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Bridging the Gap: Adapting Mindfulness-based Stress Reduction for Latino Populations

J. Alexis Ortiz

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**BRIDGING THE GAP: ADAPTING MINDFULNESS-BASED STRESS
REDUCTION FOR LATINO POPULATIONS**

By

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B.A., Psychology, University of Michigan, 2007
M.S., Psychology, University of New Mexico, 2010

DISSERTATION

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ABSTRACT

Latinos comprise a sizeable and growing population in the U.S. that experiences unmet health needs and health inequities, and could benefit from increased participation in health-promoting interventions, such as Mindfulness-based Stress Reduction (MBSR). This study examined an adapted version of MBSR (MBSR-A) designed to increase the retention and effectiveness of this intervention for Latino populations. Thirty Latino individuals, primarily from the South Valley community of Albuquerque, enrolled in the course. The retention rate in the current study was 86% compared to the 60-66% retention attained in previous MBSR studies with Latinos. Analyses revealed pre to post improvements in a variety of health-related, potential mediator, and mindfulness variables. Anxiety, depression, resilience, and perceived stress demonstrated the strongest and most frequent associations with improvements in potential mediator and mindfulness variables. Of the potential mediator measures, decentering, self-regulation, reflection, and rumination demonstrated the strongest relationships with improvements in mindfulness and health outcomes over the course of the intervention. Qualitative findings revealed

that the most common barrier to Latino retention in MBSR was related to time constraints, while derived emotional/ psychological benefits were the most frequently cited motivators for completing the MBSR program. In addition, ethnic identity emerged as a protective factor for retention of Latinos in MBSR. The results of the current study support the preliminary use of MBSR-A in increasing engagement, retention, mindfulness, and health-related outcomes among Latino individuals. Implications of these findings for future research and clinical work with this population are discussed.

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Chapter 1

Introduction

Mindfulness in Context: Defining the Abstract

Over the past two decades there has been a steady increase in interest regarding the concept of mindfulness, particularly in the fields of medicine and psychology. A variety of conceptualizations of this construct have been proposed (Hirst, 2003; Langer, 1997; Sternberg, 2000). Mindfulness has been identified as a capacity for self-regulation (Brown & Ryan, 2003), an acceptance skill (Linehan, 1993), and a meta-cognitive ability (Bishop et al., 2004; Flavell, 1979). However, the most commonly cited definition and the one utilized for this manuscript was developed by Jon Kabat-Zinn of the University of Massachusetts. Kabat-Zinn (1990) describes mindfulness as bringing deliberate and nonjudgmental awareness and attention to one's present moment experience. Although mindfulness is relatively new to the western world, its origins date back to ancient Buddhist traditions in which it is viewed as a necessary practice on the path to the cessation of suffering (Goleman, 1977; Thera, 1972).

A central premise of mindfulness is the belief that people tend to function largely on an "automatic pilot" mode distinguished by habit and lack of awareness. Increased mindfulness can provide a pathway to engaging more fully in one's life (Kabat-Zinn, 1990; Shigaki, Glass, & Schopp, 2006). Mindfulness can also be understood as "falling awake," "coming to our senses," and "knowing what we are doing as we are actually doing it" (Kabat-Zinn, 1990). In essence, the practice of mindfulness provides an opportunity to respond intentionally rather than reacting automatically. Such habitual "knee-jerk" reactions may result in increased stress, engagement in damaging albeit

familiar coping strategies (e.g., substance abuse), and unintended or unwelcome consequences (Bishop et al., 2004). Mindfulness practice may also assist in differentiating the process of thinking from thought content (Roth, 1997). By relating to thoughts and emotions in a more broad, accepting manner, thereby intentionally opening to one's experience, it may be possible to acquire a more adaptive approach to dealing with life's challenges.

At first blush, the concept of mindfulness may be misconstrued as nothing more than being aware, just as meditation is sometimes misunderstood as merely sitting idly. However, there are several crucial components that distinguish this type of attention and awareness, including a perspective characterized by a lack of judgment or reactivity (Kabat-Zinn, 1990). Such qualities of attention refer to simply observing one's experiences instead of categorizing them as positive or negative, meaningful or trivial, or true or false (Kabat-Zinn, 1990; Marlatt, 1994). The non-striving and accepting aspects of mindfulness are related to surrendering to the moment just as it is, rather than attempting to avoid, alter the experience, or obtain a particular result or goal (Bishop, 2002). This attitude of "letting go"/"letting be" may facilitate a state of equanimity, ease, and a more stable experience of well-being that is less contingent on internal or external events (McIntosh, 1997; Tart, 1994). It is important to recognize that mindfulness is both a state, which manifests as mindful awareness, as well as a process, which takes the form of mindful practice.

