Exploration of the Relevance of Anxiety Sensitivity among Adults Living with HIV/AIDS for Understanding Anxiety Vulnerability

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Abstract

This investigation explored facets of anxiety sensitivity (AS-social, physical, and mental concerns) in regard to somatization, anxiety, and depression symptoms among people with HIV/AIDS. Significant relations were found for AS-physical concerns and somatization symptoms ($\beta = .52$, $p = .007$) and AS-mental concerns and anxiety symptoms ($\beta = .29$, $p < .05$), controlling for negative affectivity, gender, and shared variance with other AS subscales. Together, AS subscales were significantly related to depression symptoms ($\Delta R^2 = .11$; $p = .006$), however, no one subscale was independently related. Findings are discussed in terms of examining AS in better understanding the HIV/AIDS-anxiety relation.

Keywords

Individuals living with HIV/AIDS experience a wide array of clinically meaningful affective symptoms and problems; some of which may be related to biologically-triggered responses to the disease state (Tsao, Dobalian, Moreau, & Dobalian, 2004), side effects from medication management (Hawkins, 2006; Lorenz, Cunningham, Spritzer, & Hays, 2006), psychologically-influenced states due to social factors (e.g., stigma related to the illness; Bunn, Solomon, Miller, & Forehand, 2007; Berger, Ferrans, & Lashley, 2001), or some combination of these, and possibly other, as of yet undocumented, factors. Although psychological and life stress and depressive problems have been well documented among this population (Atkinson et al., 2008; Bing et al., 2001; Catz, Gore-Felton, & McClure, 2002; Ciesla & Roberts, 2001; Cruess et al., 2003; Leserman, 2003; Leserman et al., 2007; Morrison et al., 2002; Siegel, Schrimshaw, & Pretter, 2005), anxiety symptoms and disorders have been less intensively studied (see O'Cleirigh, Hart, & James, 2008, for a review). Some initial work has begun to investigate cognitive factors that might be relevant in understanding anxiety among persons with HIV/AIDS. For example, a recent study documents the clinical relevance of mindful attention and awareness and disengagement coping with HIV/AIDS-related stigma in regard to anxiety symptoms (Gonzalez, Solomon, Zvolensky, & Miller, 2009). It is noteworthy that HIV/AIDS elicits a wide range of somatic-oriented sensations, ranging from muscle aches to tingling to nausea (Justice et al., 2001), which often produces significant anxiety and worry and represents frequent as well as clinically important targets in the management of the illness (O'Cleirigh et al., 2008). It is therefore striking that there has been little scientific attention focused on better understanding the types of factors that are related to anxiety states that may be focused on bodily sensations among this population.

One theoretically-relevant and well studied cognitive factor that may be helpful in better understanding anxiety processes among people living with HIV/AIDS is anxiety sensitivity

(AS; Reiss & McNally, 1985). AS is defined as the extent to which individuals believe anxiety and anxiety-related sensations have harmful consequences (McNally, 2002; Reiss & McNally, 1985). The empirical study of this construct indicates that AS is composed of a global or higher-order factor and three lower order factors namely, concerns about mental incapacitation (AS-mental concerns), concerns about physical symptoms of anxiety (AS-physical concerns), and concerns about the social consequences of experiencing anxious arousal (AS-social concerns; Zinbarg, Barlow, & Brown, 1997). A number of independent lines of research demonstrate that this cognitive vulnerability factor increases the risk for anxiety symptoms and disorders, perhaps most particularly panic attacks and panic disorder (Ginsburg & Drake, 2002; Kearney, Albano, Eisen, Allan, & Barlow, 1997; Lau, Calamari, & Waraczynski, 1996; Rabian, Peterson, Richters, & Jensen, 1993; Taylor, Koch, & McNally, 1992; Vasey, Daleiden, Williams, & Brown, 1995). For example, prospective studies indicate that AS predicts the future occurrence of panic attacks and anxiety symptoms among adults and youth (Hayward, Killen, Kraemer, & Taylor, 2000; Schmidt, Lerew, & Jackson, 1997, 1999; Schmidt, Zvolensky, & Maner, 2006; Weems, Hayward, Killen, & Taylor, 2002). Other work indicates that AS predicts fear responses to bodily sensations (Rabian, Embry, & MacIntyre, 1999; Unnewehr, Schneider, Margraf, Jenkins, & Florin, 1996; Zinbarg, Brown, Barlow, & Rapee, 2001).

