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# Ethnicity and Benefit Finding in HIV+ MSM

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UNIVERSITY OF MIAMI

ETHNICITY AND BENEFIT FINDING IN HIV+ MSM

By

Julia Seay

A THESIS

Submitted to the Faculty  
of the University of Miami  
in partial fulfillment of the requirements for  
the degree of Master of Science

Coral Gables, Florida

August 2012

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UNIVERSITY OF MIAMI

A thesis submitted in partial fulfillment of  
the requirements of the degree of  
Master of Science

ETHNICITY AND BENEFIT FINDING IN HIV+ MSM

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Ethnicity and Benefit Finding in HIV+ MSM

Abstract of a thesis at the University of Miami.

Thesis supervised by Professor Michael H. Antoni.

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HIV+ men who have sex with men (MSM) in ethnic minority groups have significantly poorer psychosocial and health-related outcomes as compared with HIV+ individuals in majority groups (e.g. white, heterosexual). The current study seeks to examine a positive psychological pattern found in previous studies comparing ethnic minority and white patients with chronic disease; specifically, that ethnic minorities tend to exhibit higher levels of benefit finding in response to chronic disease. Understanding the factors that may uniquely contribute to benefit finding in minority HIV+ MSM may aid in the development of interventions designed to improve psychosocial and health-related outcomes for this group in particular.

Based on the findings of previous work, it was hypothesized that benefit finding would be significantly greater in minority MSM than in white MSM. It was also hypothesized that both the relationship between perceived stress and benefit finding and the relationship between social support and benefit finding would differ as a function of ethnicity. Finally, it was hypothesized that religious coping would mediate the relationship between ethnicity and benefit finding.

The current study utilized baseline and 3-month follow-up (T2) data drawn from a previous trial of Cognitive Behavioral Stress Management (CBSM) intervention in HIV+

MSM. Participants were 94 HIV+ MSM; 56% were white and 44% belonged to minority ethnic groups (African-American, AfroCaribbean-American, Hispanic). Analyses revealed that benefit finding was greater in minority MSM at baseline; however, this difference became non-significant when age, education level, and HAART adherence were added to the model. Ethnicity was not a significant predictor of T2 benefit finding. There were no significant interactions found between social support and ethnicity in predicting either T1 or T2 benefit finding. Moderated regression analyses revealed a significant interaction between T1 perceived stress and ethnicity in predicting T2 benefit finding, such that higher levels of T1 perceived stress predicted lower levels of T2 benefit finding in minority MSM only. Mediated regression and bootstrapping analyses revealed religious coping to be a provisional intermediary variable in the relationship between ethnicity and T1 benefit finding in a model which was not adjusted for covariates. The current study's results highlight potential differences in the association between stress and benefit finding processes between white and minority MSM.

## TABLE OF CONTENTS

LIST OF TABLES .....	v
LIST OF FIGURES .....	vi
Chapter	
1 INTRODUCTION .....	1
Benefit Finding in Individuals with Chronic Disease.....	4
Psychosocial and Health Related Outcomes Associated with Benefit Finding in Chronic Disease.....	6
Psychosocial Predictors of Benefit Finding in Chronic Disease .....	9
Sociodemographic Predictors of Benefit Finding in Chronic Disease .....	12
Current Study.....	14
Current Study Aims and Hypotheses.....	18
2 METHOD .....	20
Participants and Procedure.....	20
Measures .....	21
Demographics .....	21
Health Status .....	21
Perceived Stress .....	22
Social Support.....	22
Religious Coping .....	23
Benefit Finding.....	24
3 RESULTS .....	25
Preliminary Analyses and Analysis Plan .....	25
Bivariate Correlations and Covariates .....	26
Hypothesis 1.....	27
Hypothesis 2.....	28
Hypothesis 3.....	30
Hypothesis 4.....	31
4 DISCUSSION .....	34
Limitations and Future Directions .....	39
Conclusion .....	41
TABLES.....	44
FIGURES .....	52
REFERENCES.....	54

APPENDIX OF MEASURES.....	62
Benefit Finding Scale.....	62
Perceived Stress Scale.....	63
UCLASSI Scale .....	65
COPE Scale.....	67



## LIST OF TABLES

TABLE 1: .....	44
TABLE 2: .....	45
TABLE 3: .....	46
TABLE 4: .....	47
TABLE 5: .....	48
TABLE 6: .....	49
TABLE 7: .....	50
TABLE 8: .....	51

## LIST OF FIGURES

FIGURE 1: .....	52
FIGURE 2: .....	53

## CHAPTER 1: INTRODUCTION

With the advent of Highly Active Antiretroviral Therapy (HAART) HIV has become a chronic disease in the United States, where there is widespread access to medication and healthcare. People living with HIV (PLWH) in the US have the opportunity to extend their lifespans to nearly that of non-infected individuals through the utilization of healthcare services, making healthy lifestyle choices, and adhering to HAART regimens. However, while HIV healthcare is widely available, PLWH experience differing rates of HIV disease progression (CDC, 2010; Chu et al., 2008).

Although there are clear biological and behavioral factors which contribute to HIV disease progression, various studies have shown that psychosocial factors such as depression, stress, and coping strategies may significantly contribute to the rate of HIV disease progression as well (Miller et al., 2009; Leserman et al., 2000). For example, a number of studies have found that depressed HIV patients experience faster disease progression than non-depressed HIV patients, even after controlling for pertinent covariates, such as socioeconomic status (Rabkin, 2008; Pence, 2009). Another related body of work has found that PLWH who experience high levels of perceived stress experience greater immune decrements (Miller et al., 2009). Similarly, work examining Cognitive Behavioral Stress Management (CBSM) intervention in HIV/AIDS and prostate cancer has shown post-intervention immune improvements which parallel decreases in stress (Antoni et al., 2008; Penedo et al., 2006). The coping strategies utilized by PLWH may significantly influence immune status. Three studies have found that PLWH who utilized denial coping specifically were less likely to improve in immune functioning as compared with those who used other forms of coping, such as active

coping, religious coping, and positive re-framing (Leserman et al., 2000; Antoni et al., 1995; Ironson et al., 1994). Likewise, a body of work has found that a factor highly related to positive re-framing coping, known as benefit finding, has been related to improvements in both psychosocial and health-related outcomes in PLWH (Bower et al., 2009; Algoe & Stanton, 2009; Lechner & Weaver, 2009).

While there is a significant body of work linking psychological factors to psychosocial and health-related outcomes in PLWH, different sociodemographic factors may moderate these associations. Currently, although there is widespread access to both healthcare and HAART in the developed world, minority groups of PLWH still experience poorer medication adherence, lower health literacy, higher levels of depression, poorer subjective health status, and ultimately faster disease progression than majority groups of PLWH (CDC, 2010; Bogart et al., 2011; Mosack et al., 2009). There have been a variety of explanations put forth to elucidate why these disparities exist. Certainly, there are some genetic and/or biological explanations for why ethnic minority individuals might face higher rates of disease progression, such as the higher susceptibility to HIV nephropathy and to cardiac side effects of certain HAART medications demonstrated in African-Americans living with HIV. However, these patterns do not constitute a complete explanation of disparities in HIV disease progression in minority individuals (Chu et al., 2008).

Researchers have posited that increased levels of social stigma toward minority groups coupled with HIV-associated stigma may provide a plausible explanation for poorer psychosocial and health outcomes in minority PLWH (Bogart et al., 2011). HIV stigma has been defined as both enacted discrimination and internalized negative self-

image due to living with HIV (Brooks et al., 2005). Increased levels of HIV stigma have been associated with higher levels of depression, lower levels of social support, and faster disease progression in PLWH (Swendeman et al., 2006; Logie & Gadalla, 2009). Some researchers suggest that certain sociodemographic groups may experience greater levels of HIV stigma due to religious and cultural influences (Brooks et al., 2005). For example, Fekete et al. (2009) found that disclosure of HIV status to family members and high levels of family support had salutary effects on disease status in white HIV+ MSM; however, these factors had no effects on disease status in Hispanic HIV+ MSM. The researchers who conducted this study postulated that HIV stigma may have accounted for the lack of effect in the Hispanic MSM. Other researchers have suggested that while Latino/Hispanic communities tend to provide high levels of general social support, social support for PLWH in some of these communities is less so, such that those with HIV may feel isolated within an otherwise supportive community (Brooks et al., 2005).

The collective weight of increased HIV and minority-associated stigma may explain why PLWH in minority groups tend to fare worse in terms of psychosocial and health-related outcomes. This layered stigma is especially salient in minority HIV+ MSM (Swendeman et al., 2006). Not only do these men face HIV stigma and ethnic minority stigma, they also face sexual minority stigma. The layered stigma may be compounded by increased homophobia and cultural biases in some ethnic minority groups (Brooks et al., 2005). The aforementioned poorer psychosocial and health-related outcomes associated with minority PLWH tend to be the most severe in ethnic minority MSM. HIV prevalence also is higher in this group; in some areas of the United States the

prevalence of HIV in minority MSM is close to 20%, as compared with a close to 1% overall national prevalence for all sociodemographic groups collectively (CDC, 2010).

Recently researchers have begun to study minority MSM more closely, attempting to tailor health interventions to this group, both for HIV prevention and improvement of psychosocial and health-related outcomes in those already infected (Hightow-Wideman et al., 2011). In order to effectively disseminate improvements in HIV prevention and HIV care to these individuals, researchers have begun to study the relationships between sociocultural and psychological factors in this population. In examining these relationships researchers have focused mostly on disparities in psychological factors between minority and majority groups, such as investigating higher levels of depression in HIV+ MSM. It may be just as important, however, to examine positive and protective psychological factors in minority groups, such as finding benefits from living with HIV (Ironson & Hayward, 2008). The current study seeks to examine benefit finding in HIV+ MSM, specifically exploring possible differences in benefit finding as a function of ethnicity. Previous research findings regarding benefit finding in individuals with chronic disease will be reviewed prior to elaborating on the current study.

#### *Benefit Finding in Individuals with Chronic Disease*

Benefit finding refers to positive life change in response to what would be considered misfortunate events (Algoe & Stanton, 2009). The construct of benefit finding has been conceptualized in many ways, some of which include building stronger relationships with loved ones as a result of a misfortune, developing a sense of personal strength, and making positive lifestyle changes in response to an unfortunate event

(Lechner & Weaver, 2009). Some researchers have chosen to examine benefit finding within individuals living with life-threatening chronic diseases such as cancer, HIV, and multiple sclerosis, in order to determine if benefit finding might have protective effects on psychosocial and health-related outcomes in these populations (Algoe & Stanton, 2009). The definition and measurement of benefit finding in these groups has been somewhat problematic, however (Weaver et al., 2008).

While most researchers have considered benefit finding to be a unidimensional construct, others have argued that benefit finding is multidimensional; however, there have been discrepancies among factor analysis studies examining various dimensions of benefit finding. Weaver et al. (2008) derived a six-factor model of benefit finding which included dimensions of acceptance, family relations, personal growth, world view, social relations, and health behaviors. This six-factor model fit the benefit finding data from men and women living with prostate and breast cancer significantly better than the unidimensional model of benefit finding, yet did not fit data from men and women living with HIV (Weaver et al., 2008; Weaver, unpublished dissertation). Furthermore, other studies have elucidated different factor structures of benefit finding, even when using the same benefit finding scale (Park et al., 1996; Roesch et al., 2004). All in all, though benefit finding can be studied in chronically ill-populations, researchers have yet to form a solid conceptualization of the dimensions of benefit finding that apply to these populations.