Mindfulness-Based Stress Reduction

Mindfulness-Based Stress Reduction (MBSR) is a group-based intervention intended to provide mindfulness training in order to decrease stress and improve overall

well-being (Kabat-Zinn, 1990). It was developed in 1979 by Jon Kabat-Zinn, initially for use with chronic pain patients (Kabat-Zinn, 1990). MBSR is generally conducted as an 8 to 10 week course of up to 30 participants who meet for approximately 2-2.5 hours each week. Mindful breathing, awareness, walking, and attention are core activities taught and practiced during and outside of the course. Class time focuses on the practice of sitting, standing, and lying down meditation, in addition to discussing homework assignments, stress, coping, and practice related issues. A day-long intensive mindfulness session or “retreat” generally occurs between the sixth and seventh week of the course. Participants are instructed to practice for a minimum of 45 minutes daily, six days per week. Audiotapes are provided to assist with the development of participants’ mindfulness practice. A body scan exercise, hatha yoga, loving kindness and “choiceless” awareness meditations are also key components of the program (See Brantley, 2005 for review).

Rather than simply ingraining the use of formal “on the cushion” meditation practices, the goal of MBSR is to weave mindfulness into the fabric of one’s daily life. Some of the foundational beliefs underlying MBSR include an experiential, psychoeducational, and patient-centered focus (Reibel, Greeson, Brainard, & Rosenzweig, 2001). The highly participatory nature of MBSR is emphasized throughout the course (Salmon, Santorelli, & Kabat-Zinn, 1998). Some of the primary attitudinal components of mindfulness practice include non-judgment, non-reactivity, patience, acceptance, letting go/letting be, curiosity, trust, compassion and “beginner’s mind,” or as if experiencing something for the first time (e.g., Brantley, 2005). These aspects may facilitate the process of decentering, which is the ability to take a step back and observe

the temporary nature of thoughts, feelings, and experiences without having to view them as literally “true” (Safran & Segal, 1990).

Although the mindfulness practices utilized in MBSR are based on Buddhist interpretations and understandings, the course is secular (e.g., no references to Buddhism or Buddhist terminology; Brantley, 2005; Kabat-Zinn, 1982) in nature. It is important to note that MBSR was designed to serve as an adjunct therapy, rather than as a primary treatment (Brantley, 2005). A benefit of MBSR is that since its inception, a heterogeneous patient population with a plethora of medical ailments has been invited to partake in the intervention. This has created a foundation for being able to apply mindfulness and MBSR to numerous physical and psychological disorders (Kabat-Zinn, 1990). Unfortunately, in practice, the heterogeneity of MBSR participants has been limited in some respects. The majority of MBSR participants have been Non-Latino White (NLW) and middle or upper middle class, particularly with MBSR classes involving research (Garland, Carlson, Cook, Lansdell, & Speca, 2007; Salmon et al., 2004).

The Impact of MBSR on Health and Well-Being: What’s All the Fuss About?

This section highlights some of the primary empirically supported effects of MBSR related to physical and mental health. The mean effect size for MBSR is medium-to-large overall [($d = .50$ for uncontrolled studies, which included pre/post designs, and $d = .54$ for controlled studies, which included wait list or active control groups on a composite well-being measure) (Grossman, Niemann, Schmidt, & Walach, 2004)]. Individuals with higher dispositional levels of mindfulness report experiencing less stress, depression, and anxiety, as well as increased feelings of joy, inspiration, gratitude,

hope, contentment, vitality, and life satisfaction, regardless of formal meditation training (Baer, 2006; Brown & Ryan, 2003; Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008). Even the momentary experience of a mindful state is related to an increased sense of overall well-being (Lau et al., 2006; Shapiro, Brown, Thoresen, & Plante, 2011). MBSR has been shown to be effective in increasing dispositional mindfulness (Cohen-Katz, Wiley, Capuano, Baker, & Shapiro, 2005; Shapiro, Brown, & Biegel, 2007), and these gains have been found to be related to the above positive mental health outcomes (Shapiro, Carlson, Astin, & Freedman, 2006).

MBSR was originally utilized with chronic pain patients, in part because this population faces a variety of stressors and there is currently no comprehensive solution to alleviate their condition (Kabat-Zinn, 1990). Two controlled, non-randomized studies compared MBSR or MBSR plus massage versus a wait list control group for chronic pain patients (Morone, Greco, & Weiner, 2008; Plews-Ogan, Owens, Goodman, Wolfe, & Schorling, 2005). The MBSR groups reported less pain and psychological distress and increased physical functioning and pain acceptance compared to the control condition. MBSR has also been shown to be beneficial for patients with a variety of chronic illnesses, and studies have established that reductions in psychological distress have persisted at 3-month (Williams, Kolar, Reger, & Pearson, 2001), 6-month (Carlson, Ursuliak, Goodey, Angen, & Speca, 2001), 3-year (Miller, Fletcher, & Kabat-Zinn, 1995) and 4-year follow-up assessments (Kabat-Zinn, Lipworth, Burney, & Sellers, 1986).

Overall, randomized controlled trials (RCTs) of MBSR with both healthy and clinical populations demonstrate that MBSR is effective in decreasing symptoms of stress, worry, rumination (Jain et al., 2007; Kabat-Zinn et al., 1992; Speca, Carlson,

Goodey, & Angen, 2000), self-reported distress (Astin, 1997; Shapiro, Astin, Bishop, & Cordova, 2005; Williams et al., 2001), increasing empathy, self-compassion (Klatt, Buckworth, & Malarkey, 2009; Shapiro, Schwartz, & Bonner, 1998) and reducing depressive symptoms (Astin, 1997; Speca, et al., 2000; Shapiro, et al., 1998). Controlled studies of MBSR have established its effectiveness in decreasing physical/medical symptoms, while increasing quality of life in stressed healthy (Monti et al., 2005) and patient populations (Brown & Ryan, 2003; Carlson, Speca, Patel, & Goodey, 2003).

