Positive and Negative Effects of HIV Infection in Women With Low Socioeconomic Resources

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Predictions generated by cognitive adaptation theory and conservation of resources theory were tested with regard to positive and negative changes associated with HIV infection in an ethnically diverse, low socioeconomic status sample of 189 HIV-positive women. Women reported a significantly greater number of benefits than losses in their experiences with HIV infection. Changes in the domains of the self and life priorities were significantly positive, whereas changes in romantic/sexual relations and view of body were significantly negative. Women who reported more benefits were less likely to report depressive and anxious symptoms. Although health status and optimism significantly predicted depression, anxiety, and negative HIV-related changes, socioeconomic resources (education and income) were the most significant predictors of HIV-related benefit finding. Implications of these results are discussed.

Research on stress and coping has largely followed the premise that stressful events lead to deleterious cognitive, emotional, and physiological effects, and this premise has guided many important avenues of research. Indeed, the negative effects of stressful life events are well documented and include cognitive disruptions such as avoidance and rumination (Horowitz, 1979; Miller, Rodoletz, Schroeder, & Mangan, 1996) and cognitive-emotional disturbances such as depression (Bifulco & Brown, 1996; Nolen-Hoeksema & Morrow, 1991), anxiety (Finlay-Jones & Brown, 1981), and posttraumatic stress disorder (Breslau & Davis, 1987). Although these negative effects are undeniable, people can—and often do—respond to extremely stressful life events with a remarkable cognitive resilience, and the benefits that people often gain from experience with adversity highlight important cognitive processes that may be crucial for adjustment and well-being (Taylor, 1983; Taylor & Brown, 1988; Updegraff & Taylor, 2000).

The relative inattention in the literature to the potential positive effects of stress may be due more to neglect in assessing them than to their actual infrequency. Studies that have simultaneously measured both positive and negative effects of stressful events have found positive effects to be as prevalent or more prevalent than negative effects. For example, Taylor and colleagues found that cancer patients reported more positive than negative changes in their activities, priorities, and social relationships due to their experience with the illness (Collins, Taylor, & Skokan, 1990), and a majority of their participants made beneficial changes in their behavior as well (Taylor, Lichtman, & Wood, 1984). Many people also report a strengthened self-concept as a consequence

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of their experiences with combat (Sledge, Boydstun, & Rabe, 1980), cancer (Collins et al., 1990), HIV infection (Schwartzberg, 1993), and bereavement (Calhoun & Tedeschi, 1990; Davis, Nolen-Hoeksema, & Larson, 1998). Strengthened social relations also have been reported by people responding to bereavement (Davis et al., 1998), infertility (Mendola, Tennen, Affleck, McCann, & Fitzgerald, 1990), multiple sclerosis (Mohr et al., 1999), and bone marrow transplant (Curbow, Somerfield, Baker, Wingard, & Legro, 1993). Wortman and Silver (Silver, 1982; Wortman & Silver, 1987) found positive emotions to be experienced as often as negative emotions in the wake of bereavement and disability. Furthermore, Folkman (1997) reported a high prevalence of positive as well as negative psychological states over the course of AIDS caregiving and bereavement. In addition, in two studies that compared the quality of life of cancer patients with that of a disease-free sample, the quality of life reported by cancer patients was found to be higher (Danoff, Kramer, Irwin, & Gottlieb, 1983; Tempelaar et al., 1989). Taken together, these studies suggest that stressful experiences may trigger a wide variety of positive responses, and the well-known negative effects may be only part of the picture.

These positive effects of stressful experiences have been reliably associated with both mental and physical functioning. In longitudinal studies, stress-related benefits such as those described above have been associated with better subsequent psychological adjustment (Aldwin, Levenson, & Spiro, 1994; Folkman, Chesney, Collette, Boccellari, & Cooke, 1996; McMillen, Smith, & Fisher, 1997; Park, Cohen, & Murch, 1996; Wells, Hobfoll, & Lavin, 1999), physical health (Affleck, Tennen, Croog, & Levine, 1987), and neuroendocrine responses to stress (Epel, McEwen, & Ickovics, 1998). Furthermore, in a study of HIV-positive men, the ability to find meaning and benefit in the experience predicted a slower immune decline over time and longer survival, even after controlling for potential psychosocial and health confounds (Bower, Kemeny, Taylor, & Fahey, 1998; Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). Thus, reports of stress-related growth are not only common but appear to play a role in both psychological and physical adjustment to stress.

Theoretical Context

The relationship between benefit-finding and psychological adjustment has been described in two influential theoretical perspectives: Taylor's (1983) cognitive adaptation theory and Hobfoll's (1989) conservation of resources theory. First, Taylor's (1983) cognitive adaptation theory views people as active agents in restoring equilibrium after a stressful life event. According to the theory, stressful events take their toll by challenging at least three basic beliefs people have about themselves and the world: people's sense of meaning, their sense of mastery, and their self-esteem. In the aftermath of a traumatic event, the theory posits that people are motivated to restore their self-esteem and sense of meaning and mastery by the production of self-enhancing cognitions (Taylor & Brown, 1988). A sense of meaning may be regained by a causal attributional search or a rethinking of attitudes and priorities. A sense of mastery can be preserved by selectively focusing on domains of one's life where one continues to experience personal control. Self-esteem can similarly be preserved by focusing on aspects in which one's self-concept is unaffected or improved by the experience or by engaging in social comparisons with less fortunate others (Taylor & Lobel, 1989). Furthermore, the processes by which meaning, mastery, and self-esteem are reestablished are believed to be critical for mental health and adjustment (Taylor & Brown, 1988; see also Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). Thus, within Taylor's perspective, perceptions of stress-related growth are the natural products of a person's motivation to enhance his or her self-perception but are not thought to be necessarily related to one's social and economic resources. Although resources such as optimism and coping skills, which may vary with socioeconomic status (SES) and life history, may aid in the reestablishment of these beliefs, Taylor's theory is silent on how SES may directly influence one's ability to benefit from adversity.

