

MANAGING HIV: SELF-EFFICACY, MINDFULNESS, OPTIMISM, AND MEANING

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The purpose of the current study is to investigate the extent to which mindfulness (observing and describing), dispositional optimism and personal meaning are associated with self-efficacy for managing a chronic disease (SEMCD) among 57 people living with HIV in the DFW Metroplex. Several statistical analyses, including a hierarchical linear regression analysis, were conducted. Results indicate, after controlling for age and gender, the overall model accounted for a significant proportion of the variance (adjusted $R^2 = .39$) in self-efficacy for managing chronic disease, $F(6, 50) = 5.80, p < .01$. Both subscales of mindfulness were significantly related to self-efficacy. However, observing was negatively associated with SEMCD ($\beta = -0.44, p < .05$), and describing was positively associated with self-efficacy ($\beta = 0.60, p < .01$). As a result, incorporating these mindfulness skills into self-efficacy based self-management programs may greatly improve self-management, thus positively influencing psychological and physiological health outcomes that are essential to the health and wellbeing of people living with HIV/AIDS. Future research should investigate methods of manipulating observing and describing, and determine what proficiency in these skills is most beneficial to improve self-efficacy.

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Introduction

Human Immunodeficiency Virus (HIV)

Human immunodeficiency virus (HIV) is a disease which hinders the body's natural ability to fight infection as well as other illnesses and may lead to acquired immunodeficiency syndrome (AIDS). The Centers for Disease Control (CDC) estimate over one million people in the United States currently live with HIV and 56,300 people are infected annually (CDC, 2010; CDC, 2009). In Texas an estimated 77,070 people, 18,325 in the Dallas/Fort Worth area, live with HIV and 4,751 people contract HIV annually (CDC, 2008). Texas ranks 4th in HIV prevalence and incidence in the United States.

Difficulties of Living with HIV

HIV's chronic nature leads to numerous health issues, hospital visits and treatment difficulties. Antiretroviral medication regimens that slow the progression of HIV are complex, require precise timing, and a 95% adherence rate to be effective (Fogarty et al., 2002). In addition, a combination of factors (negative side effects, medication toxicity, depression, poor quality of life, inconvenient dosing schedule, and lack of scheduled reminders or general forgetfulness; Ammassari et al., 2001; Johnson & Folkman, 2004; Johnson & Neilands, 2007; Johnston-Roberts & Mann, 2000; Murphy, Roberts, Martin, Marelich & Hoffman, 2000; Roberts, 2000; Simoni, Frick, Lockhart & Liebovitz, 2002; Walsh et al., 2001) make adherence to antiretroviral medication difficult. Estimates of actual adherence vary from 35% to 95% (Erlen, Sereika, Cook & Hunt, 2002; Golin, Liu, Hays, Miller & Beck, 2002; Murphy, Greenwell & Hoffman, 2002). Access to health professionals may also be limited. Anecdotal evidence

suggests wait time between setting an appointment and the actual appointment date can amount to over a week (Thompson, 2009).

Due to a progressive shift in medical care over the past decade from professional management to self-management, the previously stated issues may lead to increased difficulties for those with chronic disease (Bodenheimer, Lorig, Holman & Grumbach, 2002). Chronic disease, specifically HIV, can be difficult to self-manage even when the necessary resources (e.g. information, medication, etc.) are present. Therefore, an effective method for improving self-management of care and treatment for people living with HIV/AIDS is needed.

Self-Efficacy

Self-efficacy is a psychological construct often conceptualized as a belief or confidence in one's own capabilities to control, organize, and execute a task or specific behavior in order to achieve a particular goal or outcome (Bandura, 1997). Bandura (1997) theorized that self-efficacy is modified through four experiences: 1) mastery of experience; 2) physiological and affective states; 3) verbal persuasion; and 4) vicarious experience. Mastery of experience is determined by a person's skill at a task, which improves with progressive exposure or practice (Kennedy, Rogers & Crossley, 2007). Physiological (e.g. less pain) and affective (e.g. good mood) states can provide reinforcement for a patient's health behaviors because behaviors that lead to pleasant or desired states are more likely to occur. Verbal persuasion is experienced when others provide support and bolster confidence in personal ability. Vicarious experience is based on social learning theory which posits that learning occurs through observation and the modeling of others (Brannon & Feist, 2004). Self-efficacy is also associated with effort, perseverance, attitude, mood, and coping ability which are important to consider when implementing a self-

management program particularly for chronic disease (Marks, 2001; Bandura, 1977). While typical self-management programs provide pertinent health information and suggest positive behavioral changes, a patient's self-efficacy for managing a chronic disease is an important factor to consider (Jones, 2006).

Previous research supports the idea that self-efficacy is malleable and enhances use and effectiveness of self-management skills (Brekke, Hjortdahl & Kvien, 2003; Clark & Dodge, 1999; Marks, Allegrante & Lorig, 2005a; Marks, Allegrante & Lorig, 2005b). Health related self-management programs that focus on improving self-efficacy show a broad range of positive affective and behavioral health outcomes for chronic disease. For example, Lorig and colleagues (2001) conducted a longitudinal study among 498 persons living with arthritis, chronic obstructive pulmonary disease, diabetes, or had suffered a stroke. They were interested in the prospective benefits of a chronic disease self-management program (CDSMP), which incorporated self-efficacy as a core component. Participants completed CDSMP over a 7 week period, which improved self-efficacy through problem solving, vicarious experience, decision making, action planning, modeling, and resource utilization tasks. At six months participants reported improvements in exercise frequency, coping strategies, symptom management, fatigue, mobility, and fewer hospital visits. Benefits for those who completed CDSMP were still present during follow up a year later.

The successful combination of self-efficacy theory and self-management spawned a number of programs (expert patient program, arthritis self-management program), which benefit self-esteem, general activity, perceptions of control, physiological and mental health, interpersonal relationships, health behaviors, disease specific skill use and medication/program adherence (Aljasem, Peyrot, Wissow & Rubin, 2001; Barlow, Turner & Wright, 2000; Bourbeau

et al., 2003; Bourbeau et al., 2002; Department of Health, 2001; Donaldson, 2004; Donaldson, 2003; Grurcsik, Estabrook & Frahm-Templar, 2003; Kennedy, Rogers & Crossley, 2007; Lorig et al., 1986, Lorig et al., 1985). Within the HIV/AIDS community self-efficacy is correlated with medication adherence, but unlike other chronic diseases HIV does present some unique and pervasive obstacles for self-management and self-efficacy (Gifford et al., 2000; Simoni et al., 2002). Frequent illness and negative side effects/complexities of antiretroviral treatment may reduce confidence in self-management and reinforce non-adherence (Bandura, 1997). Due to the possible benefits that improved self-efficacy for managing a chronic disease may yield, identifying correlates of self-efficacy may be useful in developing interventions that aim to increase self-efficacy for managing chronic disease.

Mindfulness

Mindfulness is one variable which may be associated with self-efficacy. Mindfulness is rooted in Buddhist meditational practices and involves purposeful and nonjudgmental attention through observation and reflection of personal thoughts and feelings in the present moment (Kabat-Zinn, 1994). Mindfulness training (e.g. Vipassana meditation) attempts to teach participants to respond after reflection instead of simply reacting (Bishop et al., 2004). By attending to, accepting, and letting go of stimuli, mindfulness training is thought to reduce reactive behaviors thereby reducing negative thoughts and feelings (Linehan, 1993; Linehan, Heard & Armstrong 1993). Reflection typically involves reevaluation of a negative event because negative events may lead to distress, and as Langer (2002) points out there are 3 different perspectives people typically adopt when evaluating negative events: 1) negative events are unacceptable; 2) negative events occur, but if we persist these events will pass; and 3) evaluation is based on context and if you change the context you change the evaluation.

