress or whether greater distress complicates efforts to obtain support in rural areas. An additional limitation is that the study relied on self-report data.

Because the study used print materials and ASO staff to recruit individuals, it is difficult to estimate an overall study response rate. Recruitment materials that advertised the project were distributed by ASO case managers to nonmetropolitan clients through mail,
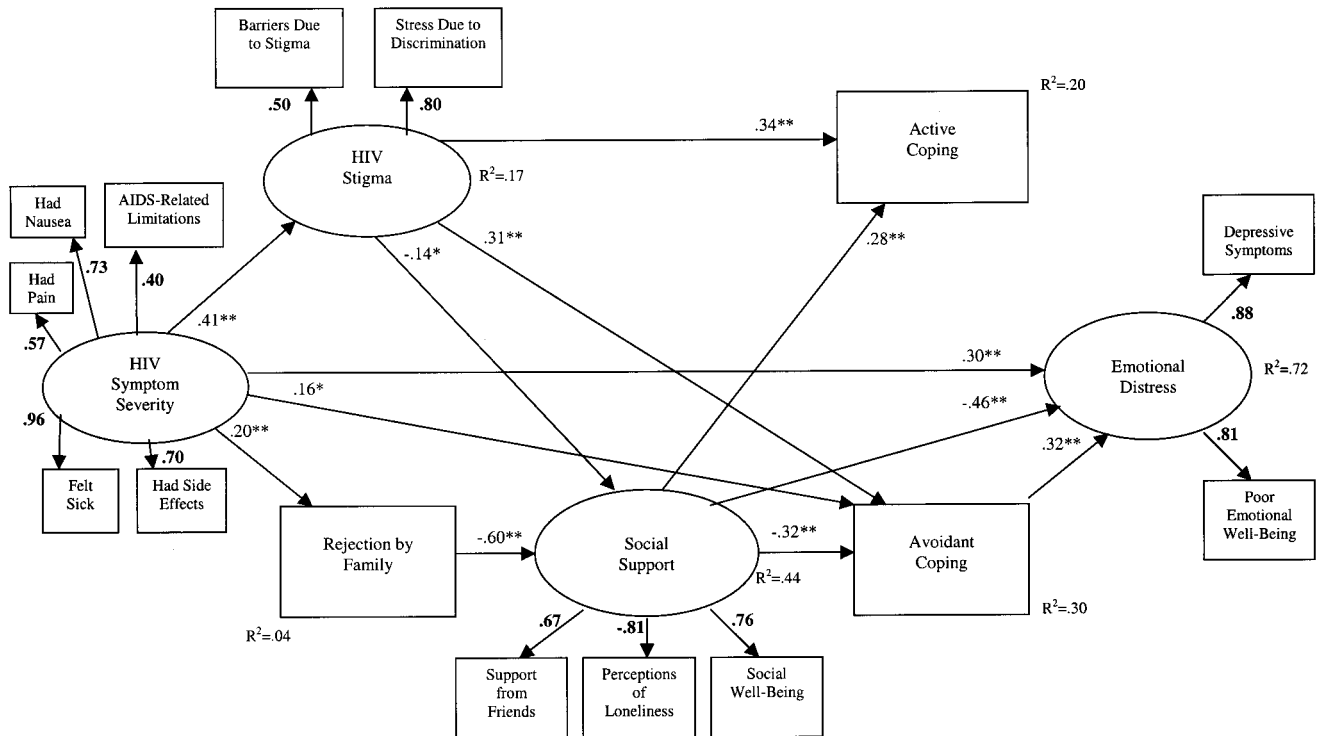
Figure 2. Final model showing statistically significant direct relationships among model variables. Factor loadings of observed variables on latent constructs are shown in bold. *p < .05. **p ≤ .01.

during home visits, and by placing materials in high-traffic areas of organizations. Although these recruitment techniques are appropriate for intervention trials, they also preclude an enumeration of the number of individuals who were aware of the study. Finally, it is unclear whether the current sample represents the population of persons living with HIV disease in nonmetropolitan areas of the United States. On the basis of national epidemiologic data characterizing people living with HIV disease in nonmetropolitan areas

of the United States (Centers for Disease Control and Prevention, 2001), the current study most likely oversampled women and Caucasians and undersampled African American and Hispanic persons. The study also undersampled men and women infected through injection drug use.

In spite of these limitations, this research adds to the AIDS mental health literature by identifying high rates of depressive symptoms in intervention-seeking, HIV-infected nonmetropolitan

Table 2
Standardized Total and Indirect Effects of Variables

Independent variable	Dependent variables					
	HIV stigma	Rejection by family	Social support	Active coping	Avoidant coping	Emotional distress
	Total effects					
HIV symptoms	.41**	.20**	−.28**	.13*	.35**	.58**
HIV stigma			−.14*	.30**	.35**	.27**
Rejection by family			−.60**	−.25**	.11*	.29**
Social support				.28**	−.32**	−.54**
Active coping						.07
Avoidant coping						.32**
	Indirect effects					
HIV symptoms			−.18**	.05	.20**	.28**
HIV stigma				−.04	.04*	.20**
Rejection by family				−.17**	.19**	.29**
Social support						−.08**

* p < .05.   ** p ≤ .01.

persons. Furthermore, this research suggests that Schmitz and Crystal's (2000) model of AIDS mental health can serve as a conceptual foundation by which to understand—and perhaps guide intervention efforts to improve—the emotional well-being of non-metropolitan persons living with HIV disease. Initial evaluations of the model (Schmitz & Crystal, 2000) examined emotional distress in a younger, more urban, and a more heterosexually identified sample that consisted primarily of men. In the present study, the model was expanded to a somewhat older, nonurban, and primarily gay sample. Although the model provided a good fit to both samples, there were differences in how the model fit the data provided by these two divergent samples. Although most of the differences between the current analysis and Schmitz and Crystal's initial evaluation appear to be in the sizes of the relations in the model, one important structural difference was found. Schmitz and Crystal's original research did not identify a direct relation between HIV-related stigma and avoidant coping. In the current analysis, avoidant coping was highly correlated with HIV-related stigma, and this type of coping was also an important mediator of the effect of stigma on emotional distress. This difference may be due, in part, to differences in the two samples (i.e., 74% of the current sample self-identified as gay, whereas only 26% of the Schmitz and Crystal [2000] sample did so). In addition, the use of items that assessed discrimination due to sexual orientation in the measurement of HIV-related stigma in this model may have also contributed to stigma's more prominent role in the model.

A comparison of results from the current study and Schmitz and Crystal's (2000) original research indicates that the size of some of the effect parameters were notably different between studies. In the current study, HIV symptomatology was a much weaker predictor of active coping and a much stronger predictor of HIV-related stigma. In this study, the effect of family rejection on active coping is almost completely mediated by social support, whereas the effect was more direct in Schmitz and Crystal's sample. These cross-study differences, some of which may be due to different operational definitions of key constructs, may also suggest that although constructs included in Schmitz and Crystal's original model are generally good predictors of emotional distress, they operate somewhat differently across different populations living with HIV disease. Future research that examines the extent to which Schmitz and Crystal's model of emotional distress generalizes to other populations of people living with HIV disease is recommended and may ultimately enable researchers and practitioners to translate this promising model into contextualized intervention strategies.

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