Despite the wealth of empirical work in regard to AS and anxiety symptoms and disorders (Taylor, 1999), empirical data pertaining to AS among people living with HIV/AIDS are lacking. The purpose of the present investigation was to provide an initial test of the possible explanatory utility of AS in relation to anxiety and somatization symptoms as well as depressive symptoms among an adult population with HIV/AIDS. Given evidence that AS subfactors are differentially related to specific anxiety and other negative emotional symptoms (Schmidt, 1999; Schmidt, Lerew, & Joiner, 1998; Zvolensky, Feldner, Eifert, & Stewart, 2001; Zvolensky, Goodie, McNeil, Sperry, & Sorrell, 2000), it was hypothesized that the AS-physical concerns subscale would best predict somatization symptoms, whereas the AS-mental concerns subscale would best predict anxiety and depressive symptoms. In all tests, it was expected that the AS relations would be evident above and beyond the variance accounted for by negative affectivity (neuroticism) and gender.

Method

Participants included 51 (13 women; M_{age} = 45.53, SD = 9.61; observed range = 18–63) people with HIV/AIDS recruited through verbal and flier announcements at the 2007 annual People with AIDS (PWA) retreat in Vermont (see Procedure section for details about the PWA retreat). The racial/ethnic distribution of the sample was such that 72.5% identified as Caucasian, 11.8% as African American, 11.8% as Hispanic, 2.0% as biracial, and 2.0% as "other." Approximately 45% (45.1%) of the sample identified as heterosexual, 45.1% as gay/lesbian, and 9.8% as bisexual. Although 84.2% of the sample reported having at least graduated high school, more than half (54.9%) reported being unemployed, with the majority of participants (66.7%) reporting a household income under $21,000. Approximately half of the sample (47.1%) reported having a spouse or partner. Participants were eligible for this study if they were at least 18 years of age and self-reported having a HIV or AIDS diagnosis. Exclusionary criteria for the investigation included the inability to provide informed, written consent.

Measures

The *Anxiety Sensitivity Index* (ASI; Reiss, Peterson, Gursky, & McNally, 1986) is a 16-item measure in which respondents indicate on a 5-point Likert-type scale (0 = "*very little*" to 4 = "*very much*") the degree to which they are concerned about possible negative consequences of anxiety symptoms (e.g. "*It scares me when I feel shaky*"). Factor analysis

of the scale indicates that it has a hierarchical structure, with three first-order factors entitled AS-social concerns, AS-physical concerns, and AS-mental incapacitation concerns (AS-mental concerns), as well as a single, higher order general factor (Zinbarg, Barlow, & Brown, 1997). The ASI has high levels of internal consistency for the global score (range of alpha coefficients: 0.79 to 0.90) and good test-retest reliability ($r = .70$ for 3 years; Peterson & Reiss, 1992).

The *Positive Affect Negative Affect Scale* (PANAS; Watson, Clark, & Tellegen, 1988) assesses two global dimensions of affect: negative and positive. For each of 20 adjectives (e.g., "irritable"), participants indicate on a 5-point Likert-type scale (1 = *very slightly* to 5 = *extremely*) the degree to which the descriptor typifies how they generally feel. Only the negative affectivity scale (PANAS-NA) was used in this study as a global index of the trait-level propensity to experience negative affect symptoms. The PANAS-NA has demonstrated sound internal consistency in clinical and non-clinical populations (range of alpha coefficients: .85 to .93), test-retest reliability (e.g., $r = .71$ for two months to $r = .43$ for seventy-two months), as well as convergent and discriminant validity in relation to multiple measures of state-level affect, trait-level mood, and personality (Watson, 2000).