The third perspective demonstrates a more mindful approach and shares an understanding of stress similar to transactional theory (Lazarus & Folkman, 1984). Under mindfulness and transactional theory the stress that results from a stressor is based on the amount of stress assigned to the stressor, meaning that the amount of stress is not necessarily inherent to the stressor. However, mindfulness does not conceptualize stress as a conflict between demands and resources, but rather as an experience of being. Mindfulness also allows for a person to acknowledge that a negative event can also be evaluated as a positive event when evaluated from an alternative perspective. For example, “my medication will cause me discomfort but will help me live a longer healthier life.” Discomfort in this example is a negative health outcome related to medication adherence, but is viewed as acceptable in order to achieve the desired health outcome of a longer healthier life. Mindfulness is incorporated into a number of interventions that include: mindfulness-based cognitive therapy (Teasdale et al., 2000; Segal, Williams & Teasdale, 2002), dialectic behavioral therapy (Linehan, Heard & Armstrong, 1993), and acceptance and commitment therapy (Hayes & Shenk, 2004). General benefits of mindfulness programs show reduced symptom distress and depression, increased motivation, more consistent adherence, and behavioral and affective regulation (Britton et al., 2010; Delgado et al., 2010; Leahey, Crowther & Irwin, 2008).

One of the most successful implementations of mindfulness training in the field of health is mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1990). MBSR is a group intervention that incorporates meditation and yoga to relieve anxiety, pain, and stress (Kabat-Zinn, 2003). Witek-Janusek and colleagues (2008) examined the use of MBSR among 66 women diagnosed with breast cancer and 30 age-matched healthy women. Breast cancer participants were randomly distributed into the MBSR group (38) or the non-MBSR group (28). The comparison

group of healthy women did not participate in MBSR. Results at the one month assessment showed significant increase in natural killer cell activity (NKCA) among MBSR participants and a return to cytokine (IL-4, IL-6, IL-10) and cortisol levels similar to the healthy comparison group. The non-MBSR group continued to show a decrease in NKCA and less stable cytokine and cortisol levels. In addition, quality of life and effective coping were significantly higher for women in the MBSR group compared to the non-MBSR group. In a longitudinal study of fibromyalgia patients, Grossman and colleagues (2007) found MBSR was significantly associated with decreased pain, anxiety, and depression and improved pain coping. Results were significant at a 3-year follow-up, which suggests MBSR has potentially sustained effects.

In our current study, we are interested in whether mindfulness skills of observing and describing are associated with self-efficacy for managing HIV/AIDS. To date, the current study is the only study which investigates the association of the mindfulness skills observing and describing with self-efficacy within the HIV/AIDS community. These mindfulness skills are necessary for mindful attention and may act as a filter through which self-efficacy is constructed (Langer, 2002). For example, alteration of these skills may change attention or evaluation of the stressors associated with HIV/AIDS and may improve belief in the ability to self-manage (Tams, 2008). Past literature demonstrates mindfulness can be manipulated (e.g. MBSR) and suggests increases in mindfulness correlate with increases in self-efficacy thereby increasing self-management (Britton et al., 2010; Iskender, 2009; Langer, 2002). As a result, mindfulness based intervention is one possible method of improving self-efficacy in a self-management program.

Optimism

Optimism is another variable which may be associated with self-efficacy for managing a

chronic disease. Optimism is a combination of cognitive, motivational, and emotional factors which influence expectations of positive future outcomes (Carver & Scheier, 1990).

Dispositional optimism, of interest in the current study, is a broad form of optimism which is conceptualized as the general belief that positive outcomes will be more abundant in the future than negative ones (Scheier, & Carver, 1985). Optimists are more likely to take direct action to solve problems, plan for difficulties, accept the realities of a difficult situation, and optimize the outcome of a bad situation (Scheier & Carver, 1992). However, excessive optimism may lead to a “sit and wait” approach in some instances and the direct approach utilized by some optimists may be maladaptive in situations where such an approach is not possible (Scheier & Carver, 1993). While dispositional optimism and self-efficacy may seem very similar, these concepts differ in sense of personal agency or the pre-reflective awareness of the control over one’s own actions. Dispositional optimism is concerned with general outcome expectations while self-efficacy is focused on personal action contingent outcome expectancies (Scheier, & Carver, 1993).

In general, optimism is linked to numerous positive physiological health outcomes including: immune functioning (Brenes, Rapp, Rejeski & Miller, 2002), cardiovascular health and blood pressure (Raikkonen, Matthews, Flory & Owens, 1999), and mortality, pain, and physical functioning (Rasmussen, Scheier, & Greenhouse, 2009). A lack of optimism is associated with poorer psychological health outcomes such as depression and hostility (Bernes, Rapp, Rejeski & Miller, 2002; Conway, Magai, Springer & Jones, 2008). Despite previous research on the association between optimism and health, mechanisms by which the association is facilitated are not completely understood (Cruess, Antoni, Kilbourn, Ironson, Klimas & Fletcher, 2000; Segerstrom, 2005; Stanley, Novy, Hopko, Beck, Averill & Swann, 2002). The

health belief model (HBM) indicates health-related action is determined by perceived risk and benefits and the belief that a health-related action will be successful (Glanz, Lewis & Rimer, 1997; Rosenstock, 1974). Since dispositional optimism involves the expectation of positive outcomes an optimist may appraise the risk of a health issue and view prescribed health-related activities as more beneficial.

Within the HIV/AIDS community optimism has been linked to positive immune response (Ironson et al., 2005), decreased mortality (Blomkvist et al., 1994), and active coping strategies (Taylor et al., 1992). Milam and colleagues (2004) investigated the association between dispositional optimism, CD4 count, and viral load among people living with HIV and found moderate levels of dispositional optimism were associated with higher CD4 counts. Results also indicate for those on antiretroviral treatment moderate levels of pessimism in the short-term may slow progression of the virus. These results suggest, extremely high or low dispositional optimism may enhance progression of the virus when difficulties in treatment arise. These findings indicate an important caveat of dispositional optimism; either extreme may have negative implications. As antiretroviral treatment advances, HIV has transitioned from a terminal illness to a chronic illness. These advances, although positive, lead some researchers to suggest that extreme optimism surrounding such medical advancements may lead to decreases in perceived risk of HIV (Lert, 2000). For example, one opinion poll among the general population of France reported that a diminished perception of risk regarding the spread of HIV is associated with improved treatment and widespread optimism (European Commission, 1999).

Currently, little research, investigates the association between dispositional optimism and self-efficacy for managing a chronic disease, though several studies do indicate a correlation between optimism and self-efficacy (Schweizer, 2000; Stanley, Novy, Hopko, Beck, Averill &

Swann, 2002). Most recently Posadzki and colleagues (2010) found a correlation between optimism, self-efficacy, and health behaviors among 455 college students. Results indicated that as self-efficacy and optimism increased, the number of healthy behaviors a person exhibits also increased. As a result, previous research and theory do suggest a possible link between dispositional optimism and self-efficacy for managing a chronic disease. Given this possible link and that a moderate level of optimism may be most advantageous, another important consideration is whether or not optimism can be manipulated for the purposes of intervention. Seligman's learned optimism theory (1991) posits that just as people can learn to be helpless, people can also learn to be optimistic and this optimism can be cultivated. Indeed, Mann (2001) found that among a HIV/AIDS sample, writing about the future in a positive manner increased the optimism of participants with low optimism. This finding illustrates the potential implementation of an optimism intervention in a self-efficacy based self-management program for people living with HIV/AIDS.

Personal Meaning

Finally, personal meaning is a topic frequently discussed in philosophy and religion, but meaning may also be important for self-efficacy. For psychologists, regarding life as having meaning (life regard) can be thought of as a broad sense of purpose and fulfillment in life (Ryff & Singer, 1998). Battista and Almond (1973) theorized a positive life regard involves the creation of a framework and a sense of fulfillment. A framework is established when a person develops and follows a life philosophy. A sense of fulfillment is evoked when life-goals are achieved in terms of the established framework. For example, someone with a strong work ethic (framework) may find more fulfillment working diligently to achieve a life-goal rather than

simply being handed the end result. A framework may also take time to develop which may explain why older people tend to experience more meaning in life than younger people (Van Ranst, & Marcoen, 1997). However, fulfillment may be a short lived state and require continuous pursuit of goals to maintain fulfillment over a lifetime (Baumeister & Vohs, 2002).