*Psychosocial and Health-Related Outcomes Associated with Benefit Finding in Chronic Disease*

In addition to being a complex construct to measure, benefit finding appears to be complexly and somewhat inconsistently related to a number of psychosocial and health-related outcomes in individuals living with chronic disease (Algoe & Stanton, 2009). Researchers have theorized that benefit finding might reduce negative psychological outcomes such as depression, distress, and negative affect in individuals with chronic disease through the facilitation of psychosocial adjustment. For instance, if one is able to find benefits from their experience of living with disease, they may be more likely to seek out social support, which in turn could aid in decreasing negative psychosocial outcomes (Littlewood et al., 2008).

In regards to the relationship between benefit finding and depression, study findings have been mostly consistent. Previous work has found that higher levels of benefit finding were predictive of longitudinal decreases in depression in cancer and HIV patients (Antoni & Carver, 2004; Schwartz et al., 2006; Littlewood et al., 2008); however, one study found no relationship between benefit finding and depression in cancer patients (Lechner et al., 2006). A recent meta-analysis indicated an inverse cross-sectional relationship between benefit finding and depression (Helgeson et al., 2006). Interestingly, one study found that depression also predicts lower levels of benefit finding, suggesting that the relationship between benefit finding and depression may be reciprocal (Jansen et al., 2011).

Findings from previous research which examined the relationship between benefit finding and negative affect are more complex. One study found an inverse association



between benefit finding and health related worry in cancer patients (Schwartz et al., 2006), while another found an interaction between disease prognosis and benefit finding, such that benefit finding actually predicted more negative affect in those with a poorer cancer prognosis (Tomich & Helgeson, 2004). A more recent study indicated that benefit finding was inversely related with distress, albeit in cross-sectional analysis (Rinaldis et al., 2010). In addition, other work has found no association between benefit finding and negative affect or distress (Sears et al., 2003; Bower et al., 2005; Danoff-Berg & Revenson, 2005).

In addition to examining the relationships between benefit finding and negative psychosocial outcomes, researchers have studied the influence of benefit finding on positive psychosocial outcomes such as quality of life, self-esteem, and positive affect. Previous findings concerning the relationship between benefit finding and positive psychosocial outcomes have also been somewhat mixed, yet current research seems to be establishing a more solid evidence base for the connection between benefit finding and positive psychological phenomena. Many studies have found a positive association between benefit finding and better quality of life in HIV and cancer patients, both cross-sectionally and longitudinally (Littlewood et al., 2008; Schwartz et al., 2006; Bellizzi et al., 2010; Rinaldis et al., 2010). However, two studies did not find an association between benefit finding and quality of life in cancer patients (Sears et al., 2003; Bower et al., 2005). In a study examining benefit finding in people who had experienced Severe Acute Respiratory Syndrome (SARS), researchers found that benefit finding was associated with greater self-esteem at follow-up (Cheng et al., 2006). Similar to the aforementioned studies which examined the relationship between benefit finding and

negative affect, some studies which examined the relationship between benefit finding and positive affect have yielded conflicting results. Some studies have found that benefit finding is related with positive affect (Carver & Antoni, 2004; Bower et al., 2005; Helgeson et al., 2006; Costa et al., 2011), while other studies have found no relationship between positive affect and benefit finding (Sears et al., 2003; Tomlich & Helgeson, 2004).

Furthermore, findings concerning the relationship between benefit finding and health-related outcomes have also been mixed. Two studies have found that benefit finding interacts with or mediates the effects of psychological and health variables in predicting physical functioning in physically ill individuals. Affleck et al. (1987) found that individuals with a history of myocardial infarction who had greater benefit finding had less activity limitation due to physical pain. In a similar vein, Danoff-Burg & Revenson (2005) found that benefit finding mediated the relationship between perceived social constraint and physical functioning in rheumatoid arthritis patients. They found that if patients perceived that others would be receptive to hearing about their illness, their benefit finding increased and this increase led to better physical functioning. Other studies have found no relationship between benefit finding and perceived general health, however (Sears et al., 2003; Bower et al., 2005; Tomich & Helgeson, 2004).

Although the findings are mixed, there has been some intriguing work looking at the influence of benefit finding on both biochemical and disease morbidity outcomes in individuals with chronic disease. Two studies have found that higher benefit finding in HIV and cancer patients is associated with lower levels of cortisol, a hormone associated with stress and immune dysregulation (Carrico et al., 2006; Cruess et al., 2000).

McGregor et al. (2004) also found that benefit finding predicted better cellular immune functioning in breast cancer patients participating in a stress management intervention study. Other research has found a protective effect of benefit finding and constructs highly related to benefit finding on disease progression in people living with HIV. One study found that in HIV+ MSM who lost a partner, “making meaning” of the loss predicted a slower decline in CD4 count (Bower et al., 1998). Similarly, Ickovics et al. (2006) found that positive life change as a result of living with HIV predicted slower decline in CD4 count in tandem with other positive psychological resources, such as positive affect and positive HIV expectancy. Another study examining benefit finding in HIV+ individuals found that benefit finding predicted higher CD4 counts, but in Hispanic participants only (Milam et al., 2006).

The aforementioned inconsistencies in findings pertaining to the relationships between benefit finding and psychosocial and health-related outcomes in individuals living with chronic disease may be explained by differences in the measurement of benefit finding between studies, differences in study design, as well as differences in the sociodemographic makeup of study participants. In addition to examining these differences, understanding predictors of benefit finding in individuals living with chronic disease may shed light on inconsistent findings pertaining to psychosocial and health-related outcomes, as well as further elucidate aspects of the benefit finding process itself.

#### *Psychosocial Predictors of Benefit Finding in Chronic Disease*

While previous research has demonstrated somewhat mixed findings pertaining to the protective influence of benefit finding on a variety of psychosocial and health-related parameters, one might conclude that understanding the predictors of benefit finding might

further elucidate the complex relationships between benefit finding and the aforementioned outcomes. Interestingly, research examining predictors of benefit finding has been a bit more consistent than the research examining outcomes associated with benefit finding, although it is not without its flaws. Benefit finding has been predicted by psychosocial variables such as coping style, optimism, emotional expressiveness, stress, and social support.

Though benefit finding has sometimes been described as a coping strategy itself, most research has distinguished between benefit finding and various coping strategies, such that certain types of coping strategies might make benefit finding more or less likely in individuals with chronic disease (Lechner & Weaver, 2009). Previous research has shown active coping, positive reframing, and spiritual/religious coping to be predictive of benefit finding in various samples of HIV and cancer patients (Siegel et al., 2005; Kinsinger et al., 2006; Sears et al., 2003; Scignaro et al., 2011; Llewellyn et al., 2011). Active coping refers to responding to adversity by taking some form of action to approach problems. Active coping may be connected with benefit finding in that those who take a proactive response may be able to secure resources such as social support, which in turn could facilitate the benefit finding process. Positive reappraisal coping can be quite similar to benefit finding as it involves the transformation of the interpretation of a negative event as positive, thus it is simple to see how the utilization of this particular coping style might be associated with benefit finding. Religious or spiritual coping may also facilitate benefit finding through meaning making and acceptance of life circumstances. Comparatively, more negative coping strategies, such as denial and passive coping have not been related with benefit finding (Siegel et al., 2005; Kinsinger

et al., 2006; Sears et al., 2003; Scignaro et al., 2011; Llewellyn et al., 2011). All in all, previous research findings indicate that style of response to negative events is quite connected with an individuals' ability to find benefits.

In a similar vein, both trait optimism and emotional expressiveness have been hypothesized to influence individuals' abilities to find benefits within the context of living with a chronic disease. Multiple studies have found trait optimism, which refers to the disposition to expect positive outcomes, to be predictive of benefit finding in individuals living with cancer and HIV (Lechner, 2000; Milam, 2004; Updegraff et al., 2002; Llewellyn et al., 2011; Dunn et al., 2011). However, some work examining the relationship between trait optimism and benefit finding in individuals with breast cancer demonstrated null or mixed findings (Lechner & Weaver, 2009). Other researchers have postulated that an individual's ability to express and process negative emotion when living with a chronic disease might influence their ability to find benefit from their experience. Antoni et al. (2001) found that emotional expressiveness was positively associated with benefit finding in individuals with breast cancer.

More recently, researchers have linked life stress and benefit finding in individuals living with chronic disease, however, the nature of this relationship remains unclear. For example, Siegel et al. (2007) found that benefit finding buffered the effects of physiological stress on psychological adjustment in HIV+ women; however, Penedo et al. (2006) found that the development of stress management skills (to decrease stress) predicted benefit finding in men with prostate cancer. While these findings are not in direct opposition to one another, they do elucidate the question of whether stress itself might have detrimental effects on benefit finding in individuals with chronic disease.

Certainly benefit finding could exist more independently of life stress, serving as a buffer for detrimental effects of stress; however, stress could make coping and finding benefits more difficult in individuals with chronic illness as well.

Social support has also been found to be related to benefit finding in individuals living with chronic disease. Researchers have theorized that the presence of high quality interpersonal relationships and support may create a positive environment in which one is more likely to perceive benefits from living with a chronic disease (Lechner & Weaver, 2009). Three studies have found that those with greater perceived social support exhibit higher levels of benefit finding, and one study in particular found that social support from specific sources (family, friends, and healthcare professionals) was positively associated with benefit finding (Fife et al., 1995; Siegel et al., 2005; Dunn et al., 2011).

#### *Sociodemographic Predictors of Benefit Finding in Chronic Disease*

Some researchers have suggested that certain sociodemographic factors may influence the ability of individuals living with chronic disease to find benefits from their experience. Previous studies have examined gender, age, ethnicity, relationship status, and socio-economic status as possible predictors of benefit finding, and have revealed mixed results. A number of studies have found higher levels of benefit finding in women than in men with cancer and HIV (Dunn et al., 2011; Milam, 2004; Foley et al., 2006; Weaver, 2006). Some researchers have postulated that greater use of social support and higher levels of emotional expression in women might account for this relationship (Lechner & Weaver, 2009). However, two other studies found no such relationship between gender and benefit finding (Lechner et al., 2003; Shulz & Mohamed, 2004).

Some researchers have postulated that older individuals may be less likely to find benefits from their illness experience, because older people could view illness as an anticipated facet of aging (Lechner & Weaver, 2009). Some studies have indeed found an inverse relationship between age and benefit finding (Lechner et al., 2003; Bellizzi, 2004; Bower et al., 2005), while others have not (Sears et al., 2003; Tomich & Helgeson, 2004). In addition to age, researchers have also theorized that relationship status may significantly influence benefit finding in individuals living with chronic disease, postulating that individuals in a relationship might receive more support than individuals who are single, and thus might be able to more easily engage in benefit finding (Lechner & Weaver, 2009). Findings regarding the association between relationship status and benefit finding have been mixed as well. Lechner and Weaver (2009) postulated that relationship status may only relate to the dimensions of benefit finding that concern social support or family, rather than to all dimensions of benefit finding. They also argued that romantic relationships might be more strained among individuals with certain diseases such as HIV, thus findings may not be consistent across all groups of individuals living with chronic disease.