Although there have been equivocal findings regarding reductions in anxiety and depression (Toneatto & Nguyen, 2007), studies overall support the use of MBSR in reducing these psychiatric symptoms. For example, MBSR has also been shown to reduce both state as well as trait anxiety as assessed by the State Trait Anxiety Index (Spielberger, 1991) in two RCTs evaluating stress and mood in pre-medical and medical students (Shapiro et al., 1998) and therapists in training (Shapiro et al., 2007). No such differences were found in the control groups. Relatedly, Rosenzweig et al. (2003) found significant decreases in anxiety, tension, and overall mood disturbance for 140 second year medical students in MBSR versus 162 control participants. MBSR has also been found to improve general social functioning (Roth & Robbins, 2004).

Furthermore, MBSR has shown to reduce avoidance behaviors and panic attack frequency in individuals diagnosed with panic disorder (Miller et al., 1995). There is also evidence supporting its use in decreasing binge-eating episodes related to eating disorders (Kristeller & Hallett, 1999), and activity avoidance in chronic pain patients, which may help to improve their overall functioning (Kabat-Zinn, Lipworth, & Burney, 1985; Kabat-Zinn, Lipworth, Burney, & Sellers, 1987). Additionally, MBSR has shown to be effective

in increasing the ability to self-regulate emotions (Tacon, McComb, Caldera, & Randolph, 2003) and perceptions of control over one's reactions (Astin, 1997).

Significant questions remain regarding the factors that facilitate increases in individuals' level of psychosocial and health-related well-being, awareness, changes in neurophysiological responses, and reductions in maladaptive emotional and behavioral interactions with one's environment. Nevertheless, despite the current limitations of our knowledge of MBSR, sufficient positive data exists to merit continued research and clinical activity in this area (Fjorback, Arendt, Ornbol, Fink, & Walach, 2011; SAMHSA, 2012).

Potential Mechanisms of Action within Mindfulness

Shapiro's Mechanisms of Mindfulness Model

While there is a growing consensus that MBSR is beneficial for individuals with a variety of health concerns, our knowledge and study of the factors underlying mindfulness is still in its infancy. Such variables are important to identify in order to target efforts and resources at the primary factors that may be accounting for the health-promoting effects of mindfulness. Shapiro and colleagues (2006) posited a theory regarding the mechanisms of action within mindfulness, which includes three simultaneously occurring factors of intention, attention, and attitude. The authors propose that cultivation of these aspects results in greater mindfulness, which in turn leads to increased "decentering" or "reperceiving" of one's experiences. The meta-mechanism of decentering is seen as primarily responsible for beneficial changes (e.g., increased clarity, objectivity, and equanimity) that can occur as a result of mindfulness practice (Carmody, Baer, Lykins, & Olendzki, 2009).

Decentering as a Mechanism

As noted above, the notion of decentering involves a substantial shift in perspective towards a less judgmental outlook that recognizes the objective and passing nature of the thoughts, feelings, and events in one's life (Safran & Segal, 1990). Decentering from one's experiences allows an individual to "suspend one's commitment" (Bishop, 2002 p. 75) to any particular thought, perspective, or interpretation. It encompasses the notion that thoughts may not always be genuine reflections of reality, and instead may simply come and go like waves on an ocean (Safran & Segal, 1990). It is important to recognize that decentering is not synonymous with dissociation (Williams & Mark, 2010). Instead, it enables an individual to step back and "de-identify" with cognitions and emotions (Safran & Segal, 1990). For example, viewing thoughts simply as mental events, without additional elaboration or meaning-making.

Self-regulation, Values Clarification, and Additional Mechanisms

Decentering as a meta-mechanism may enable the functioning of other mechanisms of mindfulness, such as self-regulation/self-management, cognitive, emotional, and behavioral (CEB) flexibility, and values clarification (Shapiro et al., 2006). These mechanisms may facilitate some of the benefits of mindfulness practice (e.g., psychological symptom reduction), in addition to being independent outcomes. Dispositional self-regulation has been described as the ability to maintain attention on a given task, regulate emotional balance, internal, and external distractions, and exert effort towards a desired outcome (Karoly, 1993). This capacity may encompass important aspects of CEB flexibility and values clarification. Specifically, greater self-regulation may enable an individual to respond to the demands of one's environment in more

adaptive ways in the service of a particular goal or value. Self-regulation has also been shown to increase over the course of MBSR (Carmody et al., 2009).