A positive perception of a one's life as meaningful may result in positive goal appraisal and buffer against stressors (King, Hicks, Krull & Del Gaiso, 2006). For example, those who find positive meaning recover more quickly from negative life events and function more positively (Davis, Wortman, Lehman & Silver, 2000; Halama, 2003). In general, a positive life regard predicts higher levels of happiness and self-esteem and fewer symptoms among psychotherapy patient populations (Debats, 1996). Positive life regard is also associated with positive health outcomes and coping among health populations. Among people who have experienced congestive heart failure a positive life regard is associated with positive coping strategies (e.g. acceptance and positive reframing) and higher physical and mental quality of life (Park, Malone, Suresh, Bliss, & Rosen, 2007). A recent study of breast cancer survivors indicates life regard is associated with increases in positive active coping and reductions in negative passive coping (Jim, Richardson, Golden-Kreutz & Andersen, 2006). Life regard may even be a factor in mortality. Over the course of one longitudinal study among 1,361 older adults, Krause (2009) found people who regarded life as meaningful were less likely to die prior to the follow-up period, possibly due to more positive health choices or coping strategies.

More pertinent to the current study is the way in which people with HIV/AIDS regard meaning. Fife (2005) investigated the association between meaning, self, and adaptation/mental health outcomes among 76 people diagnosed with cancer and 130 diagnosed with HIV/AIDS. Individual differences indicated people with HIV are more likely to exhibit a negative approach

and attach negative meaning (e.g. stigma) to disease than those with cancer. In addition, meaning constructed among those with HIV/AIDS is associated with negative self-perception and negative coping/adaptation to life with HIV/AIDS. These findings indicate a possible link between self-belief and action within the context of personal meaning. Further support for this link is seen in treatment for depression in which re-establishing personal meaning (positive life regard) is thought to be an important component for self-management and may direct planning and action, goal setting, and improved functioning (Bachman, Swenson, Reardon & Miller, 2006). While, Baumeister and Vohs (2002) note that the absence of self-efficacy may halt the pursuit of goals to obtain meaning, a regard for one's life as meaningful may also be necessary for self-efficacy to even exist. Since self-efficacy and personal meaning seem to be theoretically intertwined, to benefit self-efficacy the degree to which life is regard as meaningful must be malleable. Framework takes time to develop and is likely subject to manipulation through experience and learning. Likewise, fulfillment is based on evaluations of goal attainment, and evaluations can be altered (Delgado et al., 2010). Personal meaning is derived from framework and fulfillment and is conceivably subject to change through manipulation and learning as well. In practice, meaning-centered psychotherapeutic interventions do show an alteration of personal meaning (Breitbart & Heller, 2003; Breitbart et al., 2010). This finding suggests incorporating a personal meaning intervention into a self-efficacy based self-management program is a viable possibility.

Theory

When discussing self-efficacy one must note Bandura's (1986) social cognitive theory which is the basis of self-efficacy theory must be considered. Social cognitive theory posits that

personal, behavioral, and environmental factors interact to determine motivation and behavior (Crothers, Hughes & Morine, 2008). Motivation and behavior, which lead to goal attainment, are directed by several processes of goal realization which include: self-observation, self-evaluation, self-reaction, and self-efficacy (Redmon, 2010). Self-observation involves an awareness and attention to oneself similar to mindful attention which is a product of observing and describing (Langer, 2002). In this capacity self-observation through observing and describing may help identify distorted cognitions and highlight positive change without emotional attachment. Self-reaction is determined by perception of an outcome and influences motivation to attain a more simple or complex goal. Since dispositional optimism increases positive perceptions, outcomes are more likely to be perceived as favorable. Self-evaluation involves a contrast between current progress and a desired goal (e.g. medication adherence). Personal meaning works in much the same way because personal meaning is derived from the goal of living by a framework, by which progress is measured in fulfillment. Redmon (2010) theorized that these processes are interrelated, so the improvement of observing and describing (self-observation), dispositional optimism (self-reaction) or life regard (self-evaluation) may result in the improvement of self-efficacy and ultimately the attainment of a goal, such as self-management.

The Current Study

As medical care increasingly focuses on self-management people with HIV/AIDS face numerous hurdles to effective treatment. While improving patient self-efficacy is an important self-management component, correlates of self-efficacy which may be useful for the effectiveness and efficiency of self-efficacy training are not entirely understood. As a result, the purpose of the current study is to investigate the extent to which observing, describing,

dispositional optimism and personal meaning (all constructs amenable to clinical manipulation) are associated with self-efficacy for managing a chronic disease. I make several predictions regarding this relationship: 1) Higher amounts of observing and describing are positively associated with higher levels of self-efficacy for managing a chronic disease; 2) Higher amounts of dispositional optimism are positively associated with higher levels of self-efficacy for managing a chronic disease; 3) Higher amounts of personal meaning are positively associated with higher levels of self-efficacy for managing a chronic disease; and 4) The overall model accounts for a significant proportion of the variance in self-efficacy for managing a chronic disease.

Methods

Participants

Participants were recruited between 2006 and 2007 to take part in an intervention-based research project, which taught forgiveness as a coping strategy within the HIV community. All participants were required to meet several inclusion criteria to participate in the study: HIV-positive status, above the age of 18, and fluent in English. Our convenience sample was recruited through fliers and from several HIV/AIDS service organizations in the Dallas/Ft. Worth, Texas area. Participants represent a diverse and gender balanced sample ($N = 57$, African American 63%, male 51%) (see Table 1). We used a cross-sectional correlational design for our study and baseline data from questionnaires completed prior to intervention.

Table 1

Demographic Variables

<i>Gender</i>			
Male	<i>n</i> =29 (51%)	Female	<i>n</i> =28 (49%)
<i>Ethnicity</i>			
African American		<i>n</i> =36 (63%)	
European American		<i>n</i> =18 (32%)	
Other		<i>n</i> =3 (5%)	
<i>Sexual Orientation</i>			
Gay/Lesbian		<i>n</i> =20 (35%)	
Heterosexual		<i>n</i> =33 (58%)	
Bisexual		<i>n</i> =4 (7%)	
<i>Age in Years</i>			
<i>Mean</i> = 49		<i>SD</i> = 7.2	<i>Range</i> = 32-66
<i>Years of Education</i>			
<i>Mean</i> = 13		<i>SD</i> = 2.8	<i>Range</i> = 7-23

Procedure

Approval was obtained from the Institutional Review Board for this study and informed consent was obtained from each participant prior to participation in the study. Participants then completed baseline measures at a local community center via a computer based question development software (QDS) package loaded onto laptop computers. Computer-assisted surveys are an efficient successful method to collect and avoid error (e.g. missing data) particularly in sensitive populations (Lucia, Herrmann & Killias, 2007; Wood et al., 2006). Trained researchers were present to assist and administer the survey verbally when necessary. Participants received a \$15 incentive.

Measures

Participants completed questionnaires which collected information on demographic

characteristics (age, gender), HIV symptomatology, most recent CD4 T cell count and viral load. In addition, participants completed several measures which assess our variables of interest.