The *Symptom Checklist-90-R* (SCL-90-R; Derogatis, 1977) is a 90-item self-report measure designed to gather information regarding the symptom presentation of psychiatric disorders across nine domains (somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety paranoid ideation, and psychoticism). Individuals rate on a 5-point scale how much a particular item describes their behavior in the past week (0 = *not at all* to 4 = *extremely*). The measure has excellent psychometric properties, both for reliability and validity (alpha coefficients ranging from .77 to .90; Derogatis, 1977; Derogatis & Fitzpatrick, 2004). Three theoretically-relevant subscales were employed in the present study: somatization, anxiety, and depression.

Procedure

The People with AIDS (PWA) Coalition: Annual Gathering of Friends is an annual retreat, held in Vermont, and organized by the PWA Coalition. The PWA Coalition is a community based organization serving people living with HIV/AIDS as well as their partners, friends and families. While the majority of memberships of the PWA Coalition are Vermont residents it's over 600 members are from New York, New Hampshire, Massachusetts, and Connecticut. Individuals from all geographic areas are welcomed. People with HIV/AIDS and their partners gather for four days to attend support groups, workshops, and other activities. Interested persons with HIV/AIDS responding to the verbal and flier announcements approached the researcher at the retreat and were given a detailed description of the study. Upon written consent to participate in the study, participants were given a packet of self-report measures to complete by the end of the retreat. When completed, participants returned the packet to the researcher and were compensated $10 for participation. This study was approved by the Internal Review Board of the University of Vermont.

Data Analytic Strategy

Means, standard deviations, and zero-order (or bi-variate, as applicable) correlations were computed for the study variables. The main analyses included a series of four hierarchical regression analyses. Criterion variables included the following SCL-90-R subscale symptom domains: somatization, anxiety, and depression. The main effects of PANAS-NA and gender were entered at step one of the model, and the main effects of the ASI subscales (i.e., AS-physical concerns, AS-mental concerns, AS-social concerns) were simultaneously entered at step two. This analytic approach provides a test of incremental validity and

ensures that any observed effects at step two of the models are separable from the variance accounted for at step one of the equations (Cohen & Cohen, 1983).

Results

Descriptive Data and Correlations among Theoretically-Relevant Variables

Means, standard deviations, and zero-order (or bi-variate) correlations of relevant study variables are reported in Table 1. The PANAS-NA was significantly and positively associated with all of the studied SCL-90-R subscales (range of observed r's: .44 to .66) and all of the ASI subscales (range of observed r's: .46 to .59; see Table 1), but was not related to gender (see Table 1). Females reported greater somatization and anxiety scores than did males ($r = .36$, $p < .05$ and $r = .39$, $p < .01$; respectively), but did not report significantly varying levels of depression symptoms. Scores on the ASI subscales also did not differ by gender (see table 1). The ASI subscales were significantly and positively related to all of the studied SCL-90-R subscale symptom domains (range of observed r's: .43 to .74; see Table 1).

Hierarchical Regression Analyses

Please see Table 2 for a summary of hierarchical regression analyses. In terms of somatization symptoms, the PANAS-NA and gender entered at step one accounted for a significant portion of variance ($R^2 = .31$, $p < .001$; $\beta = .44$, $p < .001$ and $\beta = .29$, $p < .05$; respectively). The addition of the ASI subscales at step two accounted for an additional 13% of variance ($p < .05$); with AS-physical concerns being the only significant contributor to the model ($\beta = .52$, $p = .007$; AS-social concerns: $\beta = -.12$, $p = .48$; AS-mental concerns: $\beta = -.08$, $p = .69$).

With regard to anxiety symptoms, predictors variables at step one accounted for 59% of the variance. Here, both the PANAS-NA and gender were significant contributors ($\beta = .68$, $p < .001$ and $\beta = .28$, $p = .008$; respectively). At step two, the addition of the ASI subscales accounted for an additional 11% of the variance ($p = .006$). Here, the only significant predictor was the ASI-mental concerns ($\beta = .29$, $p < .05$; AS-social concerns: $\beta = .11$, $p = .34$; AS-physical concerns: $\beta = .12$, $p = .35$).