On the other hand, Hobfoll's (1989) conservation of resources theory suggests that perceptions of stress-related growth and adjustment are heavily determined by a person's preexisting personal, social, and economic resources. A basic tenet of this theory is that people strive to retain, protect, and build resources and that resources include money, education, employment, and free time as well as personal characteristics such as mastery, optimism, self-esteem, health status, and social support. This theory predicts that people with greater initial resources will be able to mobilize them in a time of stress to effect a greater net gain than those with fewer resources (Hobfoll, 1991; see also Aldwin, 1994). Furthermore, such gains appear to be important in moderating the effects of resource losses on psychological adjustment (Wells et al., 1999). Because many of the benefits that people report as consequences of a stressful event include enhanced social relationships and increased strength and self-efficacy, it is expected that people with fewer personal and socioeconomic resources would report fewer positive consequences of a stressful experience than those with greater personal and socioeconomic resources. Indeed, some research indicates that improved functioning over the course of a stressful experience is predicted by one's initial resources (Holahan & Moos, 1990; Park et al., 1996).

Few studies, however, have focused specifically on how SES may contribute to people's perceptions of stress-related growth. Much of the research documenting these positive effects has relied on samples that have had, on the whole, enough available resources to adequately deal with and ultimately gain from their adversities. For example, many of the previously described samples (Calhoun & Tedeschi, 1990; Collins et al., 1990; Curbow et al., 1993; Mendola et al., 1990; Taylor et al., 1984) have consisted of fairly well-educated, middle-class or upper-middle-class adults. Similarly, most research exploring stress-related benefits in HIV-positive populations has used samples of fairly affluent, educated gay men who have had a number of community resources available to help in dealing with their infection (Bower et al., 1998; Rabkin et al., 1997; Rabkin, Williams, Neugebauer, Remien, & Goetz, 1990; Schwartzberg, 1993). Thus, the ability to generalize from such samples, especially with regard to the phenomenon of stress-related growth, may be limited (Blankenship, 1998; Bower et al., 1998; Fleishman & Fogel, 1994). An important issue that remains to be addressed is whether the ability to find benefits in negative experiences is a luxury available mainly to people who have the time, support, and resources to both deal with a stressor and grow from it or whether it is a by-product of cognitive strategies that are employed by most people regardless of their resources.

Accordingly, the first purpose of this study was to examine the self-reported consequences of an ongoing stressful event in an ethnically diverse, low SES sample of HIV-positive women. We chose to examine this phenomenon in such a population because we believed the women would have limited access to a number of the resources, such as financial and community resources and support groups, that might ordinarily facilitate the adjustment and stress-related growth documented in more privileged samples (Barkan et al., 1998). Furthermore, because many of the previously described studies examined benefits derived from past stressors, we wanted to examine the changes reported in the experience of an ongoing, chronic experience. Our study examined the relationship between SES and benefit-finding in two ways by both assessing the prevalence of positive and negative HIV-related changes in a low SES sample and by measuring the degree to which SES measures predicted these changes. Based largely on Hobfoll's theory, we expected to find a low prevalence of HIV-related benefit in the sample. Furthermore, we expected that higher SES would predict greater levels of HIV-related benefit. We did not, however, expect that the valence of reported HIV-related changes would be uniform across domains. Consistent with Taylor's theory, we expected to find the most self-enhancement and benefit-finding occurring in the most "pliable" domains; that is, those domains that are the least concretely affected by HIV infection and most amenable to positive reinterpretation (Collins et al., 1990). In particular, we hypothesized that changes in the domains of the self and life priorities would be the most positive, whereas changes in the domains of health and sexual/romantic relationships would be the most negative.

A second purpose of this study was to identify and compare the unique predictors of positive and negative HIV-related changes to the predictors of more standardized adjustment measures such as depression and anxiety. Optimism (Scheier & Carver, 1985) has been shown to predict depression and distress in both healthy (Aspinwall & Taylor, 1992; Bromberger & Matthews, 1996) and diseased samples (Carver et al., 1993; Epping-Jordan et al., 1999) and also has been shown to predict benefit-finding in a variety of stressful experiences (Davis et al., 1998; Park et al., 1996; Thompson & Pitts, 1993). Although SES (Kessler et al., 1994), social support (Penninx et al., 1998; Siegel, Karus, & Raveis, 1997), health status (Fleishman & Fogel, 1994; Kelly et al., 1993), life trauma (Finlay-Jones & Brown, 1981; Turner & Lloyd, 1995), and chronic stress (Bromberger & Matthews, 1996) also have been shown to predict depression and distress in healthy and diseased samples, they have received little attention as predictors of stress-related benefits and losses. Lifetime trauma and chronic stress are especially important to examine as predictors because greater levels of distress found in lower SES groups may be attributable to greater exposure to traumas and chronic daily stressors (Myers & Durvasula, 1999; Turner & Lloyd, 1995). Yet, how a history of lifetime trauma and chronic stress may influence one's ability to perceive benefits and losses from an ongoing stressor is a question that remains to be explored.

A final purpose of this study was to examine the relationship between reports of HIV-related changes and adjustment. Although most studies that have examined the relationship between benefit-finding and adjustment have found increased benefits to be associated with less distress (see Lehman et al., 1993; Mohr et al., 1999, for exceptions), the exact nature of the relationship remains unclear. First, many studies have failed to control for confounds such as optimism or stressor severity. Second, some debate exists as to the extent of the relationship between the positivity of stress-related cognitions and adjustment. Some theorists suggest that overly positive cognitions may reflect denial and may ultimately be maladaptive (Colvin & Block, 1994; Lehman et al., 1993). Indeed, research that has examined the balance of positive to negative stress-related cognitions has found more balanced reports to be more adaptive than exclusively positive reports (Collins et al., 1990; Taylor, Kemeny, Reed, & Aspinwall, 1991). However, because these stud-

ies examined retrospective accounts of past experiences, it is not known whether a balanced recognition will be more adaptive in coping with a long-term, ongoing stressor. Thus, an interest of this study was to determine whether women who reported a mix of both positive and negative changes showed lower levels of both depression and anxiety than women who reported mainly positive changes.