Finally, previous research has examined the effects of both socio-economic status (SES) and ethnicity on benefit finding. Some researchers have postulated that socio-economic hardship could create obstacles to benefit finding, while others believe that a history of socio-economic hardship could build resilience and positively influence benefit finding (Cordova et al., 2001; Lechner & Weaver, 2009). Researchers have found inconsistent results pertaining to the relationships between SES and benefit finding; however, most studies examining this relationship have found an inverse relationship,

such that low SES predicts higher levels of benefit finding (Urcuyo et al., 2005; Carver & Antoni, 2004; Tomich & Helgeson, 2004). The vast majority of studies examining the relationship between ethnicity and benefit finding have found that ethnic minority individuals tend to exhibit greater levels of benefit finding than white individuals (Bellizzi et al., 2010; Bower et al., 2005; Siegel et al., 2005; Milam, 2004; Weaver, 2006; Urcuyo et al., 2005; Helgeson, 2006). Both Siegel et al. (2005) and Helgeson et al. (2006) postulated that the greater socioeconomic hardships and adversity minorities tend to face might contribute to higher levels of benefit finding in minority groups. Other researchers have postulated that the higher levels of benefit finding in minority groups can be attributed to greater reliance on religious coping strategies in these groups as a function of cultural norms. Two studies have found evidence to this effect (Urcuyo et al., 2005; Bellizzi et al., 2010). We propose that within a society in which minorities have been systematically discriminated against, it is quite difficult to tease socio-economic status apart from minority status when examining the relationship between ethnicity and benefit finding. Previous research findings have indicated that a variety of factors associated with minority status, including socioeconomic hardship and spiritual coping may positively influence benefit finding in these groups.

#### *Current Study*

The majority of studies examining benefit finding in individuals with chronic disease have done so with participants who had cancer, who were women, and who were white (Kinsinger, 2006). While there have been some studies which examined benefit finding in individuals with other chronic diseases such as HIV, in men, and in ethnic minorities, there remains a paucity of benefit finding research in these groups



comparatively. Although many researchers have called for the examination of benefit finding in more diverse populations, some have expressed differing views on examining the relationship between ethnicity and benefit finding in particular. Some researchers have discouraged the further examination of the relationship between ethnicity and benefit finding, arguing that SES and other confounding factors cannot easily be removed from the investigation (Lechner & Weaver, 2009). Others have taken a more optimistic perspective, suggesting that examining possible moderators of benefit finding such as ethnicity may clarify the inconsistent connections between benefit finding and psychosocial and health-related outcomes (Algoe & Stanton, 2009). While ethnicity has mainly been viewed as a sociodemographic predictor of benefit finding, ethnicity may also moderate the associations between various psychosocial factors and benefit finding.

There have been larger controversies among researchers concerning the study of benefit finding in general, especially pertaining to the interpretation of results from previous studies examining benefit finding in individuals with chronic disease. Coyne & Tennen (2010) asserted that proponents of positive psychology have put forth the dangerous notion that benefit finding improves the immune system, that researchers have failed to develop a solid conceptualization of benefit finding, and that researchers have been premature in developing interventions to increase benefit finding in chronically ill individuals. In response to Coyne & Tennen's assertions, Aspinwall & Tedeschi (2010) argued that there has indeed been progress in the development of benefit finding as a construct, as well as a wealth of findings which merit the further study of benefit finding in chronically ill populations.

We agree that the current evidence does not justify the recommendation that cancer patients or any individuals living with chronic disease should use benefit finding as a mechanism for improving their immune status. However, we do not believe that the current evidence indicates that there are no significant relationships between benefit finding and pertinent psychosocial and health-related outcomes in individuals living with chronic disease. Inconsistent findings are not the same as null findings; rather, they leave the door open for more clarifying work to be done.

Although findings from previous studies examining health-related outcomes of benefit finding have been somewhat mixed, Bower et al. (2009) argued that there have been many studies which suggest that benefit finding may positively impact health-related outcomes. Citing positive relationships found between benefit finding and cardiac mortality, adherence to medical appointments in cancer patients, and slower immune decline in HIV patients, Bower et al. (2009) posited that benefit finding may alter the impact of chronic disease associated stress on immune functioning through reductions in allostatic load. More specifically, Bower et al. (2009) theorized that finding benefits from stressful events such as coping with chronic disease may significantly improve an individual's ability to manage stress in the future, thus reducing the negative impact of stress on the immune system.

While there have been well-established links between stress, immune functioning, and disease progression in individuals with chronic disease, solid evidence for the positive impact of benefit finding on immune functioning and other health-related outcomes has yet to be established. However, many researchers advocate for further study of benefit finding, not only to elucidate the impacts of finding benefits, but to also

further examine benefit finding as a psychosocial construct. Understanding the factors which may influence benefit finding may shed light on the benefit finding process in general, as well as how benefit finding might relate to pertinent psychosocial and health-related outcomes in individuals living with chronic disease.

Following with this assertion, our current study sought to examine benefit finding in HIV+ men who have sex with men (MSM), with particular respect to the influence of ethnicity on benefit finding in these individuals, in order to develop greater understanding of possible differences in benefit finding between sociocultural groups. Many studies have found a pattern of higher benefit finding in minority groups, yet very few have attempted to examine how this pattern exists. Some of the studies that have looked at higher levels of benefit finding in minority groups have found that spiritual or religious coping styles may account for the differences in benefit finding in minority groups (Urcuyo et al., 2005). These studies have been limited, however, in that they have examined differences in benefit finding in minority heterosexual men and women. To date, no study has ever examined whether previous findings concerning the relationship between ethnicity and benefit finding apply to HIV+ MSM. Minority HIV+ MSM have the highest risk for developing depression, pervasive physiological symptoms, and faster immune decline as compared with other sociodemographic groups living with HIV. Given previous findings indicating salutary effects of benefit finding on psychosocial and health-related outcomes in individuals living with HIV, understanding benefit finding in HIV+ MSM may aid in the tailoring of health interventions for this particular group.

### *Current Study Aims and Hypotheses*

Aim 1: We explored whether previous findings regarding the relationship between ethnicity and benefit finding applied to HIV+ MSM. Though some studies have indicated that benefit finding is lower in males than in females, we believed that the sociocultural influences on benefit finding in ethnic minority MSM may be similar to those in ethnic minority women and heterosexual men. Thus, we hypothesized that benefit finding would be significantly greater in minority MSM than in white MSM.

Aim 2: Previous research has identified a variety of psychosocial factors as predictors of benefit finding in individuals with chronic disease. We examined possible relationships between two of the most consistently identified predictors of benefit finding, social support and stress, and ethnicity in predicting benefit finding in HIV+ MSM. As both stress and social support are highly likely to be influenced by sociocultural values and resources, we hypothesized that the relationships between social support and benefit finding as well as between stress and benefit finding would differ as a function of ethnicity in HIV+ MSM. We examined social support from specific sources (friends, family, etc) in this analysis, as different sources of social support may have qualitatively different impacts on psychosocial variables in HIV+ MSM (Fekete et al., 2009).

Aim 3: Urcuyo et al. (2005) found that both religious coping and benefit finding were higher in minority women with breast cancer and that religious coping mediated the relationship between minority status and benefit finding in these participants. We investigated whether this finding held for HIV+ MSM by testing religious coping as a mediator of the relationship between ethnicity and benefit finding. While ethnic minority MSM may use more religious coping than white MSM, MSM have been stigmatized

within religious communities. Thus, religious coping may not be as strongly associated with benefit finding in HIV+ MSM.

## CHAPTER 2: METHOD

### *Participants and Procedure*

The current study utilized baseline and post-intervention (10 weeks post baseline) data from a previous randomized controlled trial of Cognitive Behavioral Stress Management (CBSM) intervention in HIV+ MSM. To be eligible for the study, the men must have been able to read at a sixth-grade level, had no significant cognitive impairment (measured by the HIV Dementia Scale; Power et al., 1995), and had no current psychosis, alcohol/substance dependence, or panic disorder (assessed through the Structured Clinical Interview for DSM-IV; First et al., 1997). Men were excluded from the study if they were prescribed immunomodulatory medications other than HAART and other antiretroviral medications, had previously had chemotherapy or radiation for a non-AIDS related cancer, or had chronic immune illnesses (other than HIV) (Antoni et al., 2006).

The men who met study criteria provided informed consent, were administered psychosocial measures, and provided morning peripheral venous blood samples. The men were then randomized to 10-week CBSM intervention or a 1 day psycho-educational seminar following a 10-week waiting period. Study participants were administered follow-up psychosocial measures and had follow-up blood samples collected directly after completing CBSM or the 1-day psycho-educational seminar. The CBSM intervention involved 10 weekly 2-2.5 hour group sessions (4-9 participants per group) in which participants were given relaxation training, taught cognitive-behavioral techniques for stress management, and given HIV-related health information. In the 1-day psycho-

educational seminar control participants were presented with information about the components of CBSM.

### *Measures*

#### *Demographics*

We measured age, ethnicity, education level, income, and work status through a self-report questionnaire. The final sample (N = 94) included men who had completed both T1 (pre-intervention) and T2 (post-intervention) study assessments. The study participants had a mean age of 42.5 years (SD = 8.8 years) and had been HIV-positive for an average of 94.0 months (SD = 60.4 months). The ethnic composition of the sample was as follows: 56.4% Non-Hispanic White, 16.0% Hispanic/Latino, 20.1% Afro-Caribbean/Black, 1.1% Native American/Alaska Native, 1.1% Asian/Pacific Islander, and 5.3% Other Ethnicities. Most of the participants had a high-school education or higher (94.7%), and the average yearly income for the participants was between \$10,000 and \$20,000 per year. About a quarter of the men were in a romantic relationship at the time of the study (28.6%).

#### *Health Status*

We measured CD4+ T-cell counts, as well as HIV viral load from the blood samples collected at baseline and 10-week follow-up. Morning peripheral venous blood samples were collected from participants in ethylenediaminetetraacetic acid (EDTA) tubes (Vacutainer-EDTA, Becton-Dickinson, Rutherford, NJ). The participants' CD4+ T-Cell Counts were measured through whole blood four-color direct immunofluorescence with a Coulter XL and flow cytometer (Fletcher et al., 2000). We measured participants' HIV-1 viral load through EDTA plasma using an ultrasensitive in vitro reverse

transcriptase polymerase chain reaction (RT-PCR) assay, which has a lower limit of 50 copies/ml (AMPLICOR, Roche Laboratories, US #83088). We measured time since HIV diagnosis through a self-report questionnaire (M = 94.0 months, SD = 60.4 months). HAART adherence was measured through the Adult AIDS Clinical Trial Group Adherence to Combination Therapy Guide (ACTG; Chesney et al., 2000), which assessed self-reported percentage of medication adherence over the past 4 days. Participants' mean CD4 count was 419.2 cells/UL (SD = 225.9 cells/UL), mean HIV viral load was 10,129.1 copies (SD = 23,044.9 copies), and mean HAART adherence was 90.6% (SD = 9.8%).