Self-efficacy was assessed using the Self-efficacy for Managing Chronic Disease instrument (SEMCD; Lorig, Sobel, Ritter, Laurent & Hobbs, 2001), a 6-item measure of self-efficacy for managing chronic disease across several domains: symptom control, role function, emotional functioning, and communication with physicians. Items are scored on a 10 point Likert-type scale (1 = *not at all confident*; 10 = *totally confident*). When two consecutive numbers on an item are circled the lower number is used. If more than two items are not scored the scale is not scored. Designated items are totaled and the scale score is the mean of the six designated items. Examples of items from this measure include, “How confident are you that you can keep any other symptoms or health problems you have from interfering with the things you want to do” and “How confident are you that you can do different tasks and activities needed to manage your health condition so as to reduce your need to see a doctor?” Higher scores on the SEMCD indicate a greater degree of self-efficacy for managing chronic disease. The published internal consistency (Cronbach’s alpha) for the measure is .91. The SEMCD demonstrates concurrent validity with physical and mental component summary scores on the SF-36, and convergent validity was demonstrated through correlations between self-efficacy and number of health behaviors and health status (Lorig et al., 2001; Twitchell, 2007).

The mindfulness skills of observing and describing were assessed using the Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith & Allen, 2004), a 39-item assessment of 4 mindfulness skills: observing, describing, accepting without judgment, and acting with awareness. Items are scored on a 5 point Likert-type scale (1 = *never true/very rarely*, 5 = *almost always true/always*). Designated items are reverse scored and designated items are totaled to

achieve skill scores. The observation skill involves attention to various internal and external stimuli. An example item for this skill is, “I pay attention to sensations, such as the wind in my hair or the sun on my face.” The describing skill conveys awareness via labeling of observed stimuli in a nonjudgmental way. An example item for this skill is, “I’m good at finding words to describe my feelings.” The accepting without judgment skill involves accepting the reality a stimuli without judgment, avoidance, or the desire to change the stimuli. An example item from this skill is, “I tell myself that I shouldn’t be thinking the way I ‘m thinking.” The acting with awareness skill involves being fully attentive and engaged. An example item from this skill is, “I get completely absorbed in what I am doing, so that my attention is focused on it.” Higher scores on a KIMS skill indicate a greater degree of proficiency with the designated mindfulness skill. The published internal consistencies (Cronbach’s alpha) for the skills are .91 (observing), .84 (describing), .87 (accepting without judgment), and .76 (acting with awareness). The KIMS demonstrates concurrent validity through positive correlations with the Mindfulness Attention Awareness Scale (Brown & Ryan, 2003). Observing and describing are used in data analyses in this study because these skills, and not accepting without judgment or acting with awareness, demonstrate mindful attention and are akin to components of the construct self-observation (Langer, 2002; Redmon, 2010).

Dispositional optimism was assessed using the Life Orientation Test – Revised instrument (LOT-R; Scheier, Carver & Bridges, 1994), a 10-item measure of dispositional optimism. Items are scored on a 5 point Likert-type scale (0 = *strongly disagree*, 4 = *strongly agree*). Designated items are reverse scored and items are totaled to achieve the scale score. Examples of items from this measure include, “In uncertain times, I usually expect the best” and “Overall, I expect more good things to happen to me than bad.” Higher scores on the LOT-R

indicate a greater degree of dispositional optimism. The published internal consistency (Cronbach's alpha) for the measure is .78. The LOT-R demonstrates concurrent validity through correlations with the Self-mastery Scale, Rosenberg Self-esteem Scale, trait anxiety assessed by the State-Trait Anxiety Inventory, and neuroticism assessed by the Eysenck Personality Questionnaire and Gilford-Zimmerman Temperament Survey (Scheier, Carver & Bridges, 1994).

Life regard was assessed using the Life Regard Index – Revised (LRI-R; Debats, 1998), a 28-item measure of positive life regard consisting of 2 subscales, framework and fulfillment, and a full index measure of personal meaning (Mascaro, Rosen & Morey, 2004). Framework describes a system or philosophy one lives by, while fulfillment results from the achievement of life-goals related to an established framework. Items are scored on a 3 point Likert-type scale (1 = *do not agree*, 2 = *no opinion*, 3 = *agree*). Designated items are reverse scored and items are totaled to achieve individual subscores and overall scale score. Examples of items from the framework and fulfillment scales include, “There are things I devote all my life’s energy to” and “I feel that I am living fully” respectively. Higher scores on the LRI-R indicate a greater utility of the individual subscales or greater overall personal meaning. The published internal consistencies (Cronbach's alpha) are .75-.84 (framework), .84-.87 (fulfillment), and .92 (personal meaning) (Harris & Standard, 2001; Debats, 1993). The LRI-R demonstrates concurrent validity through correlations with measures of hopelessness, spiritual well-being, and additional measures of personal meaning (Harris & Standard, 2001). Personal meaning is used in data analyses in this study due to limitations of statistical power as a result of our sample size. Personal meaning incorporates both fulfillment and personal meaning which is comparable to the construct self-evaluation (Redmon, 2010).

Data Analyses

We conducted an a priori power analysis via the statistical package G*Power (Faul & Erdfelder, 1992) to determine the sample size necessary to achieve sufficient power, .80, with an effect size of .35 for a design utilizing four independent variables. Several previous studies of self-efficacy for various self-management skills within the HIV/AIDS community suggest an expected effect size between .22 and .48 (Bedell, 2008; Cha, Erlen & Kim, 2004; Lorig et al., 2001). Our power analysis found a sample size of 46 to be sufficient to test our hypotheses. Data were examined to address missing values and outliers appropriately. However, analyses found neither missing data nor outliers among our variables.

All variables were determined to be approximately normally distributed. A univariate analysis (means, standard deviations, ranges, frequencies, and percentages) was conducted to examine demographic variables (e.g. age and gender) and our variables of interest (self-efficacy for managing a chronic disease, observing, describing, dispositional optimism and personal meaning) in order to better understand our sample. In addition, we calculated Cronbach alpha coefficients for our variables of interest. Next, bivariate analyses, including a correlation analysis and *t*-tests, were conducted to assess relationships among several demographic variables (age, gender, ethnicity, years of education, and sexual orientation) in order to better describe our sample. Lastly, a hierarchical linear regression analysis was conducted to test our hypotheses and our model. Self-efficacy for managing chronic disease was entered into the model as the dependent variable. Age and gender variables were simultaneously entered into the first block of the regression to control for these variables and the independent variables of interest (observing, describing, dispositional optimism, and personal meaning) were simultaneously entered into the second block of the regression. Age and gender are controlled for in the current experiment since

differences in age and gender are associated with differences in self-efficacy (Brown, Jara & Braxton, 2005; Buchanan & Selmon, 2008; Klassen & Chiu, 2010; West & Thorn, 2001).

Tolerance and VIF analyses were conducted to assess multicollinearity.

Results

Univariate Statistics

A univariate analysis was conducted to examine our variables of interest: self-efficacy for managing a chronic disease, observing, describing, dispositional optimism, and personal meaning (Table 2).

Table 2

Univariate Statistics

Measure	Mean	SD	Possible Range	Actual Range	Calc α
SEMCD	6.4	2.5	1-10	1-10	0.94
Observing	37.0	8.9	11-55	11-51	0.89
Describing	24.3	5.4	8-40	8-37	0.72
Dis. Optimism	9.9	5.5	0-24	0-24	0.75
Personal Meaning	64.9	13.6	28-84	34-84	0.94

Bivariate Statistics

A bivariate correlation analysis was conducted to assess relationships among variables in order to better describe our sample (see Table 3). A *t*-test on gender in our sample determined females report significantly more personal meaning than males, $t(55) = -2.21, p < .05$. A *t*-test on ethnicity in our sample determined African Americans report significantly more self-efficacy for managing chronic disease than European Americans, $t(52) = 2.12, p < .05$. A *t*-test on sexual orientation in our sample determined gays/lesbians reported significantly more dispositional

optimism than heterosexuals, $t(51) = 2.34, p < .05$, but gays/lesbians reported significantly less personal meaning than heterosexuals, $t(51) = -2.59, p < .05$ (see Table 4).