METHOD

Participants

The participants were 189 HIV-positive women who were a part of the University of California, Los Angeles (UCLA), Charles Drew Medical Center Women and Family Project, a study designed to examine psychosocial and physiological processes of HIV infection in a large multiethnic sample of women in the Los Angeles area. The project recruited both HIV-positive and HIV-negative women, 18 years of age or older, of European American, African American, Latina, American Indian, and Asian/Pacific Islander descent. Women were recruited through media advertisements, community colleges, public and private health clinics, drug treatment centers, and homeless shelters (see Wyatt & Chin, 1999, for complete discussion of recruitment procedures). Inclusion in the present study was limited to HIV-positive, English-speaking women for whom accurate interview transcriptions were available.[1] Because of insufficient numbers of both American Indian and Asian/Pacific Islander women, the present study included only European American, African American, and Latina women.

The sample consisted of 90 (47.6%) African American, 62 (32.8%) Caucasian, and 37 (19.6%) Latina women. At the baseline interview, the participants ranged in age from 19 to 62, with a mean age of 37 years (SD = 8.20). The women had known of their HIV status for a mean of 4.65 years (SD = 3.14). At the time of the interview, less than one quarter of the women (23.3%) were living with a partner and a smaller portion (15.9%) were married. Most of the women thought that they had become infected through sex with either an intravenous drug user (75.7%) or a bisexual partner (11.1%). A majority of the women (73.5%) reported recreational drug use and a smaller portion (36.0%) reported intravenous drug usage. More than half (51.3%) of the women reported that they had been homeless at one point in their lives and close to one third (30.2%) of the women had reported that they had engaged in some form of prostitution in their lifetime.

Design and Procedure

Data collection consisted of an intensive structured interview and a medical examination, which were conducted at the UCLA Medical Center, Charles Drew Medical Center, or the participant's home.[2] The structured interview, which lasted 3 to 5 hours, covered a number of topics, including the participants' background, their ways of coping with HIV infection, past and present traumas and stresses, social relationships, sexual behavior, and psychological adjustment, using both open-ended interview and questionnaire methodologies. The structured interviews were conducted by trained female interviewers whose ethnicity matched that of the participants. Women were paid $50 for their participation.

Measures

Positive and negative HIV-related changes. Positive and negative changes due to HIV infection were measured by coding participants' responses to a series of six open-ended interview questions addressing a variety of life domains. The domains included the participants' view of themselves ("In what ways, if any, has being HIV positive changed the way you think about yourself?" and "In what ways has it changed you as a person, either for the better or for the worse?"), view of their bodies ("In what ways has it changed the way you think about your body?"), their social relationships ("How has being HIV positive changed the way you are with other people, including your sense of closeness with others?"), romantic relationships ("How has it changed the way you are with current or potential romantic or sexual partners?"), and their life priorities ("How has being HIV positive changed what you believe is important in life, what you feel are your priorities?"). In a manner described below, a total positive and a total negative change score was created for each participant by summing the number of positive and negative changes across each of the above questions.

Coding of the interview transcriptions was conducted by two trained coders who began by examining a random sample of 20 participants' interview responses and coding each answer for the number and valence (positive or negative) of changes for each question. If the valence of change was not readily apparent from the content of the answer, the context was used to infer valence. Discrepancies between the two coders were discussed, the coding guidelines were refined, and the coders repeated the process with an additional random sample of 20 participants' responses. Once adequate reliability was established, the coders independently coded the remaining questions. The final interrater reliability between the two judges was calculated as a two-way random effect intraclass correlation (Shrout & Fleiss, 1979) and indicated a highly significant agreement between the two judges, r_2 = .94, $F(541, 541) = 18.10$, $p < .001$.

Depression. Depression was assessed with the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977), a 20-item scale that asks respondents to report how frequently over the past week they had

experienced various depressive symptoms, such as poor appetite, impaired concentration, restless sleep, loneliness, lack of motivation, hopefulness (reverse-scored), and happiness (reverse-scored). Ratings were made on a 4-point Likert scale ranging from 0 (*rarely, less than 1 day*) to 3 (*most or all of the time, 5-7 days*). Scores greater than 15 indicate risk for clinical levels of depression (Radloff & Locke, 1986). Reliability of this measure was strong, α = .93.

Anxiety. Anxiety was measured using the Anxiety subscale of the SCL-90 (Derogatis, 1977), a 15-item scale that asks respondents to report how much they have been bothered, over the past 6 months, by symptoms of anxiety, including nervousness, fear, avoidance, tenseness, and uneasiness. Ratings were made on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). Scores equal to or greater than 15 indicate risk for clinical levels of anxiety. Reliability of this measure was strong, α = .94.

Socioeconomic measures. Both education and income were assessed by self-report items. Education was analyzed as a dichotomous measure, reflecting the highest degree achieved (0 = no degree, 1 = high school degree or greater). Income was assessed as the participant's reported total monthly income in dollars from all sources (including earned income, money from friends and family members, and all government assistance programs).[3]

Trauma history. Participants were presented with a list of eight life events that have been associated with the subsequent development of psychological symptomatology and posttraumatic stress disorder (combat or war-like circumstance, life-threatening accident, natural disaster, witnessing someone being badly injured or killed, being physically abused as a child, being neglected, being threatened with a weapon or kidnapped, or seeing one of these events happen to someone close to the participant). Participants were asked to indicate if any of the events had happened to them over their lifetime and a scale score was created for each participant, indicating the sum total of the events that had been experienced. Although reliability of this measure was low, α = .56, it was expected that endorsement of these eight trauma events would not necessarily be highly correlated within individuals.