#### *Perceived Stress*

Participants' perceived stress was measured using the 14-item Perceived Stress Scale (PSS, Cohen et al., 1983). The PSS measured the extent to which participants appraised life events as stressful over the past month, using a Likert-type rating scale ("0" indicating "never" to "4" indicating "very often"). Items indicating absence of stress or positive coping with stress were reverse scored, and all of the items were then summed to create a composite score. The participants' mean baseline PSS score was 25.3 (SD = 7.3), and their scores demonstrated adequate reliability ( $\alpha = .85$ ).

#### *Social Support*

The social support received by participants with specific regard to their HIV/AIDS diagnosis over the past month was measured using the UCLA Social Support Inventory (UCLASSI, Schwartzer et al., 1984). The UCLASSI indicates source of support as well as type of support received. For example, the first items indicate: "How often did each of these groups of people provide information or advice relevant to



HIV/AIDS-related stress (whether you wanted it or not)?...a. your partner/spouse, b. your friends, etc.” The sources of support measured by the UCLASSI include partner/spouse, friends, relatives, groups or organizations, religious/spiritual community, and health care providers. The types of support measured by the UCLASSI include information or advice, assistance, encouragement and reassurance, and listening and understanding. All items are scored on a Likert-type scale, 1 indicating “never” and 5 indicating “very often.” Items indicating source of support can be summed across types of support to create composite source of support scores (e.g. support from friends). The participants’ mean scores for each of the UCLASSI source of support subscales are as follows: Partner support (M = 5.3, SD = 7.1), Friend support (M = 11.7, SD = 4.7), Relatives support (M = 8.8, SD = 5.2), Group/Organization support (M = 9.9, SD = 5.9), Spiritual/Religious support (M = 6.1, SD = 5.9), and Healthcare Provider support (M = 13.3, SD = 4.9). The reliability for each of the source of support subscales was adequate: Partner support ( $\alpha = .96$ ), Friend support ( $\alpha = .85$ ), Relatives support ( $\alpha = .88$ ), Group/Organization support ( $\alpha = .94$ ), Spiritual/Religious support ( $\alpha = .96$ ), and Healthcare Provider support ( $\alpha = .85$ ).

#### *Spiritual/Religious Coping*

Spiritual/Religious coping was measured by a situational version of the COPE (Carver et al, 1999). This measure asked participants to rate how often they utilized particular coping strategies in dealing with HIV-related concerns or situations over the past month. Example items from the 4-item spiritual/religious coping subscale include “I put my trust in God” and “I try to find comfort in my religion.” The items are rated using a Likert-type scale with 1 indicating “not at all” and 4 indicating “A lot.” The

participants' mean score for the spiritual/religious coping subscale was 10.2 (SD = 3.9), and their scores demonstrated adequate reliability ( $\alpha = .91$ ).

### *Benefit Finding*

Benefit finding associated with living with HIV was measured using an HIV-tailored version of the Benefit Finding Scale (BFS; Antoni et al., 2001; Tomich & Helgeson, 2004). The BFS measured positive life changes such as acceptance, meaning making, and improvement in interpersonal relationships as a result of having HIV. Using the stem: "Having HIV has...", example items include: "brought my family closer together" and "led me to be more accepting of things." Participants rated their responses using a Likert-type scale with 1 indicating "not at all" and 5 indicating "extremely." The items were summed to create a composite score. The participants' mean baseline BFS score was 58.5 (SD = 13.2), and their scores demonstrated adequate reliability ( $\alpha = .92$ ).

## CHAPTER 3: RESULTS

### Preliminary Analyses and Analysis Plan

The data was reviewed to examine the distributions of all independent and dependent variables, identify outliers, and examine patterns of missing data. The distributions of all variables with the exception of HIV viral load were normal. HIV viral load was log-transformed to normalize the distribution. As no more than 5% of the data was missing for any variable, mean substitution was used to replace missing data values. Ethnicity was dichotomized (white and minority), such that the ethnic groups were comparable in size and effects could be detected.

Bivariate correlation analyses were conducted to examine associations between benefit finding and socio-demographic, disease-related, and key study variables. Independent samples t-tests were also conducted to test for differences between white and minority MSM in socio-demographic, health-related, and key study variables. Socio-demographic and disease-related covariates were selected using the following criteria: 1) If the potential covariate was significantly correlated with either T1 or T2 benefit finding 2) If the potential covariate significantly differed between white and minority MSM.

Differences between white and minority MSM in both T1 and T2 benefit finding (hypothesis 1) were examined using independent samples t-tests unadjusted for covariates, and then examined using multiple regression analyses controlling for covariates. The hypothesized interactions between both social support and benefit finding, as well as between perceived stress and benefit finding (hypotheses 2 and 3) were examined using moderated regression analyses. Prior to these regression analyses

multiple regression analyses were conducted to determine the direct effects of all sources of social support and perceived stress on both T1 and T2 benefit finding, controlling for all covariates as well as ethnicity. In the direct effects analyses covariates were entered into the first block of the regression, followed by ethnicity in the second block, and the predictor (either social support or perceived stress) in the third block. In the moderated regression analyses, covariates were entered into the first block of the regression, followed by the predictor (either social support or perceived stress), the moderator (ethnicity), and finally the interaction term. All significant interactions were decomposed using the interaction decomposition methodology outlined in Holmbeck et al. (2002).

Religious coping was examined as a provisional intermediary/mediator variable in the relationship between ethnicity and benefit finding using mediated regression analyses according to the Baron & Kenny method (Baron & Kenny, 1986). First, linear regression analyses were conducted to determine the independent relationships between the predictor (ethnicity) and the mediator (religious coping), the mediator (religious coping) and the outcome (benefit finding), and the predictor (ethnicity) and the outcome (benefit finding). Then, the full model was tested by including the predictor (ethnicity) in the first block of the regression followed by the mediator (religious coping). Bootstrapping analyses were performed to confirm mediation (Preacher & Hayes, 2008).

#### Bivariate Correlations and Covariates

Bivariate correlations analyses revealed benefit finding at baseline was negatively correlated with education level, such that individuals with higher levels of benefit finding had fewer years of education ( $r = -.23, p < .05$ ). There were no other significant correlations between sociodemographic and disease-related variables and T1 benefit

finding. There were also no significant correlations between T2 benefit finding and sociodemographic or disease-related variables (see Table 4).

Independent samples t-tests were conducted to test for differences between white and minority MSM in both socio-demographic and disease-related variables. White and minority MSM differed significantly in terms of age ( $t = 2.23, p < .05$ ) and HAART adherence ( $t = 2.54, p < .05$ ), as the white participants were older (white  $M = 44.3$  years, minority  $M = 40.3$  years) and had higher levels of HAART adherence than the minority participants (white  $M = 93.0\%$ , minority  $M = 87.5\%$ ). Each of these covariates were controlled for in the subsequent analyses (see Table 2). There were no differences between white and minority MSM in terms of income, education level, relationship status, CD4 count, or HIV viral load. Because bivariate correlations indicated a significant negative correlation between T1 benefit finding and education level ( $r = -.23, p < .05$ ), subsequent analyses controlled for education level as well.

In addition to the aforementioned covariates, T1 benefit finding scores were controlled for in all T2 benefit finding analyses. Since the data were drawn from a trial of CBSM, CBSM group assignment was controlled for in all longitudinal (T2) analyses, as time point 2 occurred after the intervention period. However, the control group and the CBSM intervention group did not differ in benefit finding at T1 ( $t = .90, p > .05$ ) nor did they differ in benefit finding at T2 ( $t = -.76, p > .05$ ).

### Hypothesis 1

We hypothesized that minority MSM would exhibit greater benefit finding than white MSM. Independent samples t-tests were conducted to test for differences in benefit finding between white and minority MSM, both at baseline and time point 2 (see Table

2). Minority MSM exhibited higher levels of benefit finding at baseline than whites ( $t = -2.00, p < .05$ ). Multiple regression analyses were conducted to determine if ethnicity was a predictor of benefit finding at baseline, controlling for the aforementioned covariates. After controlling for age, HAART adherence, and education level, ethnicity was not a significant predictor of benefit finding at baseline ( $\beta = .16, p > .05$ ). There were no significant differences found between white and minority participants in benefit finding at time point 2 ( $t = .39, p > .05$ ). After controlling for age, HAART adherence, education level, CBSM group assignment, and T1 benefit finding ethnicity was not a significant predictor of T2 benefit finding ( $\beta = -.13, p > .05$ ).

### Hypothesis 2

We hypothesized that social support may have differential effects on benefit finding as a function of ethnicity. Preliminary analyses were conducted to examine differences in social support between white and minority MSM, as well as the correlations between social support and benefit finding for both white and minority MSM. In addition, multiple regression analyses were conducted to test the direct effect of social support on benefit finding, controlling for ethnicity. T-tests revealed no significant differences between white and minority MSM in T1 social support from any source (see Table 3). Bivariate correlations revealed that for white participants, social support from partners ( $r = .29, p < .05$ ), friends ( $r = .34, p < .05$ ), family ( $r = .45, p < .01$ ), groups ( $r = .29, p < .05$ ), and spiritual communities ( $r = .30, p < .05$ ) were positively associated with T1 benefit finding, such that participants with higher levels of support had higher levels of benefit finding. However, for minority participants, only support from groups ( $r = .46, p < .01$ ) and spiritual communities ( $r = .32, p < .05$ ) were

significantly associated with T1 benefit finding, such that those with higher levels of support had higher levels of benefit finding. For white participants, T1 support from friends ( $r = .37, p < .01$ ), family ( $r = .30, p < .05$ ), groups ( $r = .30, p < .05$ ), and healthcare providers ( $r = .28, p < .05$ ) were positively associated with benefit finding at time point 2. No sources of support were significantly associated with T2 benefit finding for minority participants, however (see Table 5).

Multiple regression analyses revealed significant positive relationships between baseline support from friends ( $\beta = .23, p < .05$ ), family ( $\beta = .29, p < .01$ ), groups ( $\beta = .35, p < .01$ ), spiritual communities ( $\beta = .28, p < .01$ ), and healthcare providers ( $\beta = .27, p < .05$ ) and T1 benefit finding, controlling for age, education level, HAART adherence, and ethnicity (see Tables 6 and 7). Analyses also revealed a significant positive relationship between T1 support from friends and T2 benefit finding, controlling for age, education level, HAART adherence, CBSM group assignment, T1 benefit finding, and ethnicity ( $\beta = .18, p < .05$ ).

Moderated regression analyses were conducted to test differences in the relationship between amount of T1 social support from various sources (UCLASSI subscales) and benefit finding as a function of ethnicity. To test the interactions between ethnicity and baseline social support in predicting T1 benefit finding covariates were entered in the first block of the regression, followed by the predictor (UCLASSI subscale score) and the moderator (ethnicity), and finally the interaction term. To test the aforementioned interactions in predicting T2 benefit finding, covariates, CBSM group assignment, and T1 benefit finding, were entered into the first block of the regression, followed by the predictor, the moderator (ethnicity), and the interaction term. Analyses

revealed no significant interactions between ethnicity and social support in predicting either T1 or T2 benefit finding (see Tables 6 and 7).