Table 3

Correlation Matrix

	1	2	3	4	5	6
1. Age	-					
2. Gender	-0.05	-				
3. Observing	0.15	0.11	-			
4. Describing	0.06	0.10	0.83**	-		
5. Dis. Optimism	0.03	0.29*	-0.31*	0.23	-	
6. Personal Meaning	-0.12	-0.15	-0.26**	-0.26*	-0.78**	-
7. Self-efficacy	0.01	0.23	0.25	0.38**	0.50**	-0.52**

Note: * = $p < .05$; ** = $p < .01$

Table 4

t Statistics

Variable	Groups	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>
Personal Meaning	Females	28	68.8	12.9	-2.21*	55
	Males	29	61.0	13.4		
Self-efficacy for Managing Chronic Disease	African Americans	36	40.8	15.1	2.12*	52
	European Americans	18	31.7	14.3		
Dispositional Optimism	Gays/Lesbians	20	12.3	6.1	2.34*	51
	Heterosexuals	33	8.8	4.8		
Personal Meaning	Gays/Lesbians	20	58.9	8.8	-2.59*	51
	Heterosexuals	33	68.4	12.4		

Note: * = $p < .05$; ** = $p < .01$

Multivariate Statistics

A hierarchical linear regression analysis was conducted to test our hypotheses and our model. Self-efficacy for managing chronic disease was entered into the model as the dependent

variable. We simultaneously entered age and gender variables into the first block of the regression to control for these variables. We simultaneously entered the independent variables of interest (observing, describing, life regard, and life orientation) into the second block of the regression. Our model was significant, $F(6, 49) = 5.82, p < .01$, and explained 39% of the total variance (adjusted $R^2 = .39$) in self-efficacy. Observing ($\beta = -.43, t = -2.12, p < .05$), describing and ($\beta = .60, t = 3.09, p < .01$) dispositional optimism ($\beta = -.36, t = -2.00, p < .01$) were significantly associated with self-efficacy for managing chronic disease (see Table 5). Measures of tolerance and VIF were determined to be within acceptable ranges among both demographic and predictor variables (Pedhazur, 1997).

Table 5

Hierarchical Linear Regression

Dependent Variable: Self-efficacy for Managing Chronic Disease

Block 1	β	t	p	Tol	VIF
Age	0.02	0.17	0.88	0.99	1
Gender	0.13	0.99	0.32	0.99	1
$F(2, 54) = .50; R^2 = .02$					
Block 2	β	t	p	Tol	VIF
Observing	-0.44	-2.15*	0.03	0.29	3.40
Describing	0.60	3.07**	0.00	0.31	3.24
Dis. Optimism	-0.34	-1.90	0.06	0.37	2.69
Personal Meaning	0.23	1.29	0.20	0.37	2.73
$F(6, 50) = 5.80^{**}; \text{adjusted } R^2 = .39$					

Note: * = $p < .05$; ** = $p < .01$

Discussion

This study investigated the extent to which mindfulness (observing, describing), life regard (personal meaning), and life orientation (dispositional optimism) are associated with self-efficacy for managing a chronic disease. The association between self-efficacy and the

mindfulness skill observing was significant, but the two variables were inversely related ($\beta = -0.44, p < .05$). This finding is in contrast to previous research which suggests mindful attention, which includes observation, is generally associated with improved health related skills (Gonzalez et al., 2009; Jermann et al., 2009). One explanation for this outcome may be that when mindful observation is high, an individual is aware of external and internal stimuli but may be too emotionally detached from the stimuli to be concerned. Lack of emotional attachment may be associated with poor self-efficacy because lack of emotional attachment may hinder the development of focus or goal setting for which an individual may be efficacious (Stein, Hernandez & Trabasso, 2008). For example, without a felt sense of distress attached to a negative stimulus an individual is unlikely to focus on or develop a goal to deal with the felt distress, and as a result cannot be efficacious about that goal. Furthermore, being too low in mindful observation may lead to feelings of being overwhelmed (Gonzalez et al., 2009), thereby increasing negative affect thus reducing self-efficacy. Therefore, a balanced approach to mindful observation in which an individual is attached without being overwhelmed may be most beneficial in order to adequately identify stimuli. Describing was significantly positively associated with self-efficacy, which suggests the importance of the ability to conceptualize and communicate experiences ($\beta = -0.60, p < .01$). Those who are able to more mindfully describe an experience may do so without emotional attachment, leading to a more constructive description of internal and external stimuli. A constructive description may help identify the most realistic and beneficial approach to a situation, thus allowing self-efficacy to be accessed most efficiently. This finding is consistent with previous research that indicates describing experiences in a mindful way leads to more open, creative, and flexible processing (Burgoon, Berger, & Waldron, 2000), which in turn increases the likelihood of self-efficacious problem solving (Dreer, Dollard

& Ronan, 2004). Although dispositional optimism was not found to be a predictor of self-efficacy for managing chronic disease ($\beta = -0.34, p = .06$), the relationship was trending towards significance and the relationship appears to be negative. One explanation for this finding may be that those who are overly optimistic may adopt a “sit and wait” approach as Scheier and Carver (1993) suggest. In this instance a person does not require self-efficacy for personal ability to manage HIV/AIDS because they likely believe that everything will work out in the end. In addition, lack of a statistical significance may be a result of using a measure of dispositional optimism versus optimism specific to HIV/AIDS. Optimism specific to HIV/AIDS treatment may be more precise when investigating self-efficacy for self-management behaviors (Valdiserri, 2004). A small sample size is also a possible explanation for a trend towards, but lack of, significance. Personal meaning was also not found to be statistically significant as the literature suggests (Taylor et al., 2000). One explanation for lack of significance may be that while personal meaning may motivate action (Elliot, 2006), personal meaning does not necessitate self-efficacy. For example, managing a chronic disease may be motivated by a desire to extend life in order to spend more time with beloved family members, something which may be personally meaningful. However, simply having a motivator that is personally meaningful does not necessarily lead to confidence in the ability to manage the chronic disease. A scenario in which an individual who is motivated by personal meaning to seek out knowledge and experience, which facilitates the development of self-efficacy (Bandura, 1997), is just as probable as a scenario in which an individual is motivated to spending time taking part in what is personally meaningful while forgoing the pursuit of knowledge and experience.

Findings support our overall model which explains 39% of the total variance in self-efficacy, and mindfulness skills observing and describing were found to be associated with self-

efficacy for managing chronic disease. However, several factors may limit our findings. First, our study utilized a cross-sectional correlational design, which means that causal relationships between our variables could not be inferred. Next, our sample was a convenience sample, recruited through fliers and several HIV/AIDS service organizations in the Dallas/Ft. Worth, Texas area. A convenience sample composed of people with HIV/AIDS from one geographic location limits the generalizability of our findings, and also may not represent individuals who do not use HIV/AIDS service organizations. However, Texas does rank 4th highest in prevalence rates in the United States and the Dallas/Fort Worth area ranks 2nd highest in prevalence rates in Texas (CDC, 2008). Access to transportation and familiarity with HIV/AIDS service organizations may also be indicative of a HIV/AIDS sample population that is more adept at resource utilization. In addition, a larger sample size would have allowed for us to control for a greater number of demographic variables like race, ethnicity, income, etc. Furthermore, our study used the LOT-R to measure dispositional optimism. A measure of optimism specific to HIV/AIDS outcomes may be a more precise tool for measuring optimism among people with HIV/AIDS (Valdiserri, 2004).

As an increasing emphasis is placed on self-management for people with HIV/AIDS, self-efficacy for managing one's own care has become an important component of many self-management programs. Our study is the first to test the association between self-efficacy for managing chronic disease in combination with observing, describing, dispositional optimism and personal meaning within the HIV/AIDS community. Taking into account the significance and proportion of variance accounted for by our model, training or exercises which modify observing and describing may enhance self-management programs which include self-efficacy as a core component. Incorporating these mindfulness skills into self-efficacy based self-management

programs may greatly improve self-management, thus positively influencing psychological and physiological health outcomes that are essential to the health and wellbeing of people living with HIV/AIDS. Future research should investigate methods of manipulating observing and describing, and determine what proficiency in these skills is most beneficial for improved self-efficacy. In addition, future research should investigate whether an association exists between optimism more specific to HIV/AIDS and self-efficacy, since optimism specific to HIV/AIDS may have a greater likelihood of being associated with self-efficacy for managing chronic disease. Lastly, future research should compare samples from diverse locations/settings and control for additional demographic factors which may play a role in self-efficacy for managing HIV/AIDS.