Rumination as a Mechanism

A perseverative cognitive process known as rumination has been associated with increased levels of depression and anxiety (Nolen-Hoeksema, 1991, 2000). One study examining the relationship between mindfulness and rumination revealed that for participants with a history of depression, engaging in MBSR diminished levels of rumination (Ramel, Goldin, Carmona, & McQuaid, 2004). An RCT with undergraduates utilizing a daily diary methodology demonstrated that four weeks of mindfulness training (compared to relaxation training and a non-intervention control condition) decreased distress by reducing rumination (Jain et al., 2007). In addition, reductions in rumination were greater for the MBSR condition compared to the relaxation training group (Jain et al., 2007). These findings suggest a potential advantage of MBSR over pure relaxation training.

A Population that may Further Benefit from MBSR: Latinos in the U.S.

Latinos make up the fastest growing ethnically diverse population in the United States (Census, 2012). In 2010, Latinos comprised over 16% of the U.S. population, which is projected to increase to 30% by 2050 (U.S. Census Bureau, 2010). In 2011, approximately 47% of immigrants in the United States were Latino (Pew Hispanic Center, 2011). Although Latinos are often grouped together, in reality there is significant heterogeneity within this population. In the U.S., Mexicans form the largest subset of this ethnicity at 65.5%, followed by Puerto Ricans at 9.1%, Cubans at 3.5%, Dominicans at 2.8%, and other Latinos at 19.1% (Pew Hispanic Center, 2011). Tremendous variation

within this population exists in regard to degree of ethnic group identification and acculturation, adherence to cultural traditions, and ability to speak Spanish or Portuguese (Lara, Gamboa, Kahramanian, Morales, & Hayes Bautista, 2005). This heterogeneity results from a variety of factors including varying social class and mobility, geographic location, and immigration status. When drawing conclusions regarding Latinos, it is important to acknowledge the similarities, as well as the considerable diversity within this population.

Existing Need to Increase Latino Participation in MBSR

Despite some protective elements (see “Potential Resilience Factors In Latino Populations” below), substantial risk factors (e.g., high poverty rates, acculturative stress) exist for Latinos that manifest as significant health needs and health inequities for this population (Vega, Rodriguez, & Gruskin, 2009; Wells, Klap, Koike, & Sherbourne, 2001). Vulnerability factors among Latinos are described in further detail below. The burden of risk factors borne by Latinos in this country has been shown to have detrimental impacts on the mental and physical health of this population (Alderete, Vega, Kolody, & Aguilar-Gaxiola, 2000; Baum, Garofalo, & Yali, 1999; Magana & Hovey, 2003; Williams, 1999). Based on the previously mentioned physical and mental health benefits associated with MBSR (e.g., Greeson, 2009), increased participation in this intervention is one way to help address the unmet health needs of Latinos in the U.S. Thus, it is important to make MBSR and other health-promoting interventions more accessible and effective for this sizeable and growing population.

Potential Vulnerability Factors in Latino Populations

Health Inequities

Health inequities/disparities, which are closely linked to socioeconomic disadvantage, refer to adverse differences in quality of health, including incidence, mortality, survivorship, disease burden, and health care access among particular groups (Marmot, 2001; U.S. Department of Health and Human Services, 2006). The World Health Organization (WHO) concludes that health disparities are not only unnecessary and avoidable, they are also unfair and unjust (Whitehead, 1991). Thus, health inequities serves as a more appropriately descriptive term than health disparities and is used throughout the remainder of this manuscript. Being a member of multiple marginalized groups has been shown to amplify health inequities (Whitehead, 1991). For example, Latinas who experience low socioeconomic status (SES) and also have disabilities are overall more likely to experience health inequities, compared to those who belong to fewer or less marginalized minority groups (Whitehead, 1991).

Health inequities exact a substantial economic and social toll on Latino and other minority populations, as well as U.S. society (LaVeist, Gaskin, & Richard, 2009). Between 2003 and 2006 the total costs of health inequities and premature death in the U.S. were estimated at \$1.24 trillion (LaVeist et al., 2009). LaVeist and colleagues (2009) note that within the same three-year time frame, 30.6% of direct medical care expenditures for Latinos, African Americans, and Asians were surplus costs due to health inequities. Eliminating health inequities would have decreased direct medical care expenditures by \$229.4 billion as well as indirect costs related to illness and premature death by over one trillion dollars between 2003-2006 (LaVeist et al., 2009).

Health Inequities among Latino Populations

There is a significant need to address health inequities among Latinos given that they comprise the fastest growing ethnically diverse population in the United States (Census, 2012). Adverse differences in health are especially prevalent for Latinos and other ethnic minorities overall compared to NLWs in the U.S. (Goldberg, Hayes, & Huntley, 2004; Williams & Jackson, 2005). Latinos exhibit higher prevalence and mortality rates for diabetes, cervical cancer, rates of homicide in Latino males, and HIV (CDC, 2010; Vega et al., 2009). This population also experiences greater prevalence of asthma, tuberculosis, liver disease and obesity (CDC, 2011a, 2012b, 2012c). As an example, the rate of diabetes deaths among Latinos is 33.6 per 100,000 versus the Asian/Pacific Islander reference group of 16.6 per 100,000 (CDC, 2012a). Mexican-Americans comprise the largest subset (65.5%) of the Latino population in the U.S. (Pew Hispanic Center, 2011). The rate of diabetes deaths for Mexican-Americans specifically is 251 per 100,000 (Smith & Barnett, 2005).