### Hypothesis 3

We hypothesized that perceived stress (PSS) may have differential effects on benefit finding as a function of ethnicity. Preliminary analyses were conducted to examine differences in perceived stress between white and minority MSM (see Table 3), as well as the correlations between perceived stress and benefit finding for both white and minority MSM (see Table 5). In addition, multiple regression analyses were conducted to test the direct effect of perceived stress on benefit finding, controlling for ethnicity (see Table 8). T-tests revealed no significant differences between white and minority MSM in T1 perceived stress (see Table 3). Bivariate correlations revealed that perceived stress was associated with T1 benefit finding for white participants only ( $r = -.49, p < .01$ ), such that participants with higher levels of stress had lower levels of benefit finding. However, T1 perceived stress was negatively correlated with T2 benefit finding for both white ( $r = -.28, p < .05$ ) and minority participants ( $r = -.53, p < .01$ ). Multiple regression analyses revealed a significant negative association between T1 perceived stress and T1 benefit finding ( $\beta = -.37, p < .01$ ), controlling for age, education level, HAART adherence, and ethnicity (see Table 8). However, multiple regression analyses indicated there was not a significant relationship between T1 perceived stress and T2 benefit finding.

Moderated regression analyses were conducted to test differences in the relationship between perceived stress (PSS) and benefit finding as a function of ethnicity. To test the interactions between ethnicity and baseline perceived stress in predicting T1



benefit finding covariates were entered in the first block of the regression, followed by the predictor (PSS score) and the moderator (ethnicity), and finally the interaction term. Analyses revealed no significant interaction between T1 perceived stress and ethnicity in predicting T1 benefit finding (see Table 8).

To examine the interaction between ethnicity and perceived stress in predicting T2 benefit finding, covariates, CBSM group assignment, and T1 benefit finding were entered into the first block of the regression, followed by the predictor (perceived stress), the moderator (ethnicity), and the interaction term. Moderated regression analyses revealed a significant interaction between ethnicity and T1 perceived stress (PSS) in predicting T2 benefit finding, controlling for age, education, HAART adherence, CBSM group assignment, and T1 benefit finding (see Table 8). Post-hoc interaction decomposition analyses were conducted to examine the relationship between perceived stress and T2 benefit finding for each ethnic group (Holmbeck, 2002). Specifically, higher levels of baseline perceived stress predicted lower levels of T2 benefit finding for minority participants ( $t = -3.56, p < .01$ ), but not for white participants ( $t = -0.02, p > .05$ ) (see Figure 1).

#### Hypothesis 4

We hypothesized that T1 religious coping may serve as a provisional intermediary variable of the relationship between ethnicity and T1 benefit finding, as well as a mediator of the relationship between ethnicity and T2 benefit finding. Religious coping was positively associated with T1 benefit finding for both white ( $r = .43, p < .01$ ) and minority participants ( $r = .46, p < .01$ ). Using the Baron & Kenny (1986) mediation methodology, regression analyses were performed to test whether religious coping serves

as a provisional intermediary variable in the relationship between ethnicity and T1 benefit finding. Ethnicity was a marginally significant predictor of the intermediary variable, religious coping ( $\beta = .20, p = .057$ ). Religious coping was a significant positive predictor of T1 benefit finding ( $\beta = .45, p < .01$ ) and ethnicity was also a significant predictor of T1 benefit finding ( $\beta = .20, p < .05$ ). To test religious coping as an intermediary variable in the relationship between ethnicity and T1 benefit finding, ethnicity was entered into the first block of the regression ( $\beta = .20, p < .05$ ) and the religious subscale of the COPE was entered into the second. When religious coping was added to the model the relationship between religious coping and T1 benefit finding was highly significant ( $\beta = .44, p < .01$ ) and the relationship between ethnicity and T1 benefit finding became non-significant ( $\beta = .12, p > .05$ ), supporting religious coping as a provisional intermediary variable (see Figure 2).

Preacher & Hayes (2008) bootstrapping methodology was used to confirm the indirect effect of ethnicity on T1 benefit finding via religious coping. Based on 1000 bootstrap resamples, the 95% confidence interval for religious coping as a provisional intermediary variable was 0.81 to 2.17. As this interval did not contain zero, it supported religious coping as a provisional intermediary variable in the relationship between ethnicity and T1 benefit finding. Thus, religious coping was an intermediary variable in the relationship between ethnicity and T1 benefit finding only when covariates were not controlled. However, when age, education level, and HAART adherence were controlled for, the relationship between ethnicity and T1 benefit finding became non-significant. Since ethnicity did not predict T1 benefit finding when covariates were added religious

coping was not tested as an intermediary variable between ethnicity and T1 benefit finding in the adjusted model.

T1 religious coping was positively associated with T2 benefit finding for minority participants ( $\beta = .32, p < .05$ ) and was not significantly associated with T2 benefit finding for white participants. However, both prior t-tests and regression analyses indicated no relationship between ethnicity and T2 benefit finding, thus mediation analyses were not warranted.

## CHAPTER 4: DISCUSSION

The current study examined possible differences between HIV-positive white and minority MSM in benefit finding at two points in time, including study entry as time point 1 and post-completion of the intervention phase of a randomized controlled trial of cognitive behavioral stress management as time point 2. The study also examined whether minority status moderated the relationships between benefit finding and psychosocial variables such as perceived stress and social support from various sources. In addition, the current study examined whether religious coping mediated the relationship between ethnicity and benefit finding.

Analyses revealed that benefit finding was higher in minority MSM than white MSM at time point 1. This finding is consistent with previous findings indicating higher levels of benefit finding in minority individuals compared with white individuals in various medical populations such as cancer patients and people living with HIV (Bellizzi et al., 2010; Bower et al., 2005; Siegel et al., 2005; Milam, 2004; Weaver, 2006; Urcuyo et al., 2005; Helgeson, 2006). However, when covariates were added to the analysis the relationship between ethnicity and benefit finding became non-significant. Two prior studies reported ethnic differences in benefit finding in women with breast cancer but did not include sociodemographic covariates (Urcuyo et al. 2005; Bower et al., 2005). However two other studies found minority ethnicity to be significantly predictive of benefit finding or stress-related growth in women with breast cancer, independent of socio-demographic covariates such as age and education level (Bellizzi et al., 2010; Siegel et al., 2005). Though previous studies did not control for HAART adherence as

the current study did, the findings in the current study suggest that although mean levels of T1 benefit finding were greater in minority MSM, the difference in benefit finding between minority and white MSM may have not been as great as in previous studies which examined benefit finding or stress-related growth in women (Bellizzi et al., 2010; Bower et al., 2005; Siegel et al., 2005; Urcuyo et al., 2005). While statistically significant in the unadjusted t-test, the difference in T1 benefit finding between white and minority MSM became null with the addition of any of the covariates to the model.

Interestingly, there were no differences between white and minority MSM in benefit finding at time point 2. The lack of relationship between ethnicity and benefit finding at time point 2 may have been due to regression to the mean since minority men entered the study with greater benefit finding values. In addition, results could indicate that benefit finding may not be stable over time in MSM. All in all, it is unclear whether benefit finding is truly greater in minority MSM than in white MSM. As most previous studies examined the relationship between ethnicity and benefit finding in women, the current study may not mirror past results because of the differences in the study populations. HIV+ MSM face many unique stressors and challenges that women with HIV and other medical conditions may not face, thus, ethnic differences may not be as pronounced in HIV+ men. In addition, most previous work utilized cross-sectional data, some controlling for socio-demographic and disease-related covariates and some not (Algoe & Stanton, 2009). Our study results may indicate that the relationship between ethnicity and benefit finding may not remain stable over time.

In addition to examining differences in levels of benefit finding between white and minority MSM, the current study sought to clarify any differences in the relationship

between perceived stress and benefit finding between white and minority MSM. Both Siegel et al. (2005) and Helgeson et al. (2006) previously postulated that ethnic minority individuals may experience stress differently than white individuals due to the experience of greater socioeconomic difficulty, and that stress may not impact benefit finding in ethnic minority individuals due to increased resilience. The current study examined ethnicity as a moderator of the relationship between T1 perceived stress and benefit finding, both at time points 1 and 2. While ethnicity was not a moderator of the relationship between perceived stress and benefit finding at time point 1, ethnicity was found to moderate the relationship between perceived stress and benefit finding at time point 2, such that higher levels of baseline stress were associated with lower levels of T2 benefit finding in minority MSM only. Baseline perceived stress did not predict T2 benefit finding in the white MSM. This moderation may have contributed to the lack of differences in benefit finding between white and minority MSM at time point 2. This finding is contradictory to the assertions of Siegel et al. (2005), which postulated that minority individuals may be exposed to more stress throughout their lives and thus may have more opportunity to develop capacity for stress-related growth. Indeed, the Siegel et al. (2005) study found stress-related growth to be higher in minority HIV+ women than in white women, suggesting that minority individuals might respond more favorably to stressors.

However, HIV+ MSM face some unique challenges compared to other HIV+ individuals, and may not exhibit the same patterns of responses to stress as their female counterparts (Brooks et al., 2005). For instance, the double stigma HIV+ MSM face in regard to their HIV status and sexual orientation may increase difficulties with adapting

to or growing from stressful events. In addition, some evidence suggests that minority MSM may face more sexual orientation stigma than white MSM, which may explain the current study's contradictory findings (Swendeman et al., 2006). Siegel et al. (2005) also found that emotional support was related to greater stress-related growth. While levels of social support did not differ between white and minority MSM in the current study, the support that minority MSM received may have been qualitatively different in minority MSM. Importantly, Fekete et al. (2009) previously found that social support from one's family had positive effects on disease status in white HIV+ MSM, but not in Hispanic HIV+ MSM.

The aforementioned findings of Siegel et al. (2005) as well as these of Fekete et al. (2009) suggested that the relationship between social support and benefit finding may differ as a function of ethnicity. The current study examined possible interactions between social support from six different sources: partner, friends, family, groups, spiritual communities, and healthcare providers and ethnicity in predicting benefit finding both at baseline and at time point 2. Interestingly, there were no significant interactions between ethnicity and any of the sources of social support in predicting both T1 and T2 benefit finding. Given the results of Fekete et al. (2009) we expected that certain sources of social support may influence benefit finding only for white MSM and/or only for minority MSM; however, for our sample this was not the case. Certainly, the dichotomization of the ethnicity variable may have limited the current study's ability to detect ethnic differences in the relationship between social support and benefit finding, as the minority group of men contained nearly equal numbers of Hispanic and African-

American men. Alternatively, our results may suggest that social support has a similar influence on benefit finding across ethnic groups for HIV+ MSM.

Finally, the current study examined religious coping as a provisional intermediary variable in the relationship between ethnicity and T1 benefit finding. Minority MSM were found to have greater levels of T1 benefit finding than white MSM, however when the covariates (age, education level, HAART adherence) were added to the model the relationship between ethnicity and T1 benefit finding became non-significant. Thus, religious coping was tested as a provisional intermediary variable in the relationship between ethnicity and benefit finding in the unadjusted model only. Results suggested that for the unadjusted model, religious coping was a provisional intermediary variable in the relationship between ethnicity and benefit finding. This finding somewhat replicates previous work which found religious coping to be a mediator of the relationship between ethnicity and benefit finding in women with breast cancer (Urcuyo et al. 2005). However, caution should be taken when interpreting the current finding because in the present study the relationship between ethnicity and benefit finding did not remain significant with the addition of covariates; and previous work indicated the religious coping as a mediator of the relationship between ethnicity and benefit finding controlling for sociodemographic covariates. Also, the relationship between ethnicity and religious coping was only marginally significant ( $p = .057$ ), suggesting that differences in the use of religious coping between white and minority MSM were less pronounced than ethnic differences in religious coping in previous work in women with breast cancer (Bellizzi et al., 2010).