REFERENCES

- Aljaseem, L., Peyrot, M., Wissow, L. & Rubin, R. (2001). The impact of barriers and self-efficacy on self-care behaviors in type 2 diabetes. *Diabetes Education*, 27, 393-404.
- Ammassari, A., Murri, R., Pezzotti, P., Trotta, M., Ravisio, L. & DeLionis, P. (2001). Self reported symptoms and medication side effects influence adherence to highly active antiretroviral therapy in persons with HIV infection. *Journal of Acquired Immune Deficiency Syndromes*, 28, 445-449.
- Bachman, J., Swenson, S., Reardon, E. & Miller, D. (2006). Patient self-management in the primary care treatment of depression. *Administration and Policy in Mental Health Services Research*, 33(1), 76-85.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman and Company.
- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-272.
- Barlow, J., Turner, A. & Wright, C. (2000). A randomized controlled study of the arthritis self-management program in the UK. *Health Education Research*, 15, 659-663.
- Battista, J., & Almond, R. (1973). The development of meaning in life. *Psychiatry*, 36, 409-427.
- Baumeister, R. & Vohs, K. (2002). The pursuit of meaningfulness in life. In C. Snyder & S. Lopez (Eds.), *Handbook of positive psychology* (pp. 608-617). New York, NY: Oxford University Press.
- Bear, R., Smith, G. & Allen, K. (2004). Assessment of mindfulness by self-report: The Kentucky Inventory of Mindfulness Skills. *Assessment*, 11(3), 191-206.
- Bedell, G. (2008). Balancing health, work, and daily life: Design and evaluation of a pilot intervention for persons with HIV/AIDS. *Work: Journal of Prevention, Assessment & Rehabilitation*, 31(2), 131-144.
- Bishop, S., Lau, M., Shapiro, S., Carlson, L., Anderson, N. & Carmody, J. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11(3), 230-241.
- Blomkvist, V., Theorell, T., Jonsson, H., Schulman, S., Berntorp, E., & Stieglendal, L. (1994). Psychosocial self-prognosis in relation to mortality and morbidity in hemophiliacs with HIV infection. *Psychotherapy and Psychosomatics*, 62, 185-192.

- Bodenheimer, T., Lorig, K., Holman, H. & Grumbach, K. (2002). Patient self-management of chronic disease in primary care. *Journal of the American Medical Association*, 288, 2469-2475.
- Bourbeau, J., Julien, M., Maltis, F., Rouleau, M., Beaupré, A., Bégin, R., Renzi, P., Nault, D., Borycki, E., Schwartzman, K., Singh, R. & Collet, J. (2003). Reduction of hospital utilization in patients with chronic obstructive pulmonary disease: A disease-specific self-management intervention. *Archives of Internal Medicine*, 163, 585-591.
- Bourbeau, J., Nault, D. & Dang-Tan, T. (2002). Self-management and behavior modification in COPD. *Patient Education and Counseling*, 52, 271-277.
- Brannon, L. & Feist, J. (2004). Using alcohol and other drugs. In L. Brannon & J. Feist (Eds.), *Health psychology: An introduction to behavior and health* (5th ed., pp. 400-402). Wadsworth/Thomson Learning: Belmont, CA.
- Breitbart, W., & Heller, K. S. (2003). Refraining hope: Meaning-centered care for patients near the end of life. *Journal of Palliative Medicine*, 6(6), 979-988.
- Breitbart, W., Rosenfeld, B., Gibson, C., Pessin, H., Poppito, S., Nelson, C., et al. (2010). Meaning-centered group psychotherapy for patients with advanced cancer: A pilot randomized controlled trial. *Psycho-Oncology*, 19(1), 21-28.
- Brekke, M., Hjortdahl, P. & Kevin, T. (2003). Changes in self-efficacy and health status over 5 years: A longitudinal observational study of 360 patients with rheumatoid arthritis. *Arthritis and Rheumatism*, 49, 342-348.
- Brenes, G., Rapp, S., Rejeski, W. & Miller, M. (2002). Do optimism and pessimism predict physical functioning? *Journal of Behavioral Medicine*, 25(3), 219-231.
- Britton, W., Bootzin, R., Cousins, J., Hasler, B., Peck, T. & Shapiro, S. (2010). The contribution of mindfulness practice to a multicomponent behavioral sleep intervention following substance abuse treatment in adolescents: A treatment-development study. *Substance Abuse*, 31(2), 86-97.
- Brown, U., Jara, U. & Braxton, E. (2005). College students and AIDS awareness: The effects of condom perception and self-efficacy. *College Student Journal*, 39(1), 178-191.
- Buchanan, T. & Selmon, N. (2008). Race and gender differences in self-efficacy: Assessing the role of gender role attitudes and family background. *Sex Roles*, 58(11-12), 822-836.
- Burgoon, J., Berger, C. & Waldron, V. (2000). Mindfulness and interpersonal communication. *Journal of Social Issues*, 56, 105-127.
- Carver, C. S. & Scheier, M. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review*, 97, 19 -35.

- Center for Disease Control (2010). *CDC HIV/AIDS facts: HIV/AIDS in the United States*. Retrieved from <http://www.cdc.gov/hiv/resources/factsheets/us.htm>
- Center for Disease Control (2009). *CDC HIV/AIDS facts: HIV transmission rates in the United States*. Retrieved from <http://www.cdc.gov/hiv/topics/surveillance/resources/factsheets/transmission.htm>
- Center for Disease Control (2008). Cases of HIV and AIDS in the United States and dependent areas, 2007. *HIV/AIDS Surveillance Report*, 20.
- Cha, E., Erlen, J. & Kim, Y. (2004) Psychometric evaluation of the HIV self-efficacy scale (HIV SES). *Annals of Behavioral Medicine*, 27(Suppl.), S148.
- Clark, N. & Dodge, J. (1999) Exploring self-efficacy as a predictor of disease management. *Health Education and Behavior*, 26, 72-89.
- Conway, F., Magai, C., Springer, C., & Jones, S. (2008). Optimism and pessimism as predictors of physical and psychological health among grandmothers raising their grandchildren. *Journal of Research in Personality*, 42(5), 1352-1357.
- Crothers, L., Hughes, T. & Morine, K. (2008). *Theory and cases in school-based consultation: A resource for school psychologists, school counselors, special educators, and other mental health professionals*. New York: Routledge Taylor & Francis Group.
- Cruess, S., Antoni, M., Kilbourn, K., Ironson, G., Klimas, N. & Fletcher, M. (2000). Optimism, distress, and immunologic status in HIV-infected gay men following Hurricane Andrew. *International Journal of Behavioral Medicine*, 7(2), 160-182.
- Davis, C., Wortman, C., Lehman, D. & Silver, R. (2000). Searching for meaning in loss: Are clinical assumptions correct? *Death Studies*, 24, 497-540.
- Debats, D. L. (1998). Measurement of personal meaning: The psychometric properties of The Life Regard Index. In P. T. P. Wong and P. S. Fry (Eds.), *The human quest for meaning: A handbook of psychological research and clinical applications* (pp 237-260). Mahwah, NJ: Lawrence Erlbaum.
- Debats, D. (1996). Meaning in life: Clinical relevance and predictive power. *British Journal of Clinical Psychology*, 35(4), 503-516.
- Delgado, L., Guerra, P., Perakakis, P., Vera, M., del Paso, G. & Vila, J. (2010). Treating chronic worry: Psychological and physiological effects of a training programme based on mindfulness. *Behaviour Research and Therapy*, 48(9), 873-882.
- Department of Health (2001). *The expert patient: A new approach to chronic disease management in the 21st century*. London: Stationary Office.
- Donaldson, L. (2004). *Expert patients program*. Retrieved from <http://www.publications.doh.gov.uk/cmo/progress/expertpatient/index.htm>