Perceived discrimination is an additional vulnerability factor that is more widespread among minorities, including Latinos overall compared to NLWs (Baum et al., 1999; Clark, Anderson, Clark, & Williams, 1999; Jones, 2000). Experiencing perceived discrimination can provoke a cascade of physiological responses including increased blood pressure, heart rate, and cortisol secretions (Clark et al., 1999; Major, Quinton, & McCoy, 2002). Experiences of discrimination coupled with prolonged stress activation are believed to contribute to and exacerbate some of the poor health outcomes observed among marginalized groups (Baum et al., 1999; Clark et al., 1999). Perceived discrimination has been shown to be related to a broad range of negative health

outcomes, including depression, psychological distress, anxiety, hypertension, poor self-reported health status, and breast cancer (e.g., Paradies, 2006; Williams, Neighbors, & Jackson, 2008). Experiencing discrimination is also associated with risk factors for further illness including increased smoking (Landrine & Klonoff, 1996) alcohol and other substance abuse (Bennett, Wolin, Robinson, Fowler, & Edwards, 2005; Martin, Tuch, & Roman, 2003), as well as high blood pressure and obesity (Williams & Mohammed, 2009).

Social Determinants of Health

The conditions in which individuals are born, work, live, and age are known as the social determinants of health (SDOH; Marmot, Wilkinson, & Brunner, 2006). These conditions are shaped by factors including distribution of wealth, power, and resources, and are seen as primarily responsible for health inequities (World Health Organization, 2013). Physical and social location in society can have potent effects on health. One's position in the social system represents differential levels of power and contact with psychological, social, physical, and chemical exposure in the workplace, neighborhood, and other societal contexts (Williams, 2012). Latinos and other minorities are more likely to be on lower rungs of the social and economic power hierarchies (Williams, 2012).

Health is not only impacted by one's current SES, but also by exposure to social and economic hardship over the lifetime. Greater levels of early life psychosocial and economic adversity can negatively impact health in adulthood (Adler & Newman, 2002; Mackenbach et al., 1999). This is particularly likely for Latinos and African-Americans, who comprise the second and first poorest ethnic groups in the U.S, respectively (Census, 2012). In addition, Latino immigrants, and undocumented individuals in particular,

experience even less access to power and resources than their documented counterparts (Berk & Schur, 2001; Durden & Hummer, 2006).

Limited Access and Engagement with Health-Promoting Resources

Less access to health-promoting resources such as preventative services and adequate medical care are seen as partially responsible for health inequities among Latinos and other minority populations (Escarce, 2007; Page, 2007). Unfortunately, the healthcare that Latinos and other minorities receive may be sub-standard compared to the care that is available to many NLWs (Agency for Healthcare Research and Quality, 2007). One report based on 22 critical quality of care measures found that Latinos received lower quality care than NLWs on 77% of the items assessed (U.S. Department of Health and Human Services, 2006). For Latinos who do possess healthcare coverage, financial issues still present a barrier to treatment since often there are additional out of pocket and non-covered expenses.

Furthermore, employment schedules, particularly with the multiple jobs or late-night shifts that U.S. Latinos are more likely to work, present an additional obstacle to accessing care other than a hospital emergency department (Berk & Schur, 2001; Durden & Hummer, 2006). Individuals who are undocumented may not even access emergency care due to fears of deportation or other legal action (Andrulis, 1998). Taken together, this multitude of risk factors provides fertile ground for a host of negative mental and physical health consequences for Latinos in this country, who already experience unmet health needs and inequities (Vega et al., 2009; Wells et al., 2001). Therefore, it is important to ensure that MBSR and other health-promoting interventions are accessible and effective for this growing population.

Potential Resilience Factors in Latino Populations

Latinos and other marginalized populations have historically been viewed from a deficit-model perspective (e.g., sole focus on risk factors, pathology) (Betancourt, Green, Carrillo, & Ananeh-Firempong, 2003; Penn, Kar, Kramer, Skinner, & Zambrana, 1995). It is essential to also consider the protective factors that have enabled this population to be resilient despite a host of disadvantages. These factors may include the health-promoting benefits of spirituality, cultural identity and values, and social support, among others.

Latino Paradox

Many of the findings related to minority health suggest that ethnic minority status is associated with worse health outcomes when compared with NLWs overall (Adler et al., 1994; Bollini & Siem, 1995). This is not surprising given the a multitude of economic and social disadvantages (e.g., greater poverty, lower education, less healthcare coverage) that Latinos and other minorities are more likely to experience (Marmot et al., 2006). However, some research suggests that being Latino actually affords members of this group equal or better health outcomes and lower mortality rates for certain illnesses (e.g., Markides & Eschbach, 2011; Turra & Goldman, 2007). This phenomenon has been referred to as the “Latino (or “Hispanic”) Paradox” and its overall effect of improving health and mortality rates has been found in better cardiovascular, pregnancy, and cancer (lung, colon, breast, and prostate) outcomes, lower infant, stroke-related, and decreased all-cause mortality rates for Latinos relative to NLWs (e.g., Markides & Eschbach, 2011; Turra & Goldman, 2007). There is some evidence that the Latino Paradox may be the result of possessing greater family support, spirituality, and engaging in certain favorable

health behaviors (e.g., lower alcohol use) (Page, 2007; Perez-Stable, Marin, & Marin, 1994). Other research suggests that it may be due to only the healthiest individuals successfully migrating to the U.S., or by them choosing to return to their home country to die and therefore artificially lowering the overall mortality rate recorded in the U.S. (Franzini, Ribble, & Keddie, 2001; Markides & Eschbach, 2011).