Regarding depression symptoms, the PANAS-NA and gender entered at step one accounted for 49% of the variance, with the PANAS-NA being the sole significant contributor ($\beta = .68$, $p < .001$; Gender: $\beta = .14$, $p = .23$). Predictor variables entered at step two accounted for an additional 11% of the variance ($p < .05$). However, none of the ASI subscales made a significant contribution in isolation (AS-social concerns: $\beta = .07$, $p = .62$; AS-physical concerns: $\beta = .18$, $p = .25$; AS-mental concerns: $\beta = .27$, $p = .16$).

Discussion

Although living with HIV/AIDS is associated with a range of negative emotional and bodily symptoms (Tsao et al., 2004; Hawkins, 2006), there is limited work examining cognitive factors related to the experience of anxiety and depressive symptoms among this population. As an initial step in this line of inquiry, the present investigation sought to explore the role of AS in regard to aspects of anxiety vulnerability among this population.

Consistent with expectation, AS-physical concerns was significantly associated with somatization symptoms above and beyond the variance accounted for by negative affectivity and gender, and the shared variance of AS-social and mental concerns. Given that individuals living with HIV/AIDS experience an array of anxiety eliciting somatic symptoms as a result of the disease (Justice et al., 2001) and management of the virus (e.g.,

medication side effects; Hawkins, 2006), this finding is possibly clinically meaningful to the extent that a specific facet of AS (AS-physical concerns) may be fruitful in explaining anxiety-relevant relations in regard to somatic symptoms. Particularly noteworthy is the specificity of AS-physical concerns relative to the other AS factors (e.g., AS-social and mental concerns) in regard to somatization symptoms. This relation is consistent with past work that has highlighted the specificity of AS-physical concerns in relation to panic-relevant psychopathology, primarily somatic in nature (McLeish, Zvolensky, Yartz, & Leyro, 2008; Vujanovic, Zvolensky, & Bernstein, 2008).

Partially consistent with hypotheses, AS-mental concerns was related to anxiety symptoms but *not* depression symptoms. Here, fears of losing control or going crazy, as well as, other catastrophic cognitions experienced as a result of anxious arousal is incrementally related to anxiety symptoms above and beyond the variance of negative affectivity, gender, and the shared variance with the other AS subfactors. This finding suggests the possible relevance of focusing on AS-mental concerns in explanation of anxiety symptoms among people living with HIV/AIDS, and is consistent with past work that has demonstrated the specificity of this subfactor in relation to certain types of anxiety symptoms (Schmidt et al., 1999). As for depression symptoms, no single AS subfactor is significantly related. Caution should be exercised in interpreting this effect for at least two reasons: (1) there was consistent trends associated with an AS-mental concerns effect for depressive symptoms ($r = .73$; see Table 1); and (2) the overall sample size for this initial AS-HIV/AIDS test was small ($n = 51$) and might have likely been statistically significant with a larger number of persons. For these reasons, replication and extension of the present AS-depressive symptoms relation is needed in future research.

There are at least two key implications of the present findings. First, the data suggest that AS is related to anxiety and somatization symptoms among people living with HIV/AIDS. Thus, measuring this cognitive vulnerability risk factor for anxiety among an HIV/AIDS population may facilitate the identification of persons at greatest risk for anxiety-related distress and disorders. Second, targeting AS in intervention strategies for persons with HIV/AIDS may be a useful clinical tactic. For example, reducing AS through psychosocial or pharmacological intervention (Otto & Reilly-Harrington, 1999; Smits, Berry, Tart, & Powers, 2008; Wald & Taylor, 2005) may decrease risk for anxiety and somatization symptoms and thereby enhance quality of life. However, further work is needed here to ensure AS is a beneficial clinical target for anxiety reduction among the HIV/AIDS population.