- Donaldson, L. (2003). Expert patients usher in a new era of opportunity for the NHS. *British Medical Journal*, *326*, 12279-1280.
- Elliot, A. (2006). The hierarchical model of approach-avoidance motivation. *Motivation and Emotion*, *30*, 111-116.
- Erlen, J. A., Sereika, S. M., Cook, R. L. & Hunt, S. C. (2002). Adherence to antiretroviral therapy among women with HIV infection. *Journal of Gynecological and Neonatal Nursing*, *31*(4), 470-477.
- European Commission (1999). Public opinion in the European Union: March report. *Eurobarometer*, *50*.
- Faul, F., & Erdfelder, E. (1992). *GPOWER: A priori, post-hoc, and compromise power analyses for MS-DOS*. Bonn, Germany: Bonn University, Department of Psychology.
- Fife, B. (2005). The role of constructed meaning in adaptation to the onset of life-threatening illness. *Social Science & Medicine*, *61*, 2132-2143.
- Fogarty, L., Roter, D., Larson, S., Burke, J., Gillespie, J. & Levy, R. (2002). Patient adherence to HIV medication regimens: A review of published and abstract reports. *Patient Education and Counseling*, *46*(2), 93-108.
- Fresco, D., Moore, M., Walt, L. & Craighead, L. (2009). Self-administered optimism training: Mechanisms of change in a minimally supervised psychoeducational intervention. *Journal of Cognitive Psychotherapy*, *23*(4), 350-367.
- Golin, C., Liu, H., Hays, R., Miller, L. & Beck, C. (2002). A prospective study of predictors of adherence to combination antiretroviral medication. *Journal of General Internal Medicine*, *17*(10), 756-765.
- Gifford, A., Bormann, J., Shively, M., Wright, B., Richman, D. & Bozzette, S. (2000). Predictors of self-report and adherence and plasma HIV concentrations in patients on multidrug antiretroviral regimens. *Journal of Acquired Immune Deficiency Syndromes*, *23*, 386-395.
- Glanz, K., Lewis, F. & Rimer, B.K. (1997). *Theory at a glance: A guide for health promotion practice*. Washington, DC: National Institute of Health.
- Gonzalez, A., Vujanovic, A., Johnson, K., Leyro, T. & Zvolensky, M. (2009). The role of mindful attention in regard to the relation between negative affect reduction outcome expectancies and emotional vulnerability among adult cigarette smokers. *Cognitive Therapy and Research*, *33*(6), 645-656.
- Grossman, P., Tiefenthaler-Gilmer, U., Raysz, A., & Kesper, U. (2007). Mindfulness training as an intervention for fibromyalgia: Evidence of post-intervention and 3-year follow-up benefits in well-being. *Psychotherapy and Psychosomatics*, *76*(4), 226-233.

- Gruresik, N., Estabrooks, P. & Frahm-Templar, M. (2003). Exercise-related goals and self-efficacy as correlates of aquatic exercise in individuals with arthritis. *Arthritis and Rheumatism*, 3, 306-313.
- Halama, P. (2003). Meaning and hope: Two factors of positive psychological functioning in late adulthood. *Studia Psychologica*, 45(2), 103-110.
- Harris, A., & Standard, S. (2001). Psychometric properties of the Life Regard Index –revised: A validation study of a measure of personal meaning. *Psychological Reports*, 89(3), 759-773.
- Hayes, S., & Shenk, C. (2004). Operationalizing mindfulness without unnecessary attachments. *Clinical Psychology: Science and Practice*, 11, 249-254.
- Ironson, G., Balbin, E., Stuetzle, R., Fletcher, M., O’Cleirigh, C., Laurenceau, J., et al. (2005). Dispositional optimism and the mechanisms by which it predicts slower disease progression in HIV: Proactive behavior, avoidant coping, and depression. *International Journal of Behavioral Medicine*, 12, 86-97.
- Iskender, M. (2009). The relationship between self-compassion, self-efficacy, and control belief about learning in Turkish university students. *Social Behavior and Personality*, 37(5), 711-720.
- Jermann, F., Billieux, J., Larøi, F., d’Argembeau, A., Bondolfi, G., Zermatten, A., & Van der Linden, M. (2009). Mindful Attention Awareness Scale (MAAS): Psychometric properties of the French translation and exploration of its relations with emotion regulation strategies. *Psychological Assessment*, 21(4), 506-514.
- Jim, H., Richardson, S., Golden-Kreutz, D. & Andersen, B. (2006). Strategies used in coping with a cancer diagnosis predict meaning in life for survivors. *Health Psychology*, 25(6), 753-761.
- Johnson, M. & Folkman, S. (2004). Side effect and disease related symptom representations among HIV+ adults on antiretroviral therapy. *Psychology, Health & Medicine*, 9, 139-148.
- Johnson, M. & Neilands, T. (2007). Neuroticism, side effects, and health perceptions among HIV-infected individuals on antiretroviral medications. *Journal of Clinical Psychology in Medical Settings*, 14(1), 69-77.
- Johnston-Roberts, K. & Mann, T. (2000). Barriers to antiretroviral medication adherence in HIV-infected women. *AIDS Care*, 12(4), 377-386.
- Jones, F. (2006). Strategies to enhance chronic disease self-management: How can we apply this to stroke. *Disability and Rehabilitation*, 28(13-14), 841-847.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *American Psychological Association*, 10(2), 144–156.

- Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. New York: Hyperion.
- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. New York: Delacorte.
- Kennedy, A., Rogers, A. & Crossley, M. (2007). Participation, roles, and the dynamics of change in a group-delivered self-management course for people living with HIV. *Qualitative Health Research, 17*(6), 744-758.
- King, L., Hicks, J., Krull, J. & Del Gaiso, A. (2006). Positive affect and the experience of meaning in life. *Journal of Personality and Social Psychology, 90*(1), 179-196.
- Klassen, R. & Chiu, M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology, 102*(3), 741-756.
- Krause, N. (2009). Meaning in life and mortality. *The Journals of Gerontology: Series B: Psychological Sciences and Social Sciences, 64B*(4), 517-527.
- Langer, E. (2002). Well-being: Mindfulness versus positive evaluation. In C. Snyder & S. Lopez (Eds.), *Handbook of positive psychology* (pp. 214-229). New York, NY: Oxford University Press.
- Lazarus, R. & Folkman, S. (1984). *Stress, Appraisal and Coping*. New York: Springer.
- Leahey, T., Crowther, J. & Irwin, S. (2008). A cognitive-behavioral mindfulness group therapy intervention for the treatment of binge eating in bariatric surgery patients. *Cognitive and Behavioral Practice, 15*(4), 364-375.
- Lert, F. (2000). Advances in HIV treatment and prevention: Should treatment optimism lead to prevention pessimism? *AIDS Care, 12*(6), 745-755.
- Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York: Guilford.
- Linehan, M., Heard, H. & Armstrong, H. (1993). Naturalistic follow-up of a behavioral treatment of chronically parasuicidal borderline patients. *Archives of General Psychiatry, 50*, 971-974.
- Lorig, K., Feignbaum, P., Regan, C., Ung, E. & Holman, H. (1986). A comparison study of lay-taught, arthritis self-management courses. *Journal of Rheumatology, 13*, 763-767.
- Lorig, K., Lubeck, D., Kraines, R., Seleznik, M. & Holman, H. (1985). Outcomes of self-help education for patients with arthritis. *Arthritis and Rheumatism, 28*, 680-685.
- Lorig, K., Sobel, D., Ritter, P., Laurent, D. & Hobbs, M. (2001). Effects of a self-management program on patients with chronic disease. *Effective Clinical Practices, 4*(6), 256-267.