Health status. Health status was measured with a 14-item composite of items from the RAND Short-Form 36 (Ware & Sherbourne, 1992) and the RAND Short-Form 20 (Stewart, Hays, & Ware, 1988) Health Surveys. Items were selected to assess six aspects of the respondent's health status: general health perceptions, pain, physical functioning, role functioning, social functioning, and vitality. Items were scaled and scored according to the method detailed by Stewart et al. (1988), in which raw scores in each of the six areas are totaled and transformed to a 0 to 100 scale, with higher scores indicating better health. Transformed scores in each of the six areas are then summed to yield the measure of overall health status, with possible scores ranging from 0 (*extremely poor health*) to 600 (*excellent health*). The resulting measure showed strong internal reliability, α = .89.

Chronic burden. A measure of chronic burden was used to assess the level of chronic stress experienced by the respondents over the past 6 months. Because chronic stressors that characterize people's lives depend heavily on their life circumstances, a measure was developed for this study from focus groups with lower income, HIV-positive women from the same communities as the women who participated in this study. The resulting measure included 21 items to which respondents indicated how much of a problem each chronic stressor has been; items include having inadequate finances, housing, and transportation; relationship and employment difficulties; or experiencing crime and racial/sexual discrimination. Ratings were made on a 4-point Likert scale ranging from 1 (*not a problem*) to 4 (*a major problem*). The Cronbach's reliability of the 21-item scale was moderate (α = .79, mean interitem r = .15), because the different sources of chronic burden are not necessarily correlated with each other. For example, having being a victim of a crime would not necessarily be related to troubles with an employer. Because our hypotheses deal with the general effects of chronic burden as a whole, we used the sum of the 21 items as our measure of chronic burden.

Social support. Social support was assessed with a shortened version of the Social Support Questionnaire (Sarason, Levine, Basham, & Sarason, 1983). Participants were first asked to select the four most important people who provide them with support. Participants then rated each one according to seven items that assessed the degree to which the person gave useful information or advice, listened to them when they talked, showed that they cared, helped with specific problems, gave them things they needed, acted in an unpleasant manner (reverse-scored), criticized them (reverse-scored), or made their life difficult (reverse-scored). An additional item assessed how satisfied the respondent was with the support they received from each person. Ratings were made on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*a great deal*). Because a sizable percentage of the sample rated only three rather than four people, only the data for the first three people were analyzed. Scores on each of the eight items for the first three people were summed to yield an overall measure of social support. The 24-item composite measure had strong internal reliability, α = .88.

Optimism. Dispositional optimism was measured using the Life Orientation Test (LOT) (Scheier & Carver, 1985). The LOT is an eight-item scale that asks respondents

to rate their agreement to a series of statements using a 5-point Likert scale (1 = *strongly disagree* and 5 = *strongly agree*). Examples of statements include, "In uncertain times, I usually expect the best" and "Things never work out the way I want them to" (reverse-scored). Reliability of the LOT was moderate, $\alpha = .73$.

RESULTS

Ethnicity

Prior to main analyses, ethnic differences were examined using a chi-square test for education and a one-way analysis of variance (ANOVA) for all other measures. Significant group differences in income, $F(2, 186) = 11.53$, $p < .001$, education, $\chi^2(2) = 18.749$, $p < .001$, and social support, $F(2, 186) = 5.29$, $p < .01$, were found among the European American, African American, and Latina participants. European American participants reported significantly greater income ($M = 1188.77$, $SD = 1159.90$) than both African American ($M = 622.19$, $SD = 453.58$) and Latina ($M = 623.78$, $SD = 452.45$) participants. European American participants were also more likely to have a high school degree (77.4%) than African American (67.4%) and Latina (35.1%) participants. In addition, African American participants reported higher social support ($M = 104.72$, $SD = 12.01$) than European American ($M = 98.87$, $SD = 12.39$) and Latina participants ($M = 98.47$, $SD = 14.62$).

Although European American women were more likely to report positive changes ($M = 4.85$, $SD = 3.07$) than Latina ($M = 4.16$, $SD = 2.95$) and African American ($M = 3.54$, $SD = 2.67$) women, $F(2, 186) = 3.855$, $p < .05$, there were no significant ethnic differences in any of the other outcome measures. Consequently, all participants were pooled for all subsequent analyses, with ethnic analyses included when appropriate.[4]

Descriptive Results

Means, standard deviations, and correlations are presented in Table 1.

Positive and negative HIV-related changes. To address the first aim of the study, paired sample *t* tests compared the number of positive changes to number of negative changes, both over all domains and within each domain. Overall, the participants in this study reported a significantly greater number of HIV-related positive changes ($M = 4.10$) than negative changes ($M = 2.22$), $t(188) = 6.52$, $p < .001$.[5] There was also a significant negative correlation between the total number of positive changes and negative changes ($r = -.20$, $p < .01$). Thus, the more the women reported benefits from being HIV positive, the less they reported losses.

Although there was a greater total number of positive changes reported, the valence of the changes was not uniformly positive within the domains (see Table 2). The women's responses to the questions assessing how they think about themselves, $t(188) = 3.60$, $p < .001$, how they feel they have changed as individuals, $t(188) = 12.19$, $p < .001$, and their life priorities, $t(188) = 8.07$, $p < .001$, were all significantly more positive than negative. On the whole, the women reported that being HIV positive had made them stronger, wiser, more understanding, less involved with drugs and alcohol, and more focused on priorities such as their families, helping others, and living life to the fullest. In contrast, a smaller proportion of women reported that their condition lowered their self-esteem, made them feel ruined and withdrawn, and caused them to lose priorities and goals.

On the other hand, changes in romantic relationships, $t(188) = -3.40$, $p = .001$, and how the women viewed their bodies were significantly more negative than positive, $t(188) = -2.30$, $p < .03$. The women commonly reported that being HIV positive made them feel less interested in sex, more fearful in starting and maintaining romantic/sexual relations, and less physically attractive. A smaller proportion of women stated that being HIV positive made them closer and more loving with romantic partners or made them take better care of their bodies.