In addition, the current study aimed to examine religious coping as a mediator of the relationship between ethnicity and T2 benefit finding. Interestingly, analyses did not reveal a significant relationship between ethnicity and T2 benefit finding, even for the unadjusted model. All in all, the current study's findings suggest that while the relationships between ethnicity, religious coping, and benefit finding in HIV+ MSM may resemble those found in women with chronic disease, these relationships do not appear to be as stable over time. Indeed, while minority MSM may be more likely to utilize religious coping than white MSM due to possible cultural and community influences, the relationship between ethnicity and benefit finding in MSM was not nearly as strong as previous relationships found between ethnicity and benefit finding in women with cancer. Minority MSM may not utilize religious coping as much as other minority individuals due to increased stigma from religious communities, as many religious communities view homosexuality as sinful and distasteful (Brooks et al., 2005). In addition, previous work with female samples examined religious coping as mediator of the relationship between ethnicity and benefit finding using cross-sectional data only. Had these researchers followed their samples over time they may have also found a lack of evidence for religious coping prospectively predicting benefit finding. Another explanation of the current results could be that the relationships between ethnicity and religious coping as well as ethnicity and benefit finding may not be stable over time for all individuals, not just HIV+ MSM.

#### *Limitations and Future Directions*

The current study had a number of limitations that should be acknowledged. Firstly, while the results of our study shed light on some minority group differences in the

benefit finding process the generalizability of these results is limited due to the forced dichotomization of the a variable that represented ethnicity. Given the current sample size, unfortunately there would not be sufficient power to detect effects dividing the sample between white, Hispanic, and African-American MSM. Thus, our findings pertaining to the minority MSM, which were comprised of all participants who did not identify as white, may not be generalizable to African-American or Hispanic MSM. Rather, our results should be interpreted as preliminary evidence regarding differences between white and minority MSM in benefit finding processes. Future research should examine differences among non-Hispanic white, Hispanic, African-American, and other minority groups of HIV+ MSM.

The current study's total sample size ( $N = 94$ ) not only limited the comparisons between ethnic groups that could be made, but it also limited the statistical methodology that could be used to analyze associations between variables. While complex methodologies such as Structural Equation Modeling (SEM) are considered more robust in some cases due to their more rigorous approaches to hypothesis testing, the current study sample was not large enough to be appropriate for these types of analyses. Thus we were limited to using basic regression analyses to examine our hypotheses. Future studies should recruit samples of at least 200 or more individuals to be able to utilize more robust statistical methodologies (Kline, 2010).

Furthermore, the current study utilized data extracted from a previous randomized controlled trial of Cognitive Behavioral Stress Management (CBSM). As the original study was not designed to test ethnic differences in benefit finding, the CBSM group assignment had to be controlled for in all T2 analyses. All in all, even though variance

attributed to CBSM group assignment was accounted for, our study was not the ideal setting in which to examine our hypotheses. Certainly had the original project aimed to examine ethnic differences in benefit finding, there may have been equal numbers of each ethnic group recruited, and may have been more extensive measures of benefit finding. Future research regarding the relationship between ethnicity and benefit finding should be designed such that benefit finding is a key focus of the study, and such that the complexity of the relationships between psychosocial variables and benefit finding can be further elucidated. For example, qualitative research utilizing in-depth interviews might better illuminate any differences between white and minority HIV+ MSM in the relationship between social support and benefit finding. While the current study did not find significant differences in social support between white and minority MSM, certainly previous work has suggested that cultural differences may produce differences in social support and how it utilized in the act of disclosure of HIV status to family members among MSM (Fekete et al., 2009).

### *Conclusion*

Despite its limitations, the current study was the first to investigate possible ethnic differences in the relationships between psychosocial predictors of benefit finding and benefit finding in HIV+ MSM. In addition, the study adds dimension to a highly limited body of work examining benefit finding in individuals with chronic disease, as most previous work has examined benefit finding in heterosexual women with cancer. The current study is also one of very few studies to examine benefit finding longitudinally.

Our results suggested that the relationship between ethnicity and benefit finding is tenuous in HIV+ MSM. It may be that the sociocultural influences postulated to increase

benefit finding in minority individuals interact differently in minority HIV+ MSM than in minority women, heterosexual minority men, and minority individuals with other chronic diseases. Certainly, possible exposure to minority stigma, sexual minority stigma, and HIV-related stigma may create difficulties in developing benefit finding in HIV+ minority MSM. Indeed, the finding that perceived stress at time point 1 negatively impacted benefit finding at time point 2 for minority MSM bolsters the notion that these men face unique challenges that may impact their ability to experience positive growth from living with HIV. In addition to possibly experiencing layered stigma, HIV+ MSM may not have as effective coping skills and/or social support in dealing with their stress, and thus experienced decrements in T2 benefit finding associated with their perceived stress at T1. Indeed, our study did not find as strong of a relationship between ethnicity and religious coping as did previous work with women with breast cancer, though religious coping was highly predictive of benefit finding in our sample.

All in all, our study suggested that the relationship between ethnicity and benefit finding may be more complex in HIV+ MSM than in other groups of individuals with chronic disease. While other studies have suggested that individuals in minority groups may experience some sociocultural benefits in terms of social support, resilience to stress, religious coping, which ultimately could culminate in higher levels of benefit finding, our results may suggest that HIV+ MSM in minority ethnic groups may not experience these benefits in the same way other minority individuals do. Our study has served to highlight the need for interventions to improve psychosocial processes which are tailored specifically to minority HIV+ MSM, as this group's unique pattern of sociocultural

experiences and stressors may lead to greater susceptibility to the negative effects of stress in these individuals.

## Tables

Table 1. Demographic and Disease-Related Variables in Overall Sample

	<i>Mean (SD)</i>
Age	42.52 years (8.76 years)
Ethnicity	
Native American/Alaskan Native	1 (1.1%)
Asian/Pacific Islander	1 (1.1%)
African-American	19 (20.1%)
Hispanic/Latino	15 (16.0%)
White	53 (56.4%)
Other	5 (5.3%)
Education Level	
Graduated from high school	89 (94.7%)
Graduated from college	40 (42.5%)
Relationship Status	27 (28.6%) in a relationship 67 (71.4%) single
Modal Income	\$10,001-\$20,000 per year
Average number of months post-HIV diagnosis	94.03 months (60.43 months)
HAART Adherence	90.59% (9.84%)
HIV Viral Load	10,129.1 copies (23,044.9 copies)
Log Viral Load	2.71 (1.31)
Participants with undetectable HIV Viral Load (< 49 copies)	47 (50.0%)
Baseline CD4 Count	419.2 cells/ $\mu$ L (225.9 cells/ $\mu$ L)

Table 2. Demographic and Disease-Related Variables Among White and Minority Men Who Have Sex With Men (MSM)

	White MSM <i>Mean (SD)</i>	Minority MSM <i>Mean (SD)</i>	<i>t</i>
Age	44.25 years (8.86 years)	40.29 years (8.20 years)	2.22*
Education Level			1.62
Graduated from high school	98.0%	90.2%	
Graduated from college	43.3%	41.5%	
Relationship Status	26.9% in a relationship	30.8% in a relationship	.47
Average Income	\$10,001-\$20,000 per year	\$10,001-\$20,000 per year	.70
Number of months post-HIV diagnosis	99.44 months (61.80 months)	86.82 months (58.56 months)	.99
HAART Adherence	92.99% (5.54%)	87.50% (12.96%)	2.54*
HIV Viral Load	9,916.1 copies (22,187.9 copies)	10,420.5 copies (24,468.3 copies)	-1.10
Baseline Log Viral Load	2.69 (1.45)	2.74 (1.35)	-.12
Baseline CD4 Count	447.2 cells/ $\mu$ L (241.9 cells/ $\mu$ L)	382.8 cells/ $\mu$ L (200.1 cells/ $\mu$ L)	1.36

+  $p < .10$ ; \*  $p < .05$

Table 3. Key Study Variables in Among White and Minority Men Who Have Sex With Men (MSMs)

	White MSM	Minority MSM	<i>t</i>
	<i>Mean (SD)</i>	<i>Mean (SD)</i>	
T1 Perceived Stress (PSS)	24.77 (8.13)	26.07 (6.06)	-.88
T1 Social Support (UCLASSI)			
Partners	4.89 (6.76)	5.93 (7.45)	-.71
Friends	11.94 (4.14)	11.29 (5.40)	.64
Family	8.53 (4.70)	9.15 (5.81)	-.56
Groups	9.55 (5.55)	10.34 (6.35)	-.65
Spiritual Communities	5.83 (5.77)	6.51 (6.18)	-.55
Healthcare Providers	13.15 (4.12)	13.54 (5.71)	-.37
T1 Religious Coping (COPE)	9.51 (3.73)	11.05 (3.98)	-1.93 <sup>+</sup>
T1 Benefit Finding	56.15 (12.35)	61.55 (13.75)	-2.00*
T2 Benefit Finding	59.13 (13.55)	58.11 (14.31)	.35

<sup>+</sup> *p* < .10; \* *p* < .05



Table 4. Correlations between Benefit Finding and Sociodemographic and Disease-Related Variables for All Participants

	Ethnicity	Age	Education Level	Income	Relationship Status
Ethnicity					
Age	<b>-.225*</b>				
Education Level	-.170	<b>.259*</b>			
Income	-.074	.066	<b>.426**</b>		
Relationship Status	-.042	<b>.207*</b>	-.205	<b>-.222*</b>	
# of Months post-					
HIV diagnosis	-.104	.021	-.091	.195	
HAART Adherence	<b>-.278**</b>	-.009	.038	.020	.027
CD4 Count	-.142	<b>.237*</b>	.073	-.038	.043
Log HIV Viral Load	.015	-.073	-.157	<b>.414**</b>	<b>.284*</b>
T1 Benefit Finding	<b>.204*</b>	-.106	<b>-.233*</b>	.121	-.162
T2 Benefit Finding	-.037	-.050	-.001	.012	-.090
			.034	.093	.047

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Table 5. Correlations between Benefit Finding and Psychosocial Variables for White and Minority Participants

Ethnicity	1	2	3	4	5	6	7	8	9	10
<i>White</i>										
1. UCLASSI Partner										
2. UCLASSI Friends	<b>.295*</b>									
3. UCLASSI Family	.174	<b>.493**</b>								
4. UCLASSI Groups	.193	<b>.384**</b>	<b>.350*</b>							
5. UCLASSI Spiritual	.236	<b>.410**</b>	.250	<b>.547**</b>						
6. UCLASSI Healthcare	.013	<b>.386**</b>	.250	<b>.622**</b>	<b>.530**</b>					
7. PSS	-.113	<b>-.343*</b>	<b>-.409**</b>	-.164	-.145	-.126				
8. COPE Religious	.145	<b>.282*</b>	.218	<b>.379**</b>	<b>.544**</b>	<b>.432**</b>	-.201			
9. T1 Benefit Finding	<b>.288*</b>	<b>.340*</b>	<b>.445**</b>	<b>.285*</b>	<b>.298*</b>	.187	<b>-.491**</b>	<b>.431**</b>		
10. T2 Benefit Finding	.194	<b>.366**</b>	<b>.300*</b>	<b>.296*</b>	.207	<b>.277*</b>	<b>-.280*</b>	.235	<b>.512**</b>	
<i>Minority</i>										
1. UCLASSI Partner										
2. UCLASSI Friends	.155									
3. UCLASSI Family	.004	.651**								
4. UCLASSI Groups	-.052	.551**	.377*							
5. UCLASSI Spiritual	.049	.276	.257	<b>.564**</b>						
6. UCLASSI Healthcare	.063	<b>.520**</b>	<b>.379*</b>	<b>.592**</b>	<b>.375*</b>					
7. PSS	.162	-.158	-.132	.210	<b>.355*</b>	-.174				
8. COPE Religious	<b>-.398*</b>	-.076	.032	.138	<b>.312*</b>	-.055	-.106			
9. T1 Benefit Finding	-.132	.140	.212	<b>.464**</b>	<b>.316*</b>	.289	-.179	<b>.459**</b>		
10. T2 Benefit Finding	-.080	.236	.120	.152	-.083	.271	<b>-.531**</b>	<b>.317*</b>	<b>.652**</b>	

\*. Correlation is significant at the 0.05 level (2-tailed). \*\*. Correlation is significant at the 0.01 level (2-tailed).