A number of limitations and areas for future research directions should be noted. First, as already noted, this study was comprised of a relatively small, primarily Caucasian male sample of individuals living with HIV/AIDS that completed the protocol throughout their time spent at a HIV/AIDS specific retreat. In addition, persons attending the retreat may represent a psychologically healthier sub-set of the HIV/AIDS population. Future investigations should indeed seek to expand this line of inquiry to larger diverse clinical samples of persons living with HIV/AIDS in a more controlled setting such as a confidential research laboratory. Second, the cross-sectional design does not allow for causal inferences. As a next research step, future work could aim to test these relations prospectively to explicate the directional effects of these relations. Third, as an initial test of AS among those with HIV/AIDS, the study naturally focused on the hypothesized main effects. Future work is needed to examine possible mediating and moderating factors for the observed associations. Fourth, self-report measures were employed to assess the studied constructs. Findings based on this strategy are potentially influenced by shared method variance, and therefore, future research should bolster this approach with multimodal assessments. For instance, laboratory assessment of reactivity to emotion-elicitation tasks would be a possibly

next useful step. Last, we did not assess for disease severity markers such as CD4 T-cell count, HIV/AIDS disease stage, or presence of HIV/AIDS-related symptoms, which may be important factors to control for in regard to anxiety and depressive symptoms. Future work should examine the relevance of these factors in regard to the relation between AS and anxiety and depressive symptoms.

Overall, the current investigation represents a novel, albeit first step of inquiry, in regard to understanding the possible relevance of AS in relation to anxiety and depressive symptoms among individuals living with HIV/AIDS. Further investigation of this construct may hold clinical promise in regard to advancing the knowledge and treatment of anxiety and depressive symptoms and problems among this at-risk population.

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Table 1

Descriptive Data and Correlations between the Studied Variables

	Variables	1	2	3	4	5	6	7	8	M	SD	Observed Range
1	PANAS-NA[1]	---	.04	.46**	.51**	.59**	.44**	.66**	.62**	18.40	9.53	10–50
2	Gender[2]		---	.20	.23	.27	.36*	.39**	.24			
3	AS-Social Concerns[3]			---	.63**	.63**	.43**	.62**	.58**	6.23	2.34	2–10
4	AS-Physical Concerns[3]				---	.67**	.60**	.63**	.62**	12.41	8.95	0–31
5	AS-Mental Concerns[3]					---	.49**	.74**	.73**	5.71	4.72	0–16
6	Somatization[4]						---	.74**	.61**	1.44	1.00	0–3.5
7	Anxiety[4]							---	.84**	1.21	.94	.1–3.7
8	Depression[4]								---	1.71	.98	0–3.62

Note:

*
$p < .05$,

**
$p < .01$,

[1]PANAS-NA: Negative Affectivity sub-scale, Positive Affect Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988);

[2]Gender coded as 1 = male and 2 = female;

[3]Anxiety Sensitivity Index sub-scale, (ASI; Reiss et al., 1986);

[4]Symptom Checklist-90-Revised sub-scale (SCL-90-R; Derogatis, 1977).

Table 2

Predictors of Somatization, Anxiety, and Depression Symptoms

	ΔR²	t	β	sr²	p
Dependent variable: Somatization [1]					
Step 1	.31				<.001
PANAS-NA [2]		3.44	.44	.47	.001
Gender [3]		2.24	.29	.03	.03
Step 2	.13				.04
AS-Physical Concerns [4]		2.86	.52	.03	.007
AS-Mental Concerns [4]		−.41	−.08	.05	.69
AS-Social Concerns [4]		−.71	−.12	.01	.48
Dependent variable: Anxiety [1]					
Step 1	.59				<.001
PANAS-NA		6.99	.68	.53	<.001
Gender		2.80	.28	.15	.008
Step 2	.11				.006
AS-Physical Concerns		.95	.12	.02	.35
AS-Mental Concerns		2.14	.29	.10	.04
AS-Social Concerns		.96	.11	.02	.34
Dependent variable: Depression [1]					
Step 1	.49				<.001
PANAS-NA		6.06	.68	.47	<.001
Gender		1.22	.14	.03	.23
Step 2	.11				.02
AS-Physical Concerns		1.16	.18	.03	.25
AS-Mental Concerns		1.42	.27	.05	.16
AS-Social Concerns		.50	.07	.01	.62

Note:

[1] Symptom Checklist-90-Revised sub-scale (SCL-90-R; Derogatis, 1977);

[2] PANAS-NA: Negative Affectivity sub-scale, Positive Affect Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988);

[3] Gender coded as 1 = male and 2 = female;

[4] Anxiety Sensitivity Index sub-scale, (ASI; Reiss et al., 1986).