The changes reported in social relationships were also more negative than positive, but this relationship was not significant, $t(188) = -1.79$, $p = .075$. Common negative changes included becoming fearful and distrustful of others and socially withdrawn. Examples of positive changes in social relationships included becoming closer to friends and family and being more open and less judgmental toward others.

Depression and anxiety. On average, the women reported moderate levels of depressive symptomatology. The mean CES-D score corresponded to 1 to 2 days of depressive symptomatology in the past week, and 56% ($n = 106$) of the participants had scores above the clinical cutoff. Although the mean anxiety level was below the clinical cutoff of 15, 29% ($n = 55$) of the sample reported levels above this cutoff. Furthermore, depression and anxiety were highly correlated ($r = .65$, $p < .001$).

Socioeconomic status. Of the women, 36% had not earned an educational degree. Of the remaining 64%, 41% had a high school degree, 14% had a community college or vocational degree, and 9% had a college degree or higher. The median monthly income was $640, below the 1997 Federal Poverty Threshold. As expected, education and income were positively correlated ($r_{pb} = .16$, $p < .05$). Although increasing education and income were both associated with more HIV-related positive changes ($r_{pb} = .20$ and $r = .23$, respectively, both ps $< .01$), neither SES measure was associated with HIV-

TABLE 1: Means, Standard Deviations, and Correlations Among Measures (N = 189)

Measure	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1. Positive changes	—	–.20**	–.17*	–.05	.20**	.23**	.04	–.01	–.09	.09	.15*
2. Negative changes		—	.30**	.34**	–.04	–.07	.18*	–.27**	.19**	–.16*	–.34**
3. Depression			—	.65**	–.16*	–.05	.06	–.39**	.39**	–.16*	–.45**
4. Anxiety				—	–.19*	–.10	.15*	–.45**	.33**	–.14	–.46**
5. Income					—	.16*	–.02	.03	–.16*	.04	.14
6. Education						—	–.04	–.20**	–.09	.01	.15*
7. Trauma history							—	–.07	.21**	–.19**	–.08
8. Health								—	–.17*	.16*	.26**
9. Chronic burden									—	–.05	–.16*
10. Social support										—	.20**
11. Optimism											—
M	4.10	2.22	19.42	11.41	640.0[a]	.64[b]	2.11	364.81	37.88	101.58	28.99
SD	2.90	2.15	12.47	11.99	802.6	.48	1.68	131.19	11.88	12.96	5.25

a. Indicates median value.
b. Proportion of sample holding a high school degree or higher.
*$p < .05$. **$p < .01$.

TABLE 2: Mean Number of Positive and Negative Changes by Domain

Domain	*Positive*	*Negative*	p *Value*[a]
View of self			
"Way you think about yourself?"	.76 (1.04)	.40 (.67)	<.001
"Changed you as a person?"	1.54 (1.10)	.26 (.71)	<.001
View of body	.30 (.56)	.48 (.83)	.023
Social relations	.35 (.63)	.48 (.60)	.075
Romantic/sexual relations	.19 (.47)	.37 (.52)	.001
Life priorities	.96 (1.00)	.24 (.53)	<.001

NOTE: Values in parentheses are standard deviations.
a. All *p* values are two-tailed, from paired sample *t* tests, $df = 188$.

related negative changes. Furthermore, both depression and anxiety were negatively associated with income ($r = –.16$ and $r = –.19$, respectively, both *p*s < .05) but not education.

Trauma history. The mean number of past traumas reported by the women was 2.11. Of these, the most common were witnessing someone being badly injured or killed ($n = 87$), a natural disaster ($n = 83$), being threatened or kidnapped ($n = 58$), and being physically abused as a child ($n = 56$). Only 45 women had experienced one or more of the events within the 2 years prior to the interview, with the most common recent event being a natural disaster (i.e., the 1994 Northridge earthquake). Greater history of trauma was associated with more HIV-related negative changes ($r = .18$, $p < .05$) and more anxiety ($r = .15$, $p < .05$), but trauma history was not associated with HIV-related positive changes or depression.

Health status. On average, the women reported good health. The mean activities of daily living (ADL) score corresponded to self-reports of very good health, a little bit of pain and physical limitation, and stamina most of the time. Better health was associated with less HIV-related negative changes ($r = –.27$, $p < .01$), less depression ($r = –.39$, $p < .01$), less anxiety ($r = –.45$, $p < .01$), less chronic burden ($r = –.17$, $p < .05$), more social support ($r = .16$, $p < .05$), and more optimism ($r = .26$, $p < .01$). Better health also was associated with less education ($r_{pb} = –.20$, $p < .01$) but was not associated with income.

Chronic burden. The most severe burdens reported by the sample were having no savings to meet problems ($M = 3.24$), not having enough money to cover basic needs ($M = 2.97$), having no source of transportation ($M = 2.27$), and having housing problems ($M = 2.11$). As expected, increasing burden was associated with decreasing income ($r = –.16$, $p < .05$) and decreasing optimism ($r = –.16$, $p < .05$). Chronic burden was also positively correlated with HIV-related negative changes ($r = .19$, $p < .01$), depression ($r = .39$, $p < .01$), anxiety ($r = .33$, $p < .01$), and trauma history ($r = .21$, $p < .01$).

Social support. The mean level of social support reflected, on average, "quite a bit" of support received from the three people each woman selected. Higher levels of social support were associated with fewer HIV-related negative changes ($r = –.16$, $p < .05$), lower depression ($r = –.16$, $p < .05$), greater optimism ($r = .20$, $p < .05$), and fewer lifetime traumas ($r = –.19$, $p < .01$). Social support was not significantly correlated with HIV-related positive changes.

Optimism. The mean LOT score reflected moderately optimistic expectations. In addition to the correlations already highlighted, greater optimism was associated with higher education ($r_{pb} = .15$, $p < .05$), more HIV-related positive changes ($r = .15$, $p < .05$), fewer HIV-

related negative changes ($r = -.34$, $p < .01$), less depression ($r = -.45$, $p < .01$), and less anxiety ($r = -.46$, $p < .01$).