Table 6. Moderated Regression Analyses Results: Support from Partner, Friends, and Family

	T1 Benefit Finding		T2 Benefit Finding	
	$\beta$ (SE)	$\Delta R^2$	$\beta$ (SE)	$\Delta R^2$
<u>Support from Partner</u>				
Covariates <sup>1</sup>	-----	.06	-----	.35**
Age	-.05 (1.6)	-----	-.02 (.14)	-----
Education Level	-.22 (.82)*	-----	.12 (.75)	-----
HAART Adherence	-.08(.14)	-----	.08 (.12)	-----
CBSM group	-----	-----	.10 (2.5)	-----
T1 Benefit Finding	-----	-----	.60 (.09)**	-----
Support from Partner	.08 (.20)	.01	.02 (.18)	.00
Ethnicity	.15 (2.9)	.02	-.12 (2.6)	.01
Ethnicity*Support from Partner	-.27 (.40)	.03	-.04 (.37)	.00
<u>Support from Friends</u>				
Covariates <sup>1</sup>	-----	.06	-----	.35**
Age	-.05 (1.6)	-----	-.02 (.14)	-----
Education Level	-.22 (.82)*	-----	.12 (.75)	-----
HAART Adherence	-.08(.14)	-----	.08 (.12)	-----
CBSM group	-----	-----	.10 (2.5)	-----
T1 Benefit Finding	-----	-----	.60 (.09)**	-----
Support from Friends	.23 (.28)*	.05*	.18 (.26)*	.03*
Ethnicity	.17 (2.8)	.02	-.10 (2.6)	.01
Ethnicity*Support from Friends	-.19 (.56)	.02	-.04 (.51)	.00
<u>Support from Family</u>				
Covariates <sup>1</sup>	-----	.06	-----	.35**
Age	-.05 (1.6)	-----	-.02 (.14)	-----
Education Level	-.22 (.82)*	-----	.12 (.75)	-----
HAART Adherence	-.08(.14)	-----	.08 (.12)	-----
CBSM group	-----	-----	.10 (2.5)	-----
T1 Benefit Finding	-----	-----	.60 (.09)**	-----
Support from Family	.29 (.26)**	.08**	.06 (.25)	.00
Ethnicity	.17 (2.8)	.02	-.12 (2.6)	.01
Ethnicity*Support from Family	-.19 (.51)	.02	-.02 (.48)	.00

\*p < .05; \*\*p < .01; <sup>1</sup> T1 Models controlled for HAART adherence, age, and education level; T2 models controlled for HAART adherence, age, education level, T1 Benefit Finding, and CBSM group assignment

Table 7. Moderated Regression Analyses Results: Support from Groups, Spiritual Communities, and Healthcare Providers

	T1 Benefit Finding		T2 Benefit Finding	
<u>Support from Groups</u>				
Covariates <sup>1</sup>	-----	.06	-----	.35**
Age	-.05 (1.6)	-----	-.02 (.14)	-----
Education Level	-.22 (.82)*	-----	.12 (.75)	-----
HAART Adherence	-.08(.14)	-----	.08 (.12)	-----
CBSM group	-----	-----	.10 (2.5)	-----
T1 Benefit Finding	-----	-----	.60 (.09)**	-----
Support from Groups	.35 (.22)**	.12**	.03 (.22)	.00
Ethnicity	.13 (2.7)	.02	-.13 (2.6)	.01
Ethnicity*Support from Groups	.10 (.44)	.00	-.18 (.42)	.01
<u>Support from Spiritual Communities</u>				
Covariates <sup>1</sup>	-----	.06	-----	.35**
Age	-.05 (1.6)	-----	-.02 (.14)	-----
Education Level	-.22 (.82)*	-----	.12 (.75)	-----
HAART Adherence	-.08(.14)	-----	.08 (.12)	-----
CBSM group	-----	-----	.10 (2.5)	-----
T1 Benefit Finding	-----	-----	.60 (.09)**	-----
Support from Spiritual Communities	.28 (.23)**	.07**	-.08 (.22)	.00
Ethnicity	.14 (2.8)	.02	-.13 (2.6)	.01
Ethnicity*Support from Spiritual Communities	.00 (.44)	.00	-.22 (.40)	.02
<u>Support from Healthcare Providers</u>				
Covariates <sup>1</sup>	-----	.06	-----	.35**
Age	-.05 (1.6)	-----	-.02 (.14)	-----
Education Level	-.22 (.82)*	-----	.12 (.75)	-----
HAART Adherence	-.08(.14)	-----	.08 (.12)	-----
CBSM group	-----	-----	.10 (2.5)	-----
T1 Benefit Finding	-----	-----	.60 (.09)**	-----
Support from Healthcare Providers	.27 (.29)*	.07*	.18 (.27)	.03
Ethnicity	.12 (2.8)	.02	-.14 (2.6)	.01
Ethnicity*Support from Healthcare Providers	.04 (.55)	.00	-.13 (.51)	.00

\*p < .05; \*\*p < .01; <sup>1</sup> T1 Models controlled for HAART adherence, age, and education level; T2 models controlled for HAART adherence, age, education level, T1 Benefit Finding, and CBSM group assignment

Table 8. Moderated Regression Analyses Results: Perceived Stress

	T1 Benefit Finding		T2 Benefit Finding	
<u>Perceived Stress</u>				
Covariates <sup>1</sup>	-----	.06	-----	.35**
Age	-.05 (1.6)	-----	-.02 (.14)	-----
Education Level	-.22 (.82)*	-----	.12 (.75)	-----
HAART Adherence	-.08(.14)	-----	.08 (.12)	-----
CBSM group	-----	-----	.10 (2.5)	-----
T1 Benefit Finding	-----	-----	.60 (.09)**	-----
Perceived Stress	-.37(.17)**	.13**	-.18 (.18)	.03
Ethnicity	.18 (2.7)	.02	-.10 (2.5)	.01
Ethnicity*Perceived Stress	.11 (.38)	.01	-.29 (.34)**	.06**

\*p < .05; \*\*p < .01; <sup>1</sup> T1 Models controlled for HAART adherence, age, and education level; T2 models controlled for HAART adherence, age, education level, T1 Benefit Finding, and CBSM group assignment

## Figures

Figure 1. Decomposition of the interaction between perceived stress and ethnicity in predicting T2 benefit finding.

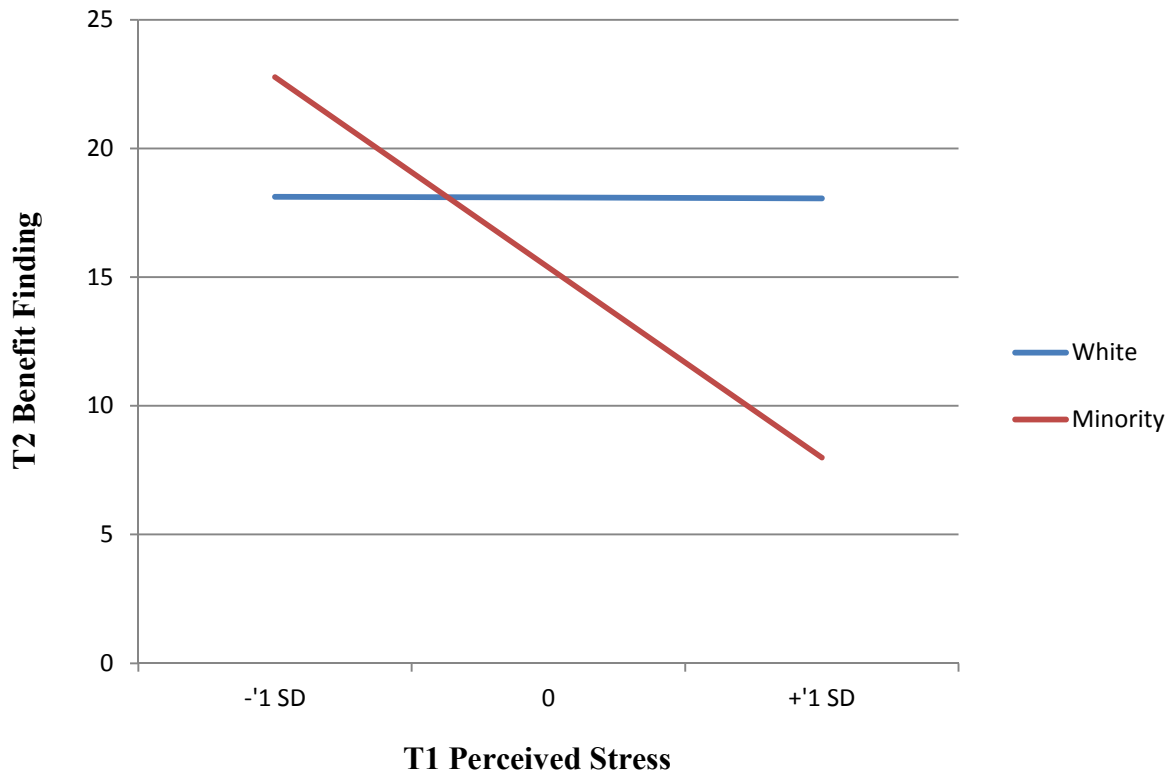
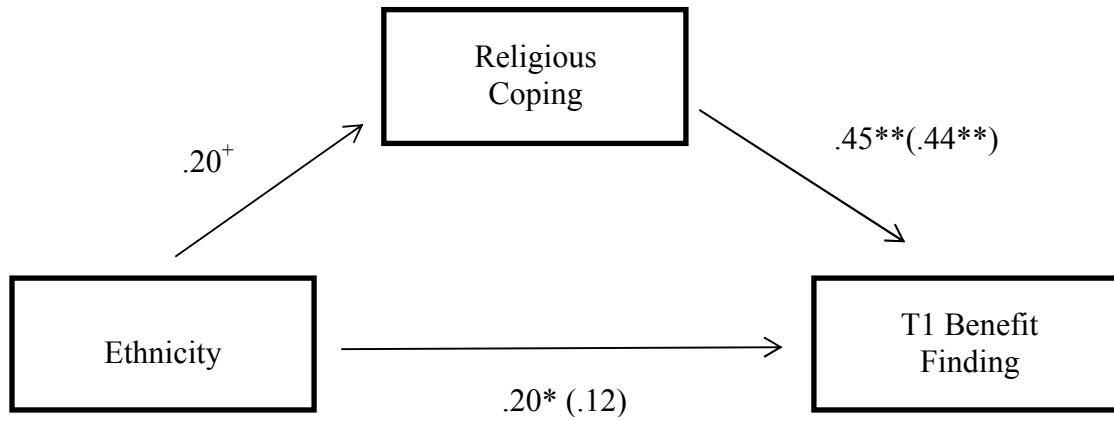


Figure 2. Regression coefficients for the relationship between ethnicity and T1 benefit finding with religious coping as a provisional intermediary variable. The values in parentheses indicate regression coefficients for the full mediation model.