Spirituality

Overall, Latinos and other ethnic minorities tend to have higher levels of spirituality and religious involvement compared to NLWs (Culver, Arena, Antoni, & Carver, 2002). Religion and spirituality appear to play a significant role in coping with adversity for certain individuals, including with health-related events (Jenkins & Pargament, 1995; Pargament, 1997). In a study of cancer patients, Latinas were found to be more religious, identify more spiritual needs, and obtain more benefit from religious coping strategies than NLW women (Taylor, 2001). For Latinas who are particularly religious or spiritual, many believe that their faith may play a role in the outcome of their illness (Ashing-Giwa et al., 2006). Some of the protective effects associated with religion may stem from greater social support resulting from involvement with one's religious group. Nevertheless, a personal sense of connection with one's religion and/or spirituality may be as beneficial as active involvement with an organized religious community (Ellison, Finch, Ryan, & Salinas, 2009; Jarvis, Kirmayer, Weinfeld, & Lasry, 2005).

Cultural Values and Attitudes

In spite of the variability within Latino culture, there appears to be strong support for a tendency towards a more collectivistic orientation and certain shared values and attitudes including *familismo*, *personalismo*, *simpatía*, and *respeto* (see Falicov, 1998;

Smith & Montilla, 2006). These factors may impact treatment and research with these populations (La Roche, 2002). For the purposes of the current manuscript, only *familismo* and *personalismo* will be discussed herein. *Familismo* refers to prioritization and strong connection to the family, including as a primary source of social support (Falicov, 1998; Smith & Montilla, 2006), which may assist in offsetting certain negative health outcomes. Individuals who possess positive emotional ties to their partners, family and friends report fewer health symptoms, fewer chronic health issues, and better self-reported health than those who lack strong support networks (Ryff, Singer, Wing, & Love, 2001). However, a potential consequence of this is that Latinos tend to underutilize sources of support outside of the family, such as mental health treatment (Falicov, 1998; Smith & Montilla, 2006).

In addition, a collectivistic perspective involves a focus on the needs and interest of others over oneself (La Roche, 2002), which may have negative health consequences when taken to an extreme. *Personalismo* refers to the value of developing and maintaining personal relationships through reciprocal and respectful interactions (Falicov, 1998; Smith & Montilla, 2006). It is possible that low engagement and retention of Latinos in mental health interventions could be due to the discrepancy between an emphasis on building relationships and trust versus time pressure to commence treatment. This and the above protective components are important to consider as part of the tapestry of vulnerability and resilience factors for Latinos.

If more Latino individuals would be willing and able to engage in mindfulness practice, it could potentially serve as a valuable additional protective factor, given its health-promoting effects (e.g., Greeson, 2009) and its relationship to increased

spirituality ratings (Carmody, Reed, Kristeller, & Merriam, 2008; Greeson et al., 2011). Mindfulness may also provide a useful complement to the collectivistic tendency to focus on others over the self, potentially at the expense of cultivating one's internal knowledge and resources. It is possible that mindfulness may allow individuals to develop greater resources to continue providing for others and meeting the demands of potentially stressful environments.

Adapting MBSR for Latino Populations: Why Changes are Warranted

In light of the previously mentioned vulnerability factors (e.g., low SES, health inequities), there is a significant need to improve the availability, quality, and fit of mental health services offered to Latinos and other minority populations (Escarce, 2007; Sue, 1998). Despite over 30 years of existence as an intervention, the vast majority of MBSR participants have been NLW, female, and middle to upper middle class (Garland et al., 2007; Salmon et al., 2004). Thus, the remaining ethnic, SES and gender groups have been unwilling or unable to take advantage of this valuable, cost-effective, health-promoting intervention. It is concerning that Latinos are no exception to this, particularly given health and SES inequities, and being the fastest growing ethnic group in the United States (Census, 2012).

Generally speaking, Latinos and other minorities tend to underutilize mental health services, obtain treatment only when these issues become severe, and end therapy prematurely (Flaskerud & Nyamathi, 2000; Sue & Zane, 1987; Zane, Enomoto, & Chun, 1994). Indeed, compared to NLWs, Latinos have been found to be half as likely to engage in mental health treatment (National Institute of Mental Health, 1999). However, it is possible that this “voting with their feet” indicates a poor treatment fit and warrants

further scrutiny. Mainstream interventions that were not developed or normed using minority samples may disregard potentially salient factors that could make the treatment unappealing, irrelevant, or ineffective. Some important aspects that may be neglected include collectivistic values and context such as SES, home and community obligations and environment, influence of spirituality, and the impact of systemic and interpersonal discrimination (Griner & Smith, 2006).