Prediction of HIV-Related Changes, Depression, and Anxiety

To address the second aim of the study, a series of simultaneous regression analyses were conducted in which the SES measures, trauma history, health status, chronic burden, social support, and optimism were used to predict each of the outcome measures (positive changes, negative changes, depression, and anxiety). Results of these four regression analyses are presented in Table 3.

Positive changes. SES measures were the most significant predictors of HIV-related positive changes ($R^2 = .08$, $p = .001$). Both higher education ($\beta = .19$, $SE = .08$, $p < .05$) and greater income ($\beta = .15$, $SE = .07$, $p < .05$) predicted greater reports of HIV-related benefits. It is unlikely that the relationship between SES and positive changes is accounted for by chronic burden, health status, or optimism, because these measures were not significant predictors when SES was simultaneously controlled.

To test whether the relationship between SES and positive changes could be explained by ethnic differences in SES and positive changes, a stepwise regression on positive changes was conducted in which ethnicity (dummy-coded as 0 = non–European American and 1 = European American) was entered on the first step and education and income were entered on the second step. Ethnicity was a significant predictor of positive changes in the first step ($\beta = .18$, $SE = .07$, $p = .01$) but showed no relation to positive changes ($\beta = .11$, $SE = .07$, $p > .10$) when education ($\beta = .19$, $SE = .07$, $p = .01$) and income ($\beta = .14$, $SE = .07$, $p = .07$) were included in the second step. Thus, analyses do not suggest that the SES association with positive changes can be adequately explained by ethnicity. On the contrary, results suggest that any effects of ethnicity on positive changes are mediated by the relationship between SES and positive changes.

To further examine the nature of the relationship between SES and positive changes, education and income were regressed onto the six domains of positive HIV-related changes. Results of these analyses suggested that how the women viewed their social relationships, $F(2, 186) = 6.94$, $p = .001$, and how they thought about themselves, $F(2, 186) = 3.08$, $p < .05$, were the domains significantly predicted by SES. Increasing income ($\beta = .15$, $SE = .07$, $p < .05$) and education ($\beta = .20$, $SE = .07$, $p < .01$) were associated with more reports of positive changes in social relationships. Women with the highest SES in the sample commonly reported that being HIV positive made them closer to other people, both close friends and family members. Furthermore, increasing income was also marginally associated with more reports of positive changes in how women think about themselves ($\beta = .14$, $SE = .07$, $p = .052$). Common positive changes in this domain included feeling stronger and reporting increased self-worth, feeling more compassionate toward other people, and wanting to appreciate and live each day to the fullest.

Negative changes. HIV-related negative changes, in contrast, were significantly predicted by optimism ($\beta = -.25$, $SE = .07$, $p < .001$) and health status ($\beta = -.19$, $SE = .07$, $p < .05$). Women who were less optimistic and less healthy were more likely to report more negative changes as a result of being HIV positive. Neither of the SES measures nor chronic burden were significant predictors of negative changes.

Depression. Depression was significantly predicted by chronic burden ($\beta = .30$, $SE = .06$, $p < .001$), optimism ($\beta = -.31$, $SE = .06$, $p < .001$), and health status ($\beta = -.25$, $SE = .07$, $p < .01$). Women who were less optimistic, experienced more chronic burden, and had poorer health reported more depressive symptoms. None of the other measures, including SES, emerged as significant predictors of depression.

Anxiety. Anxiety was significantly predicted by health status ($\beta = -.35$, $SE = .06$, $p < .001$), optimism ($\beta = -.30$, $SE = .06$, $p < .001$), and chronic burden ($\beta = .18$, $SE = .06$, $p < .01$). Women who had poorer health, less optimism, and more chronic burden reported more anxiety. Anxiety was also unrelated to income, education, social support, and trauma history when the effects of health, chronic burden, and optimism were controlled for.

Relationships Among HIV-Related Changes and Adjustment

The pattern of correlations among the outcome measures showed significant relationships between HIV-related changes and adjustment. However, because these correlations could reflect common relationships with optimism and health status, partial correlations were calculated in which the effects of these confounds were statistically removed. After partialling out the two variables, the measure of positive changes was marginally associated with depression ($pr = -.14$, $p < .06$) but not anxiety ($pr = .00$, *ns*). However, negative changes was significantly correlated with anxiety ($pr = .17$, $p < .05$) but less correlated with depression ($pr = .12$, $p < .10$). Thus, although the measures of HIV-related changes showed zero-order associations with adjustment, positive change was more closely associated (negatively) with depression and negative change was more closely associated (positively) with anxiety.

To examine whether balanced reports of HIV-related changes were associated with better adjustment than exclusively positive or exclusively negative changes, the participants were divided into three groups based on their balance of positive to negative changes. An ANOVA

TABLE 3: Summary of Regression Analysis on Positive Changes, Negative Changes, Depression, and Anxiety

Dependent Variable

	Positive Changes		*Negative Changes*		*Depression*		*Anxiety*	
β Income	.15*	(.07)	.03	(.07)	–.06	(.06)	–.09	(.06)
β Education	.19*	(.08)	–.06	(.07)	–.02	(.06)	–.10	(.06)
β Trauma history	.07	(.07)	.12	(.07)	–.06	(.06)	.06	(.06)
β Health status	–.01	(.08)	–.18*	(.07)	–.25***	(.07)	–.35***	(.06)
β Chronic burden	–.05	(.08)	.09	(.07)	.30***	(.06)	.18**	(.06)
β Social support	.09	(.07)	–.05	(.07)	–.05	(.06)	.00	(.06)
β Optimism	.09	(.08)	–.25***	(.07)	–.31***	(.06)	–.30***	(.06)
R^2	.10**		.19***		.36***		.39***	

NOTE: Values in parentheses are standard errors of the β coefficients.
*$p < .05$. **$p < .01$. ***$p < .001$.

compared these three groups—exclusively negative (n = 19), mixed (n = 133), and exclusively positive (n = 37)—on their depression and anxiety levels. Analyses indicated a steady decline in depression with increasing positivity of HIV-related changes. The positive group (M = 14.32, SD = 11.26) showed significantly less depression than both the mixed group (M = 20.31, SD = 12.11, t = 2.63, $p < .01$) and the negative group (M = 23.11, SD = 14.86, t = 2.54, p = .012), $F(2, 186) = 4.14$, p = .013. Thus, there was no evidence that a mixed recognition of HIV-related changes was associated with the lowest levels of depression. In contrast, increasing positivity was related to decreasing depression, and this pattern did not change when the effects of optimism and health status were controlled.