- Lucia, S., Herrmann, L. & Killias, M. (2007). How important are interview methods and questionnaire designs in research on self-reported juvenile delinquency? An experimental comparison of internet vs paper-and-pencil questionnaires and different definitions of the reference period. *Journal of Experimental Criminology*, 3(1), 39-64.
- Mann, T. (2001). Effects of future writing and optimism on health behaviors in HIV-infected women. *Annals of Behavioral Medicine*, 23(1), 26-33.
- Marks, R. (2001). Efficacy theory and its utility in arthritis rehabilitation: Review and recommendations. *Disability and Rehabilitation*, 23, 271-280.
- Marks, R., Allegrante, J. & Lorig, K. (2005a). A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: Implications for health education practice (Part I). *Health Promotion Practice*, 6, 37-43.
- Marks, R., Allegrante, J. & Lorig, K. (2005b). A review and synthesis of research evidence for self-efficacy-enhancing interventions for reducing chronic disability: Implications for health education practice (Part II). *Health Promotion Practice*, 6, 148-156.
- Milam, J., Richardson, J., Marks, G., Kemper, C. & McCutchan, A. (2004). The roles of dispositional optimism and pessimism in HIV disease progression. *Psychology and Health*, 19(2), 167-181.
- Murphy, D., Greenwell, L. & Hoffman, D. (2002). Factors associated with antiretroviral adherence among HIV-infected women with children. *Women & Health*, 36(1), 97-111.
- Murphy, D., Roberts, K., Martin, D., Marelich, W. & Hoffman, D. (2000). Barriers to antiretroviral adherence among HIV-infected adults. *AIDS Patient Care and STDs*, 14(1), 47-58.
- Park, C., Malone, M., Suresh, D., Bliss, D. & Rosen, R. (2007) Coping, meaning in life, and quality of life in congestive heart failure patients. *Quality of Life Research*, 17(1), 21-26.
- Pedhazur, E. (1997). Analysis of effects. *Multivariate regression in behavioral research: Explanation and prediction* (3rd ed., pp. 283-339). Wadsworth/Thomson Learning: Belmont, CA.
- Posadzki, P., Stockl, A. Musonda, P. & Tsouroufli, M. (2010). A mixed-method approach to sense of coherence, health, behaviors, self-efficacy and optimism: Towards the operationalization of positive health attitudes. *Scandinavian Journal of Psychology*, 51, 246-252.
- Raikkonen, K., Matthews, K. A., Flory, J. D., and Owens, J. F. (1999). Effects of hostility on ambulatory blood pressure and mood during daily living in healthy adults. *Health Psychology*, 18, 44-53.
- Rasmussen, H., Scheier, M., & Greenhouse, J. (2009). Optimism and physical health: A meta-analytic review. *Annals of Behavioral Medicine*, 37(3), 239-256.

- Redmond, B. (2010). Self-Efficacy Theory: Do I think that I can succeed in my work? *Work Attitudes and Motivation*. Pennsylvania State University, PA: World Campus.
- Roberts, K. (2000). Barriers to and facilitators of HIV-positive patients' adherence to antiretroviral treatment regimens. *AIDS Patient Care STDs*, 14, 155-168.
- Ronan, G., Dreer, L., Dollard, K. & Ronan, D. (2004). Violent couples: Coping and communication skills. *Journal of Family Violence*, 19(2), 131-137.
- Rosenstock, I. (1974). Historical origins of the health belief model. *Health Education Monographs*, 2(4).
- Ryff, C. & Singer, B. (1998). The contours of positive human health. *Psychological Inquiry*, 9, 1-28.
- Scheier, M. & Carver, C. (1993). On the power of positive thinking: The benefits of being optimistic. *Current Directions in Psychological Science*, 2(1), 26-30.
- Scheier, M. & Carver, C. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research*, 16, 201-228.
- Scheier, M. & Carver, C. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, 4, 219-247.
- Scheier, M., Carver, C. & Bridges, M. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67, 1063-1078.
- Schweizer, K. (2000). Experiences and expectations in evaluating preparation for an examination. *Psychology Reports*, 86(3.1), 895-898.
- Segal, Z., Williams, J. & Teasdale, J. (2002). *Mindfulness based cognitive therapy for depression: A new approach to preventing relapse*. New York: Guilford.
- Seegerstrom, S. (2005). Optimism and immunity: Do positive thoughts always lead to positive effects?. *Brain, Behavior, and Immunity*, 19(3), 195-200.
- Seligman, M. (1991). *Learned optimism*. New York: Knopf.
- Simoni, J., Frick, P., Lockhart, D. & Liebovitz, B., (2002) Mediators of social support and antiretroviral adherence among an indigent population in New York city. *AIDS Patient Care and STDs*, 16, 431-439.
- Stanley, M., Novy, D., Hopko, D., Beck, J., Averill, P. & Swann, A. (2002). Measures of self-efficacy and optimism in older adults with generalized anxiety. *Assessment*, 9(1), 70-81.

- Stein, N., Hernandez, M. & Trabasso, T. (2008) Advances in modeling emotion and thought: The importance of developmental, online, and multilevel analyses. In M. Lewis, J. Haviland-Jones & L. Barrett (Eds), *Handbook of emotions* (3rd ed.; pp 574-586). New York, NY: Guilford Publications Inc.
- Tams, S. (2008). Constructing self-efficacy at work: A person-centered perspective. *Personnel Review*, 37(2), 165-183
- Taylor, S., Kemeny, M., Reed, G., Bower, J. & Gruenewald, T. (2000). Psychological resources, positive illusions, and health. *American Psychologist*, 55(1), 99-109.
- Taylor, S., Kemeny, M., Aspinwall, L., Schneider, S., Rodriguez, R. & Herbert, M. (1992). Optimism, coping, psychological distress, and high-risk sexual behavior among men at risk for acquired immunodeficiency syndrome (AIDS). *Journal of Personality and Social Psychology*, 63, 460-473.
- Teasdale, J., Segal, Z., Williams, J., Ridgeway, V., Soulsby, J., & Lau, M. (2000). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology*, 68(4), 615-623.
- Thompson, E. (2009). Wait times to see doctors are getting longer. *USA Today*. Retrieved from http://www.usatoday.com/news/health/2009-06-03-waittimes_N.htm?loc=interstitialskip
- Van Rans, N., & Marcoen, A. (1997). Meaning in life of young and elderly adults: An examination of the factorial validity and invariance of the Life Regard Index. *Personality and Individual Differences*, 22(6), 877-884.
- Valdiserri, R. (2004). Mapping the roots of HIV/AIDS complacency: Implications for program and policy development. *AIDS Education and Prevention*, 16(5), 426-439.
- Walsh, J., Horne, R., Dalton, M., Burgess, A. & Gazzard, B. (2001). Reasons for non-adherence to antiretroviral therapy: Patients' perspectives provide evidence of multiple causes. *AIDS Care*, 13(6), 709-720.
- West, R. & Thorn, R. (2001). Goal-setting, self-efficacy, and memory performance in older and younger adults. *Experimental Aging Research*, 27(1), 41-65.
- Witek-Janusek, L., Albuquerque, K., Chroniak, K., Chroniak, C., Durazo-Arvizu, R. & Mathews, H. (2008). Effect of mindfulness based stress reduction on immune function, quality of life and coping in women newly diagnosed with early stage breast cancer. *Brain, Behavior, and Immunity*, 22(6), 969-981.
- Wood, E., Nosko, A., Desmarais, S., Ross, C., & Irvine, C. (2006). Online and traditional paper-and-pencil survey administration: Examining experimenter presence, sensitive material and long surveys. *Canadian Journal of Human Sexuality*, 15(3-4), 147-155.