An additional reason to increase utilization of MBSR among Latinos and other groups is that it may reduce healthcare costs. A study examined general medical and chronic care records and found a decrease in the number of participants' chronic care visits compared to the previous year and significantly fewer medical visits for the Latino participants (Roth & Stanley, 2002). Another study found that patients who completed MBSR showed a threefold decrease in average charges per patient, compared to those who did not complete the program (Kabat-Zinn, 1987). Finally, six months post-completion of MBSR, a hospital-based program observed a 60% reduction in clinic visits, 50% decrease in hospital stay duration, and 90% reduction in work absenteeism among program participants (Tate, 1994).

Engagement and Access Deficiencies in MBSR for Latinos

It is useful to distinguish between engagement, retention, and outcomes when evaluating the impact of an intervention. Engagement refers to how well procedures are able to access and successfully involve potential participants in treatment, while retention is related to maintaining their participation (Lau, 2006) until completion. Moreover, outcomes are related to whether an intervention is able to impact the variables of interest (e.g., health/functioning, attendance; Lau, 2006) in a given intervention. Engagement,

retention, and outcomes may be influenced by the participants' opinion of the social validity of a treatment. Social validity refers to the perceived acceptability, usefulness, and relevance of the treatment, which can be affected by cultural worldviews, and life obligations including unreliable transportation, healthcare coverage, and employment schedules (Foster & Mash, 1999). The term perceived applicability is used in this manuscript to encompass social validity.

Indeed, participants' perspectives on intervention procedures and goals have been found to be associated with willingness to continue to engage in treatment and ultimately with the extent of therapeutic change obtained (Kazdin, Holland, & Crowley, 1997; Kazdin & Wassell, 1999). In a study of MBSR with cancer patients, the number of sessions attended has been found to be the best predictor of reductions in stress-associated symptoms, accounting for 13.2% of the variance (Specia et al., 2000). Therefore, adaptations that increase attendance may prove to be highly worthwhile investments, particularly when attempting to enhance participation among Latinos or other populations that may be particularly vulnerable to high attrition.

Based on existing research, the lack of Latino participation in MBSR appears to be less a function of poor treatment outcomes and more of an engagement and retention-related issue. Roth et al., (2004) conducted a study on MBSR and health-related quality of life with inner-city English (n = 20) and Spanish-speaking (n = 48) participants versus a control condition, which highlights this distinction. Both groups improved significantly on 5 out of the 8 health-related (Short Form 36 Health Survey; Ware et al., 1993) indicators over the course of the program. The intervention groups did not differ significantly on 7 out of 8 health measures, although the English sub-group did show a

greater improvement on the general health measure compared to the Spanish sub-group. This finding could be due to the Spanish group reporting lower general health at baseline.

Roth & Creaser (1997) also conducted an earlier study of MBSR with another primarily Latino inner-city population. Following the intervention, participants reported fewer medical and psychological symptoms and greater self-esteem. The Roth et al. (1997) work referenced a 1994 study by Kabat-Zinn in which similar findings were observed. However, the first author (JAO) could not locate a copy of the Kabat-Zinn (1994) study to review. In general, the Roth and colleagues (1997) sample endorsed positive changes related to outlook, habits, and lifestyle behaviors following the MBSR program. Overall, MBSR appears to be similarly beneficial for Latinos and NLWs (Roth et al., 1997; 2004). Thus, it is reasonable to assume that lower participation and decreased retention of Latinos in MBSR is not being driven by a lack of beneficial health outcomes.

Additional reasons for low Latino engagement and retention in MBSR may be related to access and awareness issues. Few MBSR programs are offered in locations where high concentrations of minorities reside or can readily access (Roth et al., 2004). Moreover, childcare issues, transportation, work schedules, and financial constraints all present barriers for many minorities to participate in inconveniently located interventions. Latinos and other minorities are also less likely to possess the resources that would allow them to circumvent access issues (Williams & Jackson, 2005; Williams, 2012). Suggestions for increasing awareness and improving access for Latinos in treatment research include: alternative recruitment outlets (e.g., churches, community centers, medical clinics, and Spanish-language radio), Spanish-language treatment options, transportation and childcare services, and the presence of bilingual, bicultural staff who

possess a culturally sensitive interpersonal style (Miranda, Azocar, Organista, Muñoz, & Lieberman, 1996). A recurrent critique in the literature is that the above factors are not sufficiently considered or addressed when conducting research with Latinos and other minority populations (Miranda et al., 1996; Sue, 1998; Zane et al., 1994).

Retention Deficiencies in MBSR for Latinos

An essential issue to consider and address in both clinical and research interventions with Latinos is retention. This is particularly true given historically and currently low ethnic minority participation and persistence in interventions and research (Kazdin et al., 1997; Sue & Zane, 1987). This may be due in part to a legacy of minorities being taken advantage of in certain instances and settings (e.g., Tuskegee Syphilis Study) (Corbie-Smith, 1999). The average retention rates in MBSR for lower middle and middle class predominantly NLW groups range between 80 and 90% [(Kabat-Zinn et al., 1985; 85%, (Specia et al., 2000; 89%, Reibel et al., 2001)]. In terms of retention in MBSR involving Latinos, 66% of participants in the Roth and colleagues (2004) study met criteria for completion, (i.e. attending at least 5 of 8 session, including the 7th or 8th session and/or an exit interview). This retention rate is higher than the previous study of MBSR with Latino participants (60%; Roth et al., 1997).

Differential retention rates in MBSR between Latinos and NLWs suggest that adaptations to better meet the needs of this population are warranted. Indeed, Kumpfer and colleagues (2002) state that cultural adaptation of a treatment may be indicated when the engagement or retention of that group is lower compared to other ethnic groups. Cultural adaptations of treatments have been defined as “changes in the approach to service delivery, in the nature of the therapeutic relationship, or in the components of

treatment itself to accommodate cultural beliefs, attitudes, and behaviors of the target population” (Whaley & Davis, 2007 p. 571). A meta-analysis of 76 studies of culturally modified mental health interventions demonstrated a moderately strong effect ($d = .45$, $p < .001$) (Griner & Smith, 2006) for culturally adapted interventions. Furthermore, interventions targeting a specific cultural group had an effect four times greater ($d = .49$, $p < .01$) than the non-tailored groups ($d = .12$, n.s.). These findings support the potential benefits of treatments designed to meet the needs of a particular cultural group, especially for those who may not otherwise seek or maintain treatment engagement.

Given lower retention coupled with the currently unmet health needs and health inequities for Latinos overall, adaptations to MBSR aimed at enhancing engagement, retention, and perceived applicability are warranted. As previously noted, engagement, retention, perceived applicability, awareness, accessibility, and outcomes should be taken into account when considering the most advantageous types of treatment adaptations for a particular population. Although the studies are limited, it does not appear that deficient outcomes are the driving factor behind lower retention of Latinos in MBSR (Roth & Creaser, 1997; Roth & Robbins, 2004; Roth & Stanley, 2002). Therefore, addressing retention, engagement, and perceived applicability should be the primary focus of potential modifications of MBSR for Latino populations.

Bridging the Gap: Adaptations of MBSR for Latino Populations

Overview of Existing Adaptations of MBSR for Latinos: What has Already been Done?

Despite the current necessity, mindfulness-based interventions have been infrequently adapted to serve the needs of minority populations (Roth & Creaser, 1997; 2006). Roth and colleagues note that a common assumption has been that minority

patients would not be interested in MBSR, willing, or able to meet the time and effort commitment that the program requires (Roth et al., 1997). However, the few previous studies have revealed the despite potential barriers to engagement and retention (e.g., socioeconomic), there is evidence that Latinos are in fact interested in MBSR and may even demonstrate a more positive response to MBSR than NLWs (Roth et al., 1997). More research on MBSR interventions with Latino populations is needed to replicate and extend these findings. In addition, the retention rates of Latinos in these MBSR programs have still fallen below the majority population retention rates (60-66% vs. 80-90%; Roth et al., 1997; 2004; Kabat-Zinn et al., 1985; Speca et al., 2000; Reibel et al., 2001).

Studies of adapted versions of MBSR involving Latinos include the aforementioned uncontrolled (UC) Roth & Creaser (1997) study, the archival investigation by Roth & Stanley (2002), the controlled Roth & Robbins (2004) research, and the Roth & Calle-Mesa (2006) UC study discussed below. In addition to the previously reviewed work, selected studies of the most relevant research on MBSR adaptations involving Latinos are noted below. For example, modifications to MBSR have been made for low-income, female, multi-ethnic, trauma victims in substance use recovery (see Vallejo & Amaro, 2009). Vallejo et al. (2009) adapted the MBSR curriculum in order to address many participants' histories of trauma by conducting a shorter body scan, often while sitting, and introducing it in the second session rather than the first. In addition, variations of MBSR have been created for use with impoverished multi-ethnic women who received abnormal Papanicolaou (pap smear) test results (see Abercrombie, Zamora, & Korn, 2007).

Roth and colleagues (2006) included adaptations to MBSR such as: avoiding class handouts or written homework assignments due to participants' lower education level and introducing the body scan in the first class rather than the second. Former participants also occasionally came to class #1 of the MBSR courses to provide a testimonial regarding their own experiences in MBSR. Other modifications included changing the theme of the class #6 to explore anger and strong emotions rather than interpersonal communication, and adopting forgiveness and loving kindness as the theme of the class #7. Detail regarding the rationale for these changes was not provided.

In terms of practical changes, Roth et al. (2006) arranged for the availability of support staff during class time, recruited student volunteers, and obtained funding for a part-time position to provide childcare. Sessions were billed using appropriate Current Procedural Terminology (CPT) codes to ensure adequate insurance reimbursement. Additionally, Medicaid patients were informed of their eligibility for paid taxi service to and from the classes. The investigators conducted outreach through local media outlets and with hospitals, and medical and mental health clinics in the area. They also gave reminder calls to participants prior to each session and provided shorter meditation tapes (15 and 30 minutes). Even with the aforementioned arrangements, an all-day "retreat" session could not be included in the curriculum due to participants' