

Perceived Control and Psychological Adjustment in Gay Men With AIDS¹

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The relationship of control beliefs to psychological adjustment was investigated in a sample of 24 gay men diagnosed with AIDS, participants in the University of California, Los Angeles site of the Multicenter AIDS Cohort Study (MACS). Distinctions between generalized contingency beliefs and specific competence beliefs and between personal and vicarious control beliefs were included in the questionnaire and interview measures administered. The results support these distinctions and indicate that beliefs in personal control over day-to-day symptoms and over course of illness were positively related to adjustment, whereas beliefs in control by others over course of illness and over medical care and treatment were negatively related to adjustment. These relationships appeared to be strongest for men who reported poorer health. These associations were not accounted for by locus of control beliefs, negative affectivity, or time since diagnosis with AIDS.

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The idea that a sense of control or mastery is an essential part of psychological well-being has long been a major theme in the psychological literature (see Amirkhan, 1990; Averill, 1973; Lefcourt, 1985; Miller, 1980; Thompson, 1981; Thompson & Spacapan, 1991, for reviews). Constructs closely related to control figure prominently in a number of major psychological theories (e.g., Abramson, Seligman, & Teasdale, 1978; Bandura, 1977, 1982, 1991; deCharms, 1968; Lazarus & Folkman, 1984; Pearlin & Schooler, 1978; Rotter, 1966; Seligman, 1975; Taylor, 1983, 1989; Taylor & Brown, 1988; Weiner 1985, 1986). These theories are generally explicit with regard to their emphasis on perceptions of control rather than objective controllability. Perceived control has been defined as "the belief that one can determine one's own internal states and behavior, influence one's environment, and/or bring about desired outcomes" (Wallston, Wallston, Smith, & Dobbins, 1987, p. 5).

Researchers have been particularly interested in the idea that a sense of control can buffer or moderate the effects of naturally occurring stressful life events (e.g., Bachrach, 1983; Cohen & Edwards, 1989; Collins, Taylor, & Skokan, 1990; Folkman, Lazarus, Gruen, & DeLongis, 1986; Janoff-Bulman, 1989; Janoff-Bulman & Frieze, 1983; Pearlin, Meaghan, Lieberman, & Mullen, 1981; Wheaton, 1982). Taylor (1983) has suggested that one of the effects of such events is to challenge control beliefs, and that successful adaptation in part involves reestablishing a sense of control or mastery over the event in particular and over one's life in general (see also Janoff-Bulman & Frieze, 1983). Again, research on responses to naturally occurring life events has emphasized perceptions of control, which are seen as perhaps "more important determinants of the stress response than the magnitude of the stressful stimulus itself" (Cohen, Glass, & Phillips, 1977, p. 142). That is, the actual contingencies in a given situation may be less important than the individual's perceptions of those contingencies (Langer, 1975; Wallston et al., 1987; Wortman, 1975).

Diagnosis with a life-threatening illness is among the most profound and powerful stressors that people may face in their lives. Perceptions of control in many areas may be severely challenged. Individuals with life-threatening illness often face uncertainties about the length of life available to them, the future course of their illness, their ability to care for themselves, their present and future physical capacities, and the experience of symptoms. Therefore, the role of control beliefs in adjustment to severe or life-threatening illness has recently been of particular interest to researchers (e.g., Affleck, Tennen, Pfeiffer, & Fifield, 1987; Burish, Carey, Wallston, Stein, Jamison, & Lyles, 1984; Cohen & Lazarus, 1983; Krantz & Schulz, 1980; Michela, 1986; Nicassio, Wallston, Callahan, Herbert, & Pincus, 1985; Reid, 1984; Taylor, Helgeson, Reed, & Skokan, 1991; Taylor, Lichtman, & Wood, 1984; Thompson,

Bundek, & Sobelow-Shubin, 1990; Wallston et al., 1987; Worchel, Cope-land, & Barker, 1987).

The present investigation focuses on the relationship between control beliefs and psychological adjustment in a sample of gay men diagnosed with AIDS. AIDS is generally considered to be a terminal condition, and is as yet incurable. On the other hand, Persons with AIDS (PWAs) may go through long, relatively asymptomatic periods, punctuated unpredictably by periods of extreme debilitation. The lifespan of PWAs following diagnosis may range from months to years, with no established maximum. Survival time has increased as medications that slow the devastation of the immune system by the Human Immunodeficiency Virus (HIV), as well as more effective treatments for AIDS-related conditions, have developed. However, many such medications have severe side effects, and the optimal dosage and point in the course of the disease at which they are best applied has in many cases not been definitively established. PWAs must choose among an array of available treatments, none curative, in the absence of substantial knowledge relevant to these choices. Given the uncertainty surrounding the nature and severity of symptoms that PWAs may experience on a daily basis, the course of their disease, and the medical treatments that may be available or effective, control is a particularly critical theme in the struggle of PWAs to adapt, adjust, and live with their disease.

Contingency Versus Competence Beliefs

Thompson and Spacapan (1991) have pointed to several important distinctions relevant to control processes that are clearly drawn in the theoretical literature but have not been incorporated in most empirical investigations. The first is the distinction between contingency beliefs and competence beliefs (see also Wallston et al., 1987; Weisz, 1986; Weisz & Stipek, 1982). Thompson and Spacapan define contingency beliefs as judgements about the "extent to which *people in general* can obtain desired outcomes through individual action" (p. 8), and indicate that such beliefs have been referred to under a number of different theoretical terms, including outcome expectancies (Bandura, 1977), locus of control (Rotter, 1966), means-ends beliefs (Chapman, Skinner, & Baltes, 1990), and control ideology (Gurin, Gurin, & Morrison, 1978). Competence beliefs, on the other hand, represent "perceptions of *one's own* ability to enact the necessary actions to obtain the outcome" (Thompson & Spacapan, 1991, p. 8), and have substantial overlap with constructs referred to as self-efficacy (Bandura, 1977) and agency beliefs (Chapman et al., 1990).

Studies assessing the effects of control-related beliefs have tended to focus exclusively on contingency beliefs, most frequently using some version of the

Rotter (1966) Internality-Externality or Locus of Control Scale. Thus, the contributions of competence beliefs have frequently not been examined. This failure appears in part to reflect an incomplete understanding of Rotter's theory (see Amirkhan, 1990; Strecher, DeVellis, Becker, & Rosenstock, 1986; Wallston et al., 1987). Rotter believed that generalized control (i.e., contingency) beliefs would exert an influence primarily in novel situations. In more familiar settings, a person would have formed situation-specific control beliefs that would take precedence over more general expectations. Thus, Rotter expected that generalized and situational estimates of control would not always correspond. Wallston et al. (1987) pointed out that although in studies assessing both types of control these two dimensions are frequently correlated, these correlations rarely exceed .50, suggesting that they are distinguishable dimensions.