Results for anxiety showed a similar and significant pattern, $F(2, 186) = 4.75$, p = .01. The positive group (M = 6.32, SD = 7.10) had significantly lower levels of anxiety than the mixed (M = 12.30, SD = 12.75, t = 2.73, $p < .01$) and negative groups (M = 15.05, SD = 11.72, t = 2.63, $p < .01$). Again, this pattern did not change when optimism and health status were controlled. Thus, the results do not support the notion that a mixed recognition of HIV-related changes is associated with the lowest levels of anxiety.

DISCUSSION

Overall, the results provide support for hypotheses generated by both Hobfoll's (1989) conservation of resources theory and Taylor's (1983) cognitive adaptation theory.

Conservation of Resources Theory

Consistent with Hobfoll's (1989) theory, finding benefits in being HIV positive appeared to be a socioeconomic phenomenon. Although the measures of negative outcome—negative changes, depression, and anxiety—were predicted by optimism, health status, and chronic burden, the measure of positive changes was best predicted by education and income. These results appear to be robust, inasmuch as the most plausible mediators of any socioeconomic effects on benefit-finding—ethnicity, optimism, health status, and chronic burden—were controlled in the analysis and shown to have no unique association with positive changes. Although the relationship between SES and benefit-finding is predicted by Hobfoll's theory, it has been explored in few studies. Collins et al. (1990) found no relationship between income and benefit-finding, although the median income in their study was much higher and the variability in income may have reflected less variability in lifestyle than it did in the present sample. Other studies have reported associations between increasing education and increased benefit-finding (Davis et al., 1998), or increasing education and greater problem-focused coping (Epping-Jordan et al., 1999), but have not controlled for potential mediators of the relationships.

It is important to note that the domains of positive change that were best predicted by SES were social relationships and the self. These results suggest that increasing SES may influence the ability to find benefits by both broadening one's social sphere and by allowing participants more opportunities to feel stronger, more compassionate, and more appreciative of life. Common positive changes reported by higher SES participants included becoming closer to others, focusing more on family members and other close relationships, feeling stronger and with increased self-worth, and wanting to live each day to the fullest. It is interesting to note, however, that although the measure of positive changes assessed changes in social relationships, social support did not predict positive changes. This may be due, in part, to the fact that the social support measure did not assess changes in social network size and composition that frequently occur

as a response to the stigma of HIV infection (Mandel, 1986).

The negative outcomes, on the other hand, were not directly tied to SES. Neither income nor education significantly predicted depression, anxiety, or negative HIV-related changes. Instead, the women were more likely to report depression, anxiety, and negative HIV-related changes as optimism decreased, health status declined, and chronic burden increased. In this sense, reported negative changes may have been fairly veridical responses to the problems imposed by a progressive disease, in the context of preexisting and worsening burdens related to performing the tasks of daily life.

Cognitive Adaptation Theory

Consistent with Taylor's (1983) theory of cognitive adaptation, HIV-related benefits were reported significantly more often than losses. Even though the women in the sample were of a low SES; lacked financial, educational, and community resources; and showed a higher prevalence of both depression and anxiety than samples of HIV-negative women (Radloff & Locke, 1986), they nevertheless reported that being HIV positive resulted in more benefits than detriments, especially in their views of themselves and life priorities. Common themes of benefit included becoming stronger, wiser, less involved with drugs, more understanding, and more focused on priorities such as family, helping others, and living life to the fullest.

Although these results are consistent with theory (Taylor, 1983) and previous research, we had not expected that a sample largely lacking socioeconomic resources would report such a preponderance of benefits resulting from the ongoing stressor of being HIV positive. Were these women simply being unrealistically optimistic? A further examination of their responses suggests that they were not. As hypothesized, the HIV-related changes were not positive in all domains. For example, the women reported significantly more negative than positive changes in their romantic relationships and in their views of their bodies, domains that are the most negatively and directly affected by HIV infection. Furthermore, consistent with reports on the social stigma of HIV infection (Mandel, 1986), the changes in their social relationships were also somewhat more negative, although this difference was only marginally significant. Common negative changes included lack of interest and fear in becoming romantically involved, decreased attractiveness, and feelings of isolation and hopelessness. Indeed, the differentiated patterns of positive and negative responses suggest that the women were responding to the realities of their situations rather than from a general desire to see their lives in positive terms (cf. Collins et al., 1990).

Thus, rather than being unrealistically optimistic, it is more likely that these women were reappraising and finding benefits in their most pliable domains; that is, the areas in their lives most influenced by coping efforts such as positive reinterpretation. However, the use of the term "positive reinterpretation" should not be taken to suggest that the reported benefits are necessarily imaginary. Although benefit-finding in the context of an ongoing stressor can be viewed as a coping strategy as much as a coping outcome (Calhoun & Tedeschi, 1998), research suggests that reported benefits often reflect changes that can be validated by behavior (Taylor et al., 1984), outside observers (Park et al., 1996), or pre- to posttest changes on trait measures (Park et al., 1996). Furthermore, benefit-finding has been associated with adjustment in accounts of both past (Aldwin et al., 1994; Collins et al., 1990) and ongoing stressors (Affleck et al., 1987; Folkman et al., 1996).

Relationship of HIV-Related Changes to Adjustment

We found no evidence, contrary to some previous research (e.g., Collins et al., 1990), that reporting a balance of positive and negative changes was more adaptive than reporting exclusively positive changes. Instead, greater reports of HIV-related benefit were associated with better adjustment in this sample. Perhaps in the context of an ongoing stressor, focusing on the positive aspects of a negative experience reflects an active coping strategy that is more adaptive than would be true in reporting the effects of a past stressor. Thus, in an ongoing situation, benefit-finding may serve two purposes—as a strategy and as an outcome—and thus shows a stronger relationship to adjustment than it would in retrospective accounts.

Although we found increasing positivity to be associated with both decreasing depression and anxiety, results from partial correlational analyses indicated that positive changes were more related to depression, whereas negative changes were more related to anxiety. Perhaps the stronger association between positive changes and depression suggests that benefit-finding is a phenomenon tied more to positive affect than negative affect (Watson & Kendall, 1989; Watson & Tellegen, 1985). Indeed, studies that have shown no association between benefit-finding and adjustment (or a reverse association) have assessed anxiety more than depression (Lehman et al., 1993; Mohr et al., 1999). Furthermore, the strongest associations between benefit-finding and adjustment have been with depression, well-being, or positive mood measures (Park, 1998).

Limitations

A few qualifications to these conclusions must be addressed. First, some research suggests that characteristics of the stressor itself may influence people's ability to

find benefits in it. For example, sudden, traumatic events or stressors that are directly caused by another person may be the most difficult traumas from which to extract benefits (McMillen et al., 1997). On the other hand, stressors that typically have a long course of adaptation, such as cancer or HIV infection, are often associated with higher rates of benefit-finding. Second, although the women in this study had known of their HIV infection for more than 4 years, they were still a fairly healthy sample with little functional impairment. Thus, the women may have had considerable time to focus on their benefits and rethink their life priorities, with little serious deterioration in health. Although health status did not predict benefit-finding in this study, it is possible that as one's health deteriorates, health status may begin to show stronger associations with both negative and positive changes.

Third, although conservation of resources theory and cognitive adaptation theory both offer unique perspectives on the phenomenon of stress-related growth and how it relates to adjustment and SES, other theoretical perspectives also may be helpful in understanding how people benefit from adversity. An alternative to the theoretical interpretation proposed here is offered by cognitive dissonance theory (Festinger, 1957). Dissonance could conceivably have been aroused by the discovery that one had contracted HIV as a result of one's actions. However, dissonance is thought to be engaged primarily under conditions of choice and forseeability of the consequences. From the interviews, it was evident that for many of the women, these conditions were not met (e.g., sexual intercourse with a partner who had contracted HIV infection in prison and not told his partner). Moreover, the results of the present study are consistent with those of many other investigations involving benefit-finding in adverse events for which forseeability and choice are irrelevant variables, such as multiple sclerosis or cancer. Nonetheless, cognitive dissonance theory may be a useful perspective to consider in understanding how benefit-finding might occur under conditions of forseeability and choice.

Last, the analyses presented here are based on cross-sectional data so they are limited in their ability to demonstrate a causal relationship between benefit-finding and adjustment. A challenge in studying benefit-finding and adjustment in any traumatized population is that benefit-finding often may occur quite early in the course of the condition, as may any effects on adjustment. Furthermore, many individuals may be certain they have HIV for a long time prior to diagnosis, making it difficult to trap benefit-finding at its most nascent stage and track its relation to adjustment over time. Similarly, although the analyses we present address our original question of whether a balanced recognition or a more positively biased recognition of changes is more associated with adjustment, there is the possibility that the relationship between benefit-finding and adjustment may be causally reversed (i.e., better adjustment contributes to benefit-finding) or partially explained by higher order personality factors such as neuroticism (McCrae & John, 1992). Although neuroticism is closely tied conceptually and empirically to depression and anxiety and may partially explain any relationship between these adjustment measures and dispositional optimism (Smith, Pope, Rhodewalt, & Poulton, 1989), studies have not yet demonstrated neuroticism to be meaningfully related to benefit-finding (Park et al., 1996; Tedeschi & Calhoun, 1996). It is therefore unlikely that neuroticism would be a plausible explanation for the relationship between benefit-finding and adjustment found in this study. However, a unique aspect of this study is that it separately assessed positive and negative changes and found negative changes to be more similar than positive changes to the distress measures in terms of their correlations and their significant predictors, suggesting that positive and negative changes may be products of quite different underlying processes.

Despite these qualifications, the results of this study suggest that although the ability to benefit from negative life events may be to a degree contingent on socioeconomic resources, it is by no means rare. Even among those with limited socioeconomic resources, the capacity to benefit from adversity attests in powerful fashion to the resilience of the human spirit.

NOTES

1. Because interview transcripts were used as the basis for the current analyses, it was essential to have accurately transcribed accounts of the women's interview responses. Women for whom only interviewer notes were available (e.g., women who did not agree to have their interview tape-recorded) were excluded from participation in this study. These women ($N = 34$) did not differ significantly from the included women on any demographic variable or other measure used in subsequent analyses (all ps $> .16$).

2. Although interviews were conducted every 6 months over a 2-year period, only baseline data are used for the present analyses.

3. We used individual income, rather than household income, as our measure because households often included a number of unrelated individuals whose income had no bearing on each other (i.e., roommates, friends, children, or an occasional partner whose income was unstable or not available to the respondent).

4. Furthermore, controlling all analyses for ethnicity do not affect the findings reported here. However, to retain statistical power, analyses reported in this study do not control for ethnicity (except where noted).

5. Furthermore, when participants are classified according to a median split on education–income factor scores, positive changes outnumber negative changes in both the higher socioeconomic status (SES) participants (Ms = 4.80 and 2.18, respectively), $t(93) = 6.18$, $p < .001$, and lower SES participants (Ms = 3.40 and 2.27, respectively), $t(94) = 3.02$, $p < .01$.

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