+  $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$

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## APPENDIX OF MEASURES

### Benefit Finding Scale

Individuals with HIV sometimes feel that having HIV makes contributions to their lives, as well as causing problems. Indicate how much you agree with each of the following statements, using these response options:

- 1 = Not at all
- 2 = A little
- 3 = Moderately
- 4 = Quite a bit
- 5 = Extremely

#### Having HIV....

- \_\_\_\_\_ 1. has led me to be more accepting of things.
- \_\_\_\_\_ 2. has taught me how to adjust to things I can not change.
- \_\_\_\_\_ 3. has helped me take things as they come.
- \_\_\_\_\_ 4. has brought my family closer together.
- \_\_\_\_\_ 5. has made me more sensitive to family issues.
- \_\_\_\_\_ 6. has taught me that everyone has a purpose in life.
- \_\_\_\_\_ 7. has shown me that all people need to be loved.
- \_\_\_\_\_ 8. has made me realize the importance of planning for my family's future.
- \_\_\_\_\_ 9. has made me more aware and concerned for the future of all human beings.
- \_\_\_\_\_ 10. has taught me to be patient.
- \_\_\_\_\_ 11. has led me to deal better with stress and problems.
- \_\_\_\_\_ 12. has led me to meet people who have become some of my best friends.
- \_\_\_\_\_ 13. has contributed to my overall emotional and spiritual growth.
- \_\_\_\_\_ 14. has helped me become more aware of the love and support available from other people.
- \_\_\_\_\_ 15. has helped me to realize who my real friends are.
- \_\_\_\_\_ 16. has helped me become more focused on priorities, with a deeper sense of purpose in life.
- \_\_\_\_\_ 17. has helped me become a stronger person, more able to cope effectively with future life challenges.



### Perceived Stress Scale (PSS)

The questions in this scale ask you about your feelings and thoughts during *the last month*. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question.

	<b>Never</b>	<b>Almost Never</b>	<b>Some- times</b>	<b>Fairly Often</b>	<b>Very Often</b>
<b>In the last month...</b>					
1. how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3. how often have you felt nervous and "stressed"?	0	1	2	3	4
4. how often have you dealt successfully with irritating life hassles?	0	1	2	3	4
5. how often have you felt that you were effectively coping with important changes that were occurring in your life?	0	1	2	3	4
6. how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
7. how often have you felt that things were going your way?	0	1	2	3	4
8. how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
9. how often have you been able to control irritations in your life?	0	1	2	3	4

10. how often have you felt that you were on top of things?	0	1	2	3	4
11. how often have you been angered because of things that happened that were outside of your control?	0	1	2	3	4
12. how often have you found yourself thinking about things that you have to accomplish?	0	1	2	3	4
13. how often have you been able to control the way you spend your time?	0	1	2	3	4
14. how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

### UCLA Social Support Inventory

The following questions concern the type and amount of support you may have received from family, friends, partner, organizations, people at church, and medical staff for any HIV/AIDS-related stress that you may have experienced in the **PAST MONTH**. If a category of people is not applicable to you (e.g., if you have no spouse or partner), circle "0".

1. How often did each of these groups of people provide **information or advice** relevant to HIV/AIDS-related stress (whether you wanted it or not)?

	NEVER	RARELY	SOMETIMES	OFTEN	VERY OFTEN	Not Applicable
a. Your partner/spouse?	1	2	3	4	5	0
b. Your friends?	1	2	3	4	5	0
c. Your relatives?	1	2	3	4	5	0
d. Groups or organizations?	1	2	3	4	5	0
e. Religious/spiritual community?	1	2	3	4	5	0
f. Your health care providers?	1	2	3	4	5	0

2. In general, how satisfied or dissatisfied have you been with all the **information and advice** you have received about your HIV/AIDS -related stress? (Please circle ONE)

1	2	3	4	5	6	7
VERY DISSATISFIED			NEITHER SATISFIED NOR DISSATISFIED			VERY SATISFIED

3. At times we want assistance, like help with a task (e.g., giving a ride or help moving) or to borrow or be given something we need. How often did each of these groups of people provide **assistance** to you in connection with your HIV/AIDS -related stress (whether you wanted it or not)?

	NEVER	RARELY	SOMETIMES	OFTEN	VERY OFTEN	Not Applicable
a. Your partner/spouse?	1	2	3	4	5	0
b. Your friends?	1	2	3	4	5	0
c. Your relatives?	1	2	3	4	5	0
d. Groups or organizations?	1	2	3	4	5	0
e. Religious/spiritual community?	1	2	3	4	5	0
f. Your health care providers?	1	2	3	4	5	0

4. How satisfied or dissatisfied have you been with the **assistance** you have received in connection with HIV/AIDS -related stress? (Please circle ONE)

1	2	3	4	5	6	7
VERY DISSATISFIED			NEITHER SATISFIED NOR DISSATISFIED			VERY SATISFIED

5. How often did each of these groups of people convey **encouragement or reassurance** to you concerning your HIV/AIDS -related stress (whether you wanted it or not)?

	NEVER	RARELY	SOMETIMES	OFTEN	VERY OFTEN	Not Applicable
a. Your partner/spouse?	1	2	3	4	5	0
b. Your friends?	1	2	3	4	5	0
c. Your relatives?	1	2	3	4	5	0
d. Groups or organizations?	1	2	3	4	5	0
e. Religious/spiritual community?	1	2	3	4	5	0
f. Your health care providers?	1	2	3	4	5	0

6. In general, how satisfied or dissatisfied have you been with the **encouragement and reassurance** you have received in connection with your HIV/AIDS -related stress? (Please circle ONE)

1	2	3	4	5	6	7
VERY			NEITHER			VERY
DISSATISFIED			SATISFIED NOR			SATISFIED
			DISSATISFIED			

7. How often did each of these people **listen to or try to understand** your concerns about your HIV/AIDS -related stress?

	NEVER	RARELY	SOMETIMES	OFTEN	VERY OFTEN	Not Applicable
a. Your partner/spouse?	1	2	3	4	5	0
b. Your friends?	1	2	3	4	5	0
c. Your relatives?	1	2	3	4	5	0
d. Groups or organizations?	1	2	3	4	5	0
e. Religious/spiritual community?	1	2	3	4	5	0
f. Your health care providers?	1	2	3	4	5	0

8. How satisfied or dissatisfied have you been with the **listening and understanding** you have received concerning your feelings about your HIV/AIDS -related stress? (Please circle ONE)

1	2	3	4	5	6	7
VERY			NEITHER			VERY
DISSATISFIED			SATISFIED NOR			SATISFIED
			DISSATISFIED			

9. In general, how often have **YOU** provided information and advice, encouragement and reassurance, or listening and understanding regarding HIV/AIDS to each of these groups of people?

	NEVER	RARELY	SOMETIMES	OFTEN	VERY OFTEN	Not Applicable
a. Your partner/spouse?	1	2	3	4	5	0
b. Your friends?	1	2	3	4	5	0
c. Your relatives?	1	2	3	4	5	0
d. Groups or organizations?	1	2	3	4	5	0
e. Religious/spiritual community?	1	2	3	4	5	0
f. Your health care providers?	1	2	3	4	5	0

### COPE\*

This questionnaire asks you to indicate how you have dealt with being HIV+ in the past month (30 days). Using this scale, please choose the answers that best reflect how YOU dealt with the HIV concerns or problems you had during the past month - not how you think "most people" would say or do. Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully and make your answers reflect what YOU did. There are no "right" or "wrong" answers.

\*The religious subscale is *italicized*

**1 = Not at all**  
**2 = A little bit**  
**3 = A medium amount**  
**4 = A lot**

- |  |   |   |   |   |
|--|---|---|---|---|
| 1. I try to grow as a person as a result of the experience.              | 1 | 2 | 3 | 4 |
| 2. I try to get advice from someone about what to do.                    | 1 | 2 | 3 | 4 |
| 3. I concentrate my efforts on doing something about it.                 | 1 | 2 | 3 | 4 |
| 4. I say to myself, "this isn't real."                                   | 1 | 2 | 3 | 4 |
| 5. <i>I put my trust in God.</i>   | 1 | 2 | 3 | 4 |
| 6. I admit to myself that I can't deal with it, and quit trying.         | 1 | 2 | 3 | 4 |
| 7. I discuss my feelings with someone.                                   | 1 | 2 | 3 | 4 |
| 8. I use alcohol or other drugs to make myself feel better.              | 1 | 2 | 3 | 4 |
| 9. I get used to the idea that it happened.                              | 1 | 2 | 3 | 4 |
| 10. I talk to someone to find out more about the situation.              | 1 | 2 | 3 | 4 |
| 11. <i>I seek God's help.</i>  | 1 | 2 | 3 | 4 |
| 12. I accept that this has happened and that it cannot be changed.       | 1 | 2 | 3 | 4 |
| 13. I try to get emotional support from friends or relatives.            | 1 | 2 | 3 | 4 |
| 14. I just give up trying to reach my goal.                              | 1 | 2 | 3 | 4 |
| 15. I take additional action to try to get rid of the problem.           | 1 | 2 | 3 | 4 |
| 16. I refuse to believe that it has happened.                            | 1 | 2 | 3 | 4 |
| 17. I criticize myself.  | 1 | 2 | 3 | 4 |
| 18. I try to see it in a different light, to make it seem more positive. | 1 | 2 | 3 | 4 |
| 19. I talk to someone who could do something concrete about the problem. | 1 | 2 | 3 | 4 |

20. I get sympathy and understanding from someone.	1	2	3	4
21. I use alcohol or other drugs to help me get through it.	1	2	3	4
22. I give up the attempt to get what I want.	1	2	3	4
23. I look for something good in what is happening.	1	2	3	4
24. I pretend that it has not really happened.	1	2	3	4
25. I accept the reality of the fact that it happened.	1	2	3	4
26. I ask people who have had similar experiences what they did.	1	2	3	4
27. I take direct action to get around the problem.	1	2	3	4
28. <i>I try to find comfort in my religion.</i>	1	2	3	4
29. I reduce the amount of effort I am putting into solving the problem.	1	2	3	4
30. I talk to someone about how I feel.	1	2	3	4
31. I learn to live with it.	1	2	3	4
32. I blame myself for things that happen.	1	2	3	4
33. I act as though it has not even happened.	1	2	3	4
34. I do what has to be done, one step at a time.	1	2	3	4
35. I learn something from the experience.	1	2	3	4
36. <i>I pray more than usual.</i>	1	2	3	4