In an attempt to capture more specific control beliefs, the Wallstons and their colleagues have developed a "sphere-specific measure" of control over health-related experiences, designed to assess competence beliefs in regard to this general area. However, such measures have generally not been demonstrated to add significant predictive value after accounting for generalized contingency beliefs (see Wallston & Wallston, 1981), suggesting that it may be important to assess health-related control beliefs with greater specificity. Amirkhan (1990) pointed out that researchers who have used even more situation-specific measures have generally met with greater success in predicting health-related outcomes, and thus recommends the incorporation of situation-specific measures, even if this entails the use of nonstandard items.

Recent research supports the use of very specific distinctions regarding the area over which perceived control is assessed. A number of researchers have found different patterns of perceived control over specific life areas (e.g., Lachman, 1991; Remondet & Hansson, 1991; Schulz, Heckhausen, & Locher, 1991). Further, control beliefs in different areas appear to be differentially affected by various life events (Reich & Zautra, 1991). These results suggest that it is important to be extremely cautious in combining items potentially related to different dimensions of control in the interests of scale construction. That is, competence beliefs appear to be best assessed at a very specific level. In regard to disease-relevant control perceptions, there may be important differences between different domains of control—such as control over one's work, control over one's family life, and control over one's medical treatment—all of which may be related in important ways to the disease.

Studies that have examined situation-specific control (i.e., competence) beliefs in populations with serious disease have suggested that these feelings of control are associated with positive adjustment to physical illness. Taylor et al. (1984) found that breast cancer patients who believed that they could exert control over the course of their cancer, or over the likelihood of its

recurrence, were significantly better adjusted than those who lacked such feelings of control. Positive relationships between perceptions of control over disease-specific dimensions and adjustment were also found by Michela (1986) in a sample of male patients who had suffered a myocardial infarction, and by Nicassio et al. (1985) in a sample of individuals with rheumatoid arthritis. Importantly, in a sample of men and women at high risk for sudden cardiac death, Taylor and her colleagues (1991) found not only that perceptions of control were positively associated with adjustment, but that perceived control predicted adjustment longitudinally. An alternative model, with adjustment predicting control perceptions over time, was found to be untenable.

One potentially important caveat concerning the adaptiveness of disease-specific control beliefs has been suggested by Affleck and his colleagues (1987), who studied a sample of rheumatoid arthritis patients. These researchers found that the relationship between control beliefs and adjustment varied according to the severity of symptoms. For patients with more severe symptoms, the belief in personal control over the course of their disease was negatively associated with adjustment. Therefore, these authors suggest that it may be adaptive for more severely ill patients to relinquish beliefs that they can control the uncontrollable, in the face of overwhelming evidence to the contrary. Similarly, Burish et al. (1984) have argued that maintaining beliefs in personal control over a chronic illness may be maladaptive because of the helplessness created by personal failure to influence the course of the disease (see also Jamieson, Wellisch, & Pasnau, 1978; Reid, 1984). In the present investigation, both generalized contingency beliefs and disease-specific control (competence) beliefs were assessed. AIDS-related control beliefs were assessed for three important and distinct dimensions—experience of symptoms on a day-to-day basis, overall course of the disease, and medical care and treatment. Further, detailed measures of self-reported health status and symptom severity were included in this investigation in order to examine the relationships among symptom severity, control beliefs, and adjustment.

Primary Versus Secondary Control

Perceptions of control in medical populations are particularly relevant in part because medical care delivery is a social context that typically restricts the control that may be exercised by the objects of that care (Thompson & Spacapan, 1991). Kaplan (1991) pointed out that medical treatment approaches frequently make the paternalistic assumption that physicians are entitled to make treatment decisions for their patients, and that patients rarely report being advised of various alternatives (e.g., Wennberg, 1990). Some studies have suggested that patients are not interested in making medical choices, and prefer that these decisions be made exclusively by their

physicians (e.g., Ende, Kazis, Ash, & Moskowitz, 1989; Strull, Lo, & Charles, 1984), although the distinction between choices related to alternative outcomes and choices related to the specific means by which those outcomes may be achieved has not always been made clearly (Kaplan, 1991).

These issues relate to a second important distinction in the theoretical literature on control—the difference between primary and secondary control beliefs (Rothbaum, Weisz, & Snyder, 1982). Primary control involves the belief that there are personal actions available that are likely to change the situation or lead to a desired outcome. In this paper, these are referred to as *personal control* beliefs. Secondary control may involve more passive, indirect ways of exerting influence. One important secondary control strategy, termed *vicarious control*, involves relying on powerful others to obtain desired outcomes on one's behalf. Although a number of theories have suggested that vicarious control may have adaptive benefits similar to those of personal control (e.g., Folkman, 1984; Reid, 1984; Rothbaum et al., 1982), few researchers have tested this hypothesis.

The health care setting is a useful place in which to examine feelings of vicarious control. In contrast to the context surrounding many stressful or threatening events, there are, in fact, powerful external agents that may be able to exert at least some control over one's symptoms, course of disease, and medical care and treatment—namely, physicians and other health care agents. This issue takes on special significance in the context of advancing or terminal illness, for in such situations personal control may no longer be possible, but some form of vicarious control may be available through the actions of medical care givers.

Consistent with this hypothesis, Taylor and colleagues (1984) found in their study of breast cancer patients that beliefs in the ability of others, primarily physicians, to control the course of the disease were positively associated with adjustment, and that this relationship was independent of the relationship between adjustment and personal control beliefs. Affleck et al. (1987) also found evidence of the adaptive function of vicarious control beliefs in some patients with rheumatoid arthritis. However, these effects, like those of personal control, varied according to symptom severity. The belief that others could control the course of the disease was associated with positive mood only for patients with less severe symptoms. For patients with more severe symptoms, these beliefs were negatively associated with positive mood. In order to address these issues in the present sample of men with AIDS, separate measures of personal and vicarious control were included.

Negative Affectivity

A final issue addressed by this investigation relates to the possibility that some other variable may determine both adjustment and feelings of control.

Research has suggested that a pervasive personality predisposition to view the self and events in a negative manner may be associated with a wide range of adverse reactions to stressful events (e.g., Rhodewalt & Zone, 1989; Smith, Pope, Rhodewalt, & Poulton, 1989; Watson & Pennebaker, 1989). Researchers have found this general trait, termed negative affectivity, to be associated with health complaints, physical symptoms, and less effective coping (Costa & McCrae, 1985, 1987; Smith et al., 1989; Watson & Pennebaker, 1989).

There has been some suspicion that negative affectivity may account for relationships between various psychological predictors and positive outcomes that were previously ascribed to other factors. In particular, the hardiness concept (Kobasa, 1979; Kobasa & Puccetti, 1983), of which a sense of personal control is a central component, has come under scrutiny as potentially confounded with negative affectivity (Rhodewalt & Zone, 1989). Conceivably, then, feelings of psychological control over a stressful event may not represent a set of specific cognitions generated in response to that stressor, but instead an outgrowth of a more general personality predisposition to view events in a positive rather than a negative way.

Although negative affectivity has several aspects—for example, feelings of nervousness, tension, worry, anger, scorn, revulsion, guilt, self-dissatisfaction, and a sense of rejection—it nevertheless appears to be a unitary dimension (Watson & Tellegen, 1985), with what earlier researchers referred to as “trait anxiety” (e.g., Spielberger, Gorsuch, & Lushene, 1970) or “neuroticism” (e.g., Eysenck & Eysenck, 1968) as one of its central features. Watson and Clark (1984) have reviewed a wide range of studies using a large number of common tests purporting to measure trait anxiety, depression, neuroticism, and defensive or socially desirable responding. Based on data for each measure from several different studies and in most cases representing total sample sizes of at least several hundred individuals, they computed correlations among these measures. The intercorrelations among 12 of these measures were high enough that these researchers concluded that they were alternative measures of the negative affectivity construct. Although the authors suggest that these measures may be interchangeable as measures of negative affectivity, the Taylor Manifest Anxiety Scale (TMAS; Taylor, 1953) demonstrated the highest pattern of correlations with the other measures.

Therefore, the shortened version of the TMAS (Bendig, 1956) was used to assess negative affectivity, to allow examination of the potential influence of negative affectivity on the observed relationship between perceived control and adjustment. An additional advantage of using the TMAS as a measure of this construct was that the items in the TMAS have relatively little explicit overlap with the items in the adjustment measures comprising the major dependent variable in this investigation.

Hypotheses

In summary, the present investigation of gay men with AIDS assessed the relationship between control beliefs and adjustment. Both generalized contingency beliefs and specific competence beliefs were assessed. Control beliefs were assessed according to three disease-specific domains—symptoms experienced on a daily basis, course of the disease, and medical care and treatment. Beliefs in personal (primary) control were assessed separately from vicarious (secondary) control beliefs. The study was designed so that the contribution of negative affectivity to these relationships could be examined.

It was hypothesized that competence-based control beliefs would be significantly related to adjustment even after accounting for generalized contingency beliefs. Specifically, it was hypothesized that perceptions of personal control would be positively associated with adjustment across the three domains assessed, with the exception that feelings of personal control over disease course were expected to be negatively associated with adjustment for men with more severe symptoms. It was expected that beliefs in vicarious control would be positively associated with adjustment for men with fewer symptoms, but that perceptions of vicarious control over course of the disease would be negatively associated with adjustment for men with more severe symptoms. Further, it was expected that these relationships would be maintained after accounting for the association between negative affectivity and adjustment.

Method

Participants

The MACS Study. Participants were recruited from participants in the University of California, Los Angeles site of the Multicenter AIDS Cohort Study (MACS). Specific information regarding the sample characteristics and methodology of the MACS has been published elsewhere (Detels et al., 1988; Kaslow et al., 1987). During the original enrollment period from April 1984 to March 1985, 1,637 men volunteered to participate in the Los Angeles cohort of the MACS. These were gay or bisexual men with no diagnosis of AIDS or cancer and no history of radiation therapy. After excluding deaths and persons who had refused further participation, approximately 1,400 men remained active participants in the Los Angeles site of the MACS at the time of this study. HIV antibody testing of blood samples obtained upon entry into the MACS revealed that approximately 51% of the Los Angeles sample was HIV-seropositive at that time. Of the original sample of 1,637,

202 men (12.3%) had developed AIDS as of the time of these analyses, and 129 of these men (7.9% of the sample; 63.9% of those diagnosed) had died of HIV-related complications.

The present study. The data presented here were collected as part of a longitudinal psychosocial study of men with AIDS. All men in the Los Angeles MACS sample who met Centers for Disease Control (CDC, 1987) criteria for a diagnosis of AIDS at the beginning of this investigation were considered eligible for participation. Recruitment packets were mailed to 80 MACS participants, soliciting their participation in a psychosocial study of persons with AIDS. Fifty-three men completed the initial questionnaire component of this investigation, representing a response rate of 66.3%. However, this response rate is likely to be an underestimate, because a number of men never responded to the mailing and our experience with this sample suggests that deaths about which the MACS had not yet been notified may have been one reason for nonresponse. All but 6 of these 53 men also agreed to participate in a more intensive interview study several months later. However, 18 men died before being able to complete the second phase of the study, and 2 could not be contacted. Three participants were later excluded from the study because subsequent examination of medical records failed to confirm a clear diagnosis of AIDS at the time of initial participation. Questionnaires completed at the time of initial participation, and interviews and concurrent questionnaires completed by the 24 men who participated in the second phase of the investigation an average of 8 months following initial participation, are the source of the data presented here.

Participant characteristics. All participants were Caucasian. At the time of their participation in the initial phase of the study, the mean age of the participants was 36.8 years ($SD = 6.2$; range = 24.9 to 49.2). The mean educational level of the sample represented having completed a four-year college degree. At the time of their participation in the initial questionnaire phase of the study, participants had been diagnosed with AIDS for a mean of 10.5 months ($SD = 8.5$; range = 1.9 to 32.7). At the time of the second phase of the study (i.e., the interview) participants had been diagnosed with AIDS for a mean of 18.4 months ($SD = 10.6$; range = 5.1 to 44.5). Examination of AIDS-related diagnoses for each participant, documented by medical records or medical examination as part of the MACS study, indicated that the initial diagnosis of AIDS had been based only on *Pneumocystis carinii* pneumonia (PCP) for 45.8% of the participants ($n = 11$), on PCP and the simultaneous presence of an additional AIDS-defining condition (e.g., wasting syndrome, esophagitis) for 16.7% ($n = 4$), only on Kaposi's sarcoma (KS) for 29.2% ($n = 7$), and only on other AIDS-defining conditions for 8.3% ($n = 2$).

Participants were compared with respect to demographic and disease

characteristics both to those 26 participants of the original 50 who did not participate in the interview and with the entire group of participants from the Los Angeles MACS sample with confirmed diagnoses of AIDS within the time frame specified for eligibility for this investigation, but who had not participated in the interview. Deceased participants were included in these analyses because failure to do so might obscure significant bias in terms of which participants had survived to participate in the interview. Therefore, the relevant comparison sample from the MACS consisted of 90 participants. The exception to this was the analysis of time since diagnosis, in which participants were compared with surviving nonparticipants and separately with the survival time following diagnosis of deceased participants. No significant differences were found between participants and these comparison groups of nonparticipants with respect to age, ethnicity, education, time since diagnosis, or documented AIDS-related diagnoses. It is clear, however, that in absolute terms many of the participants in this investigation represented relatively "long-term survivors" of AIDS.

Measures

Questionnaires. Questionnaire measures focusing on self-reported health status and psychological adjustment were administered both in the initial phase of this investigation and again at the time of the interview. Most of these were standardized measures selected on the basis of their psychometric properties and prior successful use in studies of chronically ill populations. Three measures—the AIDS-Related Symptom List, Personal Functioning, and Satisfaction with Life Domains—were created to assess specific dimensions relevant to this investigation.

Three measures of self-reported health status were used. (a) The Overall Health Rating consisted of a 7-point rating of general physical health. (b) The AIDS-Related Symptom List was a detailed list of 29 physical symptoms commonly associated with AIDS (e.g., fevers, lack of energy, difficulty breathing, diarrhea), the severity of which participants were asked to rate on a 5-point scale. Participants were asked to write in additional symptoms that were not listed. A composite score for symptoms was created by weighting each symptom according to its rating and summing these scores. (c) Personal Functioning consisted of three items regarding degree of impairment in activities of daily living, mobility, and physical activity that participants were asked to rate on a 5-point scale. These questions were based on an assessment model for disease-related functional impairment developed by Bush (1983). Ratings on these items were summed to create a score.

The next series of measures focused on various aspects of psychological adjustment. (a) Satisfaction with Life Domains consisted of 7-point ratings

of current satisfaction with employment, finances, physical health, medical care, and relationships with others. (b) Participants were also asked to make a general rating of satisfaction with their lives as a whole, which was used as a separate variable. (c) The Index of Well-Being is an 11-item scale developed by Campbell, Converse, and Rodgers (1976), consisting of 10 ratings anchored by two opposing adjectives describing qualities of the participant's life (e.g., Boring-Interesting; Useless-Worthwhile). (d) The Affects Balance Scale is a 40-item scale of positive and negative emotions developed by Derogatis (1975). Participants were asked to rate the degree to which they had experienced 20 positive and 20 negative emotions during the past week on 5-point scale. The total balance score between negative and positive emotions was used in the analyses presented here. (e) The Hopelessness Scale (Beck, Weissman, Lester, & Trexler, 1974) consists of 20 true-false items measuring negative expectations about the future. (f) A 10-item version of the Rosenberg Self-Esteem Scale (Rosenberg, 1965) was also included.

The questionnaire administered at the time of the interview also included the short form of the Taylor Manifest Anxiety Scale (TMAS, 20 items; Bendig, 1956) as a measure of negative affectivity, and a 16-item version of the Locus of Control Scale (Rotter, 1966) as modified based on analyses by Collins (1974), scored so that higher scores reflect a more internal locus of control.

Interview measures. Ratings of personal and vicarious control were coded from interview transcripts. Personal Control was assessed using the following three questions: (a) "How much control do you feel you have over the amount of fatigue, pain, or other symptoms you may experience on a daily basis?"; (b) "How much control do you feel you have over maintaining or improving your health, for example, by influencing your immune system or by preventing AIDS-related conditions from occurring, getting worse, or coming back?"; and (c) "How much control do you feel you have over the medical care and treatment of your illness?" Responses to these questions consisted of ratings made on a 5-point scale, from 1 (*none at all*) to 5 (*complete*). Provided that the participant made a rating higher than *none*, he was asked in an open-ended fashion to describe the ways in which he believed he could exert control in that area.

Vicarious Control was assessed using analogous questions, rated on the same scale regarding how much control the participant felt that people or things outside himself had in the same three areas. For each rating higher than *none*, the participant was asked who or what he believed had control, and in what ways this control was exercised.

Self-Reported Health Status and Global Adjustment Indexes

Scores on the three measures of health status were standardized for the 24 participants and combined into a composite index of Self-Reported Health

Status.³ Scores on the six measures of psychological adjustment were standardized and combined into a composite index of Global Adjustment,⁴ following a procedure used by Taylor and her colleagues (1984). A score for Prior Global Adjustment for each participant was also created based on data from participants' initial participation in the earlier phase of the investigation, following an identical procedure (see Footnote 4).

Results

Level of AIDS-Related Perceived Control

Mean ratings for personal control were quite high, corresponding to "some control" over Day-to-Day Symptoms ($M = 2.96$, $SD = .91$) and over Overall Course of Illness (i.e., "maintaining or improving your health"; $M = 3.30$, $SD = .76$), and to "very much control" over Medical Care and Treatment ($M = 4.00$, $SD = 1.18$). Mean ratings for vicarious control were also fairly high, corresponding to "a little control" by others over Day-to-Day

³The global index of Self-Reported Health Status was constructed based on analyses of data from the 50 participants participating in the initial data collection, at which time the same three measures of self-reported health status were collected. In order to determine whether these measures could be meaningfully combined into a single index, standardized scores on each of these scales for the 50 participants participating at Time 1 were entered into a factor analysis with quartimax rotation. This analysis yielded a single factor with an Eigenvalue greater than 0 (Eigenvalue = 1.56), accounting for all of the variance in the three scores. The three individual self-reported health measures were strongly intercorrelated, with correlation coefficients ranging from .50 to .62. Correlations between the three measures and the Self-Reported Health Status index ranged from .82 to .87. All correlations were significant ($p < .001$). Based on this analysis, a composite Self-Reported Health Status index was created by summing standard scores for the 24 participants in the second phase of the investigation, described in the present paper.

⁴The Global Adjustment index was also constructed based on analyses of data from the 50 participants participating in the initial data collection. The same six measures of adjustment were collected at that time, and standard scores for these measures were entered into a factor analysis with quartimax rotation. This analysis yielded one factor with a Eigenvalue of 3.48, accounting for 93.5% of the variance in the six scales, with the next highest Eigenvalue being 0.14. Each of the six scales had loadings between .56 and .88 onto this factor. Intercorrelations between the six different measures were all significant ($p < .05$), with correlation coefficients ranging from .34 to .78. All six measures were strongly and significantly correlated ($p < .001$) with the Global Adjustment index, with correlation coefficients ranging from .66 to .89. (Note that the scoring of the Hopelessness scale was reversed for inclusion in this index. The above correlation coefficients refer to this reversed score.) Based on this analysis, a composite Global Adjustment score was created by summing standard scores on the six measures for the 24 participants in the second phase of the investigation, described in the present paper. A composite Global Adjustment score for the initial time point, referred to in this paper as Prior Global Adjustment, was also created by summing scores on these 6 measures, standardized based on these 24 participants.

Symptoms ($M = 1.95$, $SD = 1.16$), and "some control" by others over Overall Course of Illness ($M = 2.95$, $SD = 1.20$), and over Medical Care and Treatment ($M = 2.75$, $SD = 1.15$).

Methods of Exerting Control

The most prevalent means of exerting personal control over Day-to-Day Symptoms reported by participants were relaxing, taking care of themselves, not letting themselves get tired or "too stressed out," using pain pills or other medications, sleeping or resting more, and distracting themselves or keeping themselves occupied. The predominant strategies for exerting personal control over Overall Course of Illness were compliance with medical treatment and advice, being careful about diet, and exercising. The single predominant means of control that participants reported over their Medical Care and Treatment consisted of being well-informed about their treatment and options and viewing their treatment as a cooperative venture between themselves and their doctors, with the ultimate authority for decision-making resting with them.

Participants who felt that someone else had some degree of control over these aspects of their AIDS-related experience most frequently reported that this control rested with their physicians. Over two thirds of the participants reported that their physicians had some degree of control over Overall Course of Illness and Medical Care and Treatment. Several participants also mentioned their partners, friends, or family for each of the vicarious control items.

When ratings for personal control were compared with those for vicarious control, it was found that participants saw themselves as having more control than others over their Day-to-Day Symptoms ($t_{(23)} = 3.92$, $p < .001$) and over their Medical Care and Treatment ($t_{(23)} = 3.97$, $p > .001$). Ratings of personal and vicarious control over Overall Course of Illness were not significantly different from one another.

Intercorrelations Among AIDS-Related Perceived Control Ratings

Intercorrelations among the perceived control items are shown in Table 1. Beliefs in personal control over the Overall Course of Illness were significantly and positively correlated with beliefs in personal control over Day-to-Day Symptoms ($r = .63$, $p < .01$), and significantly and negatively correlated with beliefs in control by others over Overall Course of Illness ($r = -.43$, $p < .05$) and Medical Care and Treatment ($r = -.42$, $p < .05$). With these exceptions, none of the personal and vicarious control items were significantly correlated with one another.

Table 1
Intercorrelations Among AIDS-Related Control Items and Correlations Between AIDS-Related Control Ratings and Locus of Control Scale Scores

	Personal control ratings			Vicarious control ratings		
	Day-to-Day Symptoms	Overall Course of Illness	Medical Care and Treatment	Day-to-Day Symptoms	Overall Course of Illness	Medical Care and Treatment
Personal control ratings:						
Day-to-Day Symptoms	—					
Overall Course of Illness	.63**	—				
Medical Care and Treatment	-.04	.02	—			
Vicarious control ratings:						
Day-to-Day Symptoms	.29	.15	.22	—		
Overall Course of Illness	-.32	-.43*	-.03	.22	—	
Medical Care and Treatment	-.18	-.42*	.13	.06	.28	—
Locus of Control Scale	.32	.35	.00	.07	-.29	-.34

* $p < .05$. ** $p < .01$.

Correlations between perceived control ratings and Locus of Control Scale scores are also shown in Table 1. None of these correlations were significant.

Control and Global Adjustment

One of the main hypotheses of this investigation was that perceived control ratings would be related to psychological adjustment. Table 2 shows the correlations between the Global Adjustment Index and Perceived Control Ratings, as well as the correlations between the Global Adjustment Index and Locus of Control Scale scores. As shown, Global Adjustment was significantly correlated with beliefs in personal control over Day-to-Day Symptoms ($r = .49, p < .05$), and over Overall Course of Illness ($r = .49, p < .05$), with individuals reporting greater feelings of personal control in these areas exhibiting better adjustment. Global Adjustment was not significantly correlated with beliefs in personal control over Medical Care and Treatment.

Global Adjustment was significantly and negatively correlated with beliefs

Table 2

Correlations of Locus of Control Scale Scores and AIDS-Related Control Ratings With Global Adjustment Index, and Partial Correlations Between AIDS-Related Control Ratings and Global Adjustment Index, Controlling for Locus of Control Scale Scores

	Global adjustment	
	Simple correlations	Controlling for Locus of Control
Locus of Control Scale	.56**	—
Personal control ratings:		
Day-to-Day Symptoms	.49*	.53*
Overall Course of Illness	.49*	.38
Medical Care and Treatment	.11	.12
Vicarious control ratings:		
Day-to-Day Symptoms	.03	.00
Overall Course of Illness	-.49*	-.41
Medical Care and Treatment	-.59**	-.51*

* $p < .05$. ** $p < .01$.

in control by others over Overall Course of Illness ($r = -.49, p < .05$) and over Medical Care and Treatment ($r = -.59, p < .01$), with individuals reporting greater control by others over these areas exhibiting poorer psychological adjustment.

Global Adjustment was also significantly correlated with Locus of Control Scale scores ($r = .56, p < .01$), with men who reported having a more internal locus of control exhibiting better psychological adjustment.

A second hypothesis of this investigation was that ratings of perceived control over AIDS-specific domains would be associated with psychological adjustment over and above the association of adjustment with Locus of Control. To assess this question, partial correlations between the Global Adjustment Index on perceived control ratings were calculated, controlling for the association between Global Adjustment and Locus of Control. These partial correlations are also shown in Table 2. As shown, after accounting for the association between Global Adjustment and Locus of Control, a significant and positive partial correlation was found between Global Adjustment and ratings of personal control over Day-to-Day Symptoms ($r = .53, p < .05$), and a significant and negative correlation was found between Global Adjustment and ratings of control by others over Medical Care and Treatment ($r = -.51, p < .05$).

Perceived Control and Other Potentially Relevant Variables

It was also important to examine the contribution of a number of other potentially relevant variables to the observed relationship between perceived control and adjustment. These included negative affectivity, which was assessed using the TMAS. That is, perhaps these results were accounted for by a tendency for participants to rate all emotionally loaded material in a similar direction. Second, we were interested in the influence on these relationships of self-reported health status. We had hypothesized different effects of control beliefs for participants who were more ill. It was also possible that participants who were more ill perceived themselves to have less control and also exhibited poorer adjustment as a function of their poorer health. Third, we wished to examine the influence of number of months since participants had been diagnosed with AIDS on these relationships, although no specific hypotheses had been made in this regard. This was especially important given that many of these participants had been diagnosed for relatively long periods of time. For example, perhaps men who had lived longer following their diagnosis felt that they had more control, and also exhibited better adjustment. Finally, because these men had been given the same assessment of Global Adjustment at an earlier point in time, an average of 8 months earlier, it was possible to examine the associa-

tion between control ratings and changes in psychological adjustment over the previous several months.

First, the correlations between these variables and the Global Adjustment Index were examined. As would be expected, TMAS scores were significantly and negatively related to adjustment ($r = -.51, p < .05$). Adjustment was not significantly correlated with either Self-Reported Health Status ($r = .34$), or Time Since Diagnosis ($r = .13$). There was a very high correlation between the Global Adjustment Index and Prior Global Adjustment ($r = .77, p < .001$), suggesting that adjustment had been relatively stable over the previous few months.

The correlations between each of these variables and control ratings were also calculated, and are shown in Table 3. As shown, TMAS scores were significantly correlated only with beliefs in control by others over Medical Care and Treatment ($r = .43, p < .05$). Self-Reported Health Status was significantly correlated with ratings of personal control over both Day-to-Day Symptoms ($r = .43, p < .05$) and Overall Course of Illness ($r = .67, p < .001$), with individuals who described themselves as being in better health and having fewer symptoms likely to make higher ratings in these areas. Time Since Diagnosis was significantly correlated only with beliefs in con-

Table 3

Correlations Among Potentially Relevant Variables and Control Ratings

	TMAS	Self- Reported Health Status	Time Since Diagnosis	Prior Adjust- ment
Locus of Control Scale	-.37	.04	.27	.56**
Personal control ratings:				
Day-to-Day Symptoms	-.22	.43*	.35	.29
Overall Course of Illness	-.22	.67***	.22	.58**
Medical Care and Treatment	.04	-.12	.28	.15
Vicarious control ratings:				
Day-to-Day Symptoms	.04	.19	.43*	-.20
Overall Course of Illness	.18	-.26	.14	-.45*
Medical Care and Treatment	.43*	-.36	-.26	-.42*

Note. TMAS = Taylor Manifest Anxiety Scale (Taylor, 1953), short form (Bendig, 1956).

* $p < .05$. ** $p < .01$. *** $p < .001$.

trol by others over Day-to-Day Symptoms, with participants who had been diagnosed for longer periods of time indicating that they perceived others to have more control in this area. A comparison of Table 3 and Table 2 indicates that Prior Global Adjustment exhibited almost the same pattern of associations with control ratings as current Global Adjustment, with the exception that the association between Prior Global Adjustment and ratings of personal control over Day-to-Day symptoms was not significant.

In order to assess the impact of these variables on the association between perceived control ratings and adjustment, four sets of partial correlation analyses were conducted for the relationship between the Global Adjustment Index and control ratings, controlling for each of the four variables listed above. These are shown in Table 4. As can be seen by comparing Table 4 and Table 2, neither controlling for TMAS scores nor Time Since Diagnosis appreciably altered the relationships between perceived control and psychological adjustment. Controlling for Self-Reported Health Status, on the other hand, reduced the correlation between Global Adjustment and personal control ratings over Overall Course of Illness to the point that it was not significant ($r = .38$). Finally, the association between psychological

Table 4

Partial Correlations Between Control Ratings and Global Adjustment, Controlling for Four Additional Variables

	TMAS	Self- Reported Health Status	Time Since Diagnosis	Prior Adjust- ment
Locus of Control Scale	.47*	.58**	.55**	.25
Personal control ratings:				
Day-to-Day Symptoms	.58**	.57**	.62**	.41
Overall Course of Illness	.45*	.38	.47*	.09
Medical Care and Treatment	.14	.15	.04	.02
Vicarious control ratings:				
Day-to-Day Symptoms	.08	-.02	-.01	.28
Overall Course of Illness	-.47*	-.44*	-.50*	-.31
Medical Care and Treatment	-.47*	-.53*	-.57**	-.52*

Note. TMAS = Taylor Manifest Anxiety Scale (Taylor, 1953), short form (Bendig, 1956).

* $p < .05$. ** $p < .01$.

adjustment and perceived control by others over Medical Care and Treatment was maintained even after controlling for Prior Global Adjustment ($r = -.52, p < .05$), in spite of the high correlation between Prior and current Global Adjustment ($r = .77, p < .001$). Individuals who perceived higher degrees of control by others over this area tended to exhibit a deterioration in psychological adjustment over the previous several months.

Because severity of illness had been an important moderator of the relationship between perceived control and adjustment in other studies (Affleck et al., 1987; Taylor et al., 1991), and because Self-Reported Health Status was observed in these data to have at least some impact on this relationship (see Table 4), additional analyses were conducted to examine this further. Participants were divided into Low and High Self-Reported Health Status groups based on a median split on the Self-Reported Health Status index. Correlations between control variables and Global Adjustment were calculated within each group. These results are shown in Table 5. As shown, the correlations for the Low Self-Reported Health Status group follow the same pattern as the correlations for the whole sample, and are stronger in every case except for personal control over Overall Course of Illness. By contrast, the correlations are attenuated for the High Self-Reported Health Status group. A similar pattern was also observed for the relationship between the Global Adjustment Index and Locus of Control Scale scores, with individuals reporting better health exhibiting a weaker and nonsignificant association between these two variables and individuals reporting poorer health exhibiting a high and significant correlation. Thus, although the pattern of the relationship between control ratings and Global Adjustment described above appears to be consistent across levels of Self-Reported Health Status, the relationship between perceived control and adjustment appears to be especially powerful for individuals describe themselves as being in poorer health.

The Presence of Outliers

Because of the small number of participants in this investigation, it was particularly important to examine these data for the presence of outliers. That is, it was possible that extreme scores for one or two participants might disproportionately affect the results, artificially inflating the observed correlations. In order to identify influential observations, Cook's distance measure D_i was calculated using simple linear regression analysis for the association between Global Adjustment, the dependent variable of primary interest in all of the analyses presented above, and every other variable used in this investigation. Cook's distance provides an overall measure of the impact of each observation i based on two factors (Neter, Wasserman, & Kutner,

Table 5

Correlations Between Control Ratings and Global Adjustment Index, by Self-Reported Health Status Group

Variable	Total sample (<i>n</i> = 24)	Low Self-Reported Health Status (<i>n</i> = 11)	High Self-Reported Health Status (<i>n</i> = 13)
Locus of Control Scale	.56**	.69*	.45
Personal control ratings:			
Day-to-Day Symptoms	.49*	.73*	.30
Overall Course of Illness	.49*	.46	.42
Medical Care and Treatment	.11	.56	-.17
Vicarious control ratings:			
Day-to-Day Symptoms	.03	.35	-.23
Overall Course of Illness	-.49*	-.65*	-.34
Medical Care and Treatment	-.59**	-.67*	-.51

* $p < .05$. ** $p < .01$.

1985). It is calculated based on the Studentized deleted residual e_i , for identifying outliers in terms of Y values (in this case the Global Adjustment Index), and the leverage value h_{ii} , for identifying outliers in terms of X values (in this case each of the other variables used in this investigation). A criterion value is calculated by relating D_i to the corresponding F distribution based on the number of observations and number of parameters, and scores for Cook's distance above this value are considered influential observations (or potential outliers). According to these analyses, there was one potentially influential observation for the association between the Global Adjustment Index and personal control over Day-to-Day Symptoms, one potentially influential observation for personal control over Medical Care and Treatment, and one potentially influential observation for Self-Reported Health Status. Each of these represented a different participant. In each case, all analyses involving that variable were repeated without data for that participant. There were no changes in the pattern of significant and nonsignificant relationships in these analyses as compared to the original analyses. In fact, the general tendency was for correlations to be slightly higher in the analyses without these observations, suggesting that their effect

was to depress, rather than to inflate, the observed correlations between control variables and adjustment.

Discussion

Relationships Between Perceived Control Domains

These men with AIDS saw themselves as having a high degree of personal control over their experiences related to having AIDS. They saw others, particularly their physicians, as also having some control, but generally less than they perceived themselves to have. The pattern of intercorrelations among the perceived control ratings (see Table 1) indicates that personal control ratings were not simply the inverse of vicarious control ratings. That is, these men did not see control over these domains as belonging *either* to themselves or to other agents, but saw these relationships as more complex.

A particularly striking finding is that most participants saw themselves as having primary responsibility for their own medical care and treatment. Nineteen of the 24 participants (79.2%) rated themselves as having very much or complete control in this area. As one participant said, "I believe it is a partnership with the doctor, and it is my responsibility to know as much as I can and do as much as I can for myself." Another went further, "I tell people that my relationship with my doctor is just like my accountant. They are hired professionals, and I pay them a lot of money to give me their best professional opinion. Once they give me their opinion, I will make the decision."

Second, the largely low and inconsistent pattern of correlations among different perceived control ratings (see Table 1) suggest that the three domains assessed are distinguishable. This argues against the construction of more global perceived control scores summarizing across different domains, and is consistent both with Bandura's (1977, 1982, 1991) work indicating that self-efficacy is domain-specific and with the suggestions of a number of researchers that situation-specific distinctions in control beliefs are important (e.g., Amirkhan, 1990; Thompson & Spacapan, 1991).

Generalized Versus Domain Specific Control Beliefs

The correlations between perceived control ratings and Locus of Control Scale scores (see Table 1) are modest and are not significant. This suggests that the perceived control ratings did, in fact, capture cognitive phenomena distinguishable from generalized contingency beliefs. Given that at the time of these assessments, these men had had considerable experience with the disease-related dimensions about which they were asked, this finding is con-

sistent with Rotter's (1966) theory and with the distinction made by many other researchers between generalized and situational perceptions of control (see Thompson & Spacapan, 1991).

Further, perceived control dimensions appear to be related to adjustment independently of generalized contingency beliefs. Accounting for Locus of Control Scale scores in examining the relationship between adjustment and perceived control ratings had relatively little impact (see Table 2). Again, this is consistent with Rotter's (1966) idea that generalized control beliefs have an impact primarily in novel situations, whereas more specific control beliefs are more important in situations with which individuals are experienced. The correlations between adjustment and personal and vicarious control over Overall Course of Illness did shift from being significant to nonsignificant after controlling for Locus of Control scores. However, this shift may be a function of low power due to the small number of participants in this investigation.

Adjustment and Personal Control Beliefs

The positive associations between adjustment and ratings of personal control over Day-to-Day Symptoms and Overall Course of Illness is consistent with a large body of experimental and clinical literature indicating that perceived control is positively related to adjustment. More specifically, these findings are consistent with results of similar studies of persons coping with breast cancer (Taylor et al., 1984) and rheumatoid arthritis (Affleck et al., 1987). The lack of correlation between adjustment and personal control ratings over Medical Care and Treatment may reflect a ceiling effect for this domain, given that, as noted, over two thirds of the participants saw themselves as having "very much" or "complete" control over this area.

The notable exception to our hypotheses regarding personal control was that perceived personal control over Overall Course of Illness was positively, rather than negatively, related to adjustment in participants with more severe symptoms (see Table 5). This is in contrast to the findings of Affleck and his colleagues (1987) in rheumatoid arthritis patients. This divergence may reflect important differences between the diseases studied, particularly in terms of lethality. Rheumatoid arthritis is not life-threatening, its course tends to be fairly linear, and its primary symptom is pain, for which there may be no effective medical treatment. Under these circumstances, it may be most adaptive for people with severe symptoms to accept that little can be done to change the course of their disease, and to focus on coping strategies to deal with their symptoms. Holding beliefs in personal control over aspects of the disease other than daily symptoms may amount to self-blame, which may be negatively associated with adjustment.

By contrast, persons with AIDS live with the constant possibility of developing a lethal or debilitating infection, and symptom levels may fluctuate widely over time. Although many AIDS-related conditions can be treated effectively, their underlying cause cannot. In the face of this uncertainty, the belief that one can exert some control over one's illness-related experience, and hence over one's functioning and future, may be extremely important. The greater the uncertainty, the more important such beliefs may be, as evidenced by the stronger relationships observed between personal control and adjustment for those who perceived themselves to be more ill (see Table 5). If these men with AIDS are unable to believe in their ability to maintain their present level of health, the alternative may be to prepare for death. To do so when one may survive for months or years may be maladaptive and irreconcilable with the demands of daily life. This perspective is consistent with previous work by Taylor and her colleagues (Taylor, 1983, 1989; Taylor & Brown, 1988; Collins et al., 1990) suggesting that people develop positive illusions to help them combat the adverse consequences of victimizing events. The belief of these men with AIDS in their ability to control their disease may be such an illusion, but this makes the belief no less important and no less adaptive.

Adjustment and Vicarious Control Beliefs

Beliefs in control by others over Overall Course of Illness and over Medical Care and Treatment were negatively associated with adjustment, and this relationship was particularly strong for those who reported more severe symptoms (see Table 5). The lack of association between adjustment and ratings of vicarious control over Day-to-Day Symptoms may be accounted for by differences in perceptions of who had control. Whereas virtually all participants mentioned their physicians in connection with Overall Course of Illness and their Medical Care and Treatment, only one third mentioned their physicians as having any control over Day-to-Day Symptoms. Those rating others as having any degree of control over this area referred primarily to individuals in their immediate interpersonal environment, such as their partners, close friends, and families.

Controlling for Prior Global Adjustment, assessed an average of 8 months earlier, did not completely remove the relationship between perceptions of vicarious control and adjustment (see Table 4), in spite of the high correlation between adjustment scores at the two time points ($r = .77, p < .001$). Perceived control by others over Medical Care and Treatment was associated with deterioration in adjustment over time. Although the direction of this relationship cannot be established based on these data, it is worthy of further exploration in the future.

The findings of this investigation on vicarious control diverge markedly from previous literature, particularly with Taylor et al.'s (1984) finding that beliefs in control by others (i.e., physicians) over the course of illness was positively associated with adjustment in breast cancer patients. These results are partially consistent with Affleck et al.'s (1987) finding that these beliefs were negatively associated with mood in rheumatoid arthritis patients with more severe symptoms. However, in contrast to Affleck et al.'s findings, men with AIDS with less severe symptoms did not exhibit a positive relationship between vicarious control beliefs and adjustment (see Table 5).

The difference among these studies can potentially be explained with reference to any of several factors. First, type of disease may importantly moderate the relation between perceived control and adjustment. Taylor et al.'s (1984) breast cancer sample was skewed in the direction of a favorable prognosis, and under such circumstances, belief in vicarious control may well be adaptive. Breast cancer is potentially curable through contact with medical professionals and through compliance with medical procedures that others perform, such as chemotherapy, radiation, and surgery. Thus, trusting one's physician, and assuming that he or she knows what is best and has control, may be adaptive. Similarly, for the rheumatoid arthritis patients studied by Affleck et al. (1987), such beliefs may also be adaptive as long as the symptoms are not severe. Among those with more serious conditions, including life-threatening ones such as AIDS, beliefs in vicarious control may become less adaptive. Thus, health status or prognosis may moderate the relationship between vicarious control and adjustment.

However, other possible explanations may also have some validity. In particular, the breast cancer patients were all women, the rheumatoid arthritis patients were a mixed gender sample, and the AIDS patients were all men. It is possible that men and women respond to personal and vicarious control beliefs differently, and that a sense of vicarious control is adaptive for women but not for men. Due to traditional sex role expectations, women may be more accustomed to relying on others to maximize their outcomes, and thus may experience positive emotions in response to the perception that others can exert control over an aversive event that affects them. The distress of men, in contrast, may be reduced only by feelings of personal control and not by the perception that others can exert control, which may be threatening to the typical masculine sex role. Consistent with this explanation, Dracup, Guzy, Taylor, and Barry (1986) found that men with advanced heart disease whose wives had been trained in CPR (i.e., a vicarious control manipulation with potentially life-saving consequences) were nonetheless significantly more distressed than those whose wives did not have the training.

The possible explanations involving prognosis and gender are both supported by data from a study by Taylor and colleagues (1991) of male and

female cancer patients with prognoses of varying severity, who found that positive associations between beliefs in vicarious control and adjustment were confined almost exclusively to women. The variable of prognosis was even more important. For those with poor prognoses or advanced disease, the beliefs that there were others in the environment who could control the disease was associated with poor adjustment.

A third explanation maintains that both the nature of AIDS as a disease and the history of the response to it by the medical community are substantially different than has been the case for other diseases (see Shilts, 1987, for extensive background on this issue). Early in the history of the AIDS epidemic, the medical community regarded AIDS as unimportant, and the government was unresponsive. Open expressions of hostility toward this disease and those who have it continue to be remarkably prevalent even among the medical community (e.g., Kelly & St. Lawrence, 1988). Thus, beliefs in control by physicians may be associated with negative emotions. However, Taylor et al. (1991) point out that a similar, although not nearly as extreme, climate previously dominated the treatment of breast cancer, and in that population the relationship between vicarious control and adjustment was reversed.

Finally, the men who participated in this investigation tended to be extremely well-informed about AIDS, the development of new medications, and the options for treatment available to them. It was common for men in this group to describe having to educate their physicians about aspects of their disease, or alert them to potentially beneficial treatments. Under these circumstances, it may be quite distressing to perceive that one's physician controls the course of the disease and the nature of the medical care delivered.

Negative Affectivity

These data do not support the potential explanation that negative affectivity accounts for the relationship between perceived control and adjustment. Scores on the TMAS were generally not related to control perceptions (see Table 3). Controlling for negative affectivity did not alter the pattern of correlations between perceived control ratings and adjustment (see Tables 2 and 4). This pattern of results provides further support for the assertion that perceived control is not simply the flip side of negative affectivity (e.g., Taylor et al., 1991).

Limitations of the Study

This was a cross-sectional investigation from which causal inferences cannot be drawn. The pattern of these findings, however, is consistent with

experimental studies showing that perceived control has a causal influence on subsequent adjustment (e.g., Thompson, 1981). Further, recent research by Taylor et al. (1991) indicated that control perceptions predicted adjustment longitudinally, whereas adjustment did not predict control perceptions. Additional longitudinal studies are needed to shed further light on the pattern and causal direction of these relationships over time.

The characteristics of the men with AIDS who participated in this investigation are likely to have influenced the results in a number of important ways. As mentioned, these men had been diagnosed with AIDS for an average of 18.4 months, indicating that these participants represent relatively long-term survivors of AIDS. However, there was a remarkably full range of time since diagnosis, from 5 months to 45 months. Time since Diagnosis was not consistently correlated with control ratings (see Table 3), nor did controlling for Time since Diagnosis alter the pattern of relationships between perceived control and adjustment (see Tables 2 and 4). These results suggest that the length of time from diagnosis does not account for the associations observed.

Other relevant sample characteristics include the fact that all of the participants in this investigation were Caucasian gay men with a level of education significantly above average. Obviously, these results cannot be generalized to other populations affected by HIV, such as intravenous drug users and persons infected by blood transfusions. However, the substantial majority of individuals diagnosed with AIDS to date have been gay or bisexual men, making this an important population to study. Similarly, these results may not be generalizable to ethnic minority populations, for whom the psychosocial correlates of HIV infection and AIDS may differ (e.g., Mays & Cochran, 1987; Peterson & Marin, 1988).

Other systematic biases are based on the recruitment process for the MACS and for this investigation. First, these participants were self-identified as gay or bisexual, so the sample was less likely to have included individuals who were more "in the closet" or conflicted about their sexual orientation, or who considered themselves to be heterosexual in spite of having sexual contact with other men. Second, because recruitment took place through local gay newspapers and organizations, the sample can be presumed to be biased toward individuals who were more integrated into the gay community. Third, individuals volunteering for the study were likely to have been better educated about AIDS than demographically similar non-participants, given that at the time of original recruitment for the MACS, AIDS was far from universally acknowledged as an important problem in the gay community in Los Angeles.

This sample was also clearly biased toward healthier participants. It can be assumed that persons with AIDS who were more severely ill were more

likely to have dropped out of the MACS, to have declined participation in this investigation, or to have died. However, aspects of these data suggest that the relationship between perceived control and adjustment may be even more important for participants who are more ill.

Finally, participants in this investigation had been enrolled for several years in an intensive study of the natural history of HIV infection. This involved a tremendous investment of time and effort, without tangible compensation. Informally, participants often indicated that an important reason for their involvement both in the MACS and in this investigation was their view that this was a means of making a contribution to knowledge about AIDS and to the gay community. Individuals for whom such a motivation was powerful may be different in important ways from individuals who chose not to participate.

Implications

Despite these limitations, a number of important implications may be drawn from these data. In terms of personal control, an important message is that these men with AIDS did not view themselves as passive victims of their disease, nor as passive recipients of their treatment, but as having a high degree of control over important aspects of their AIDS-related experiences. Theoretically, these findings suggest that previous researchers have been incorrect in assuming that it is adaptive for persons with severe disease to have relatively accurate views of their degree of personal control. Instead, these data support the suggestion (Collins et al., 1990; Taylor, 1983, 1989; Taylor & Brown, 1988) that the development of positive illusions is an important aspect of the adjustment to victimizing events, specifically to life-threatening disease, and that these illusions function to protect the individual from the potentially devastating consequences of these events.

Clinical interventions for individuals with potentially terminal conditions have frequently been based on assumptions about the benefits of realism. Clinicians may view the perception of personal control as a state of "denial" and strive for the patient to achieve a state of realistic "acceptance" (e.g., Kübler-Ross, 1969). These results suggest that such interventions may be misplaced and possibly destructive, and that it is important for professionals to support a sense of control and autonomy, at the same time encouraging necessary planning and problem-solving.

In terms of vicarious control, previous theory has suggested that it is especially important for those with graver prognoses to turn control of important health-related outcomes over to those more competent to handle them (e.g., Burish et al., 1984; Jamieson et al., 1978; Reid, 1984). It will be important for future research to explore the circumstances under which

vicarious control may contribute to and detract from adjustment. On a clinical level, these results provide an argument against the paternalistic stance that may characterize medical institutions. It was extremely important for these gay men with AIDS to be well informed about their treatment and options, to participate fully in the decision-making process, and to feel that the ultimate authority rested with them. Physicians and other professionals who are able to support their patients in this process may contribute to adjustment, well-being, and ultimately to quality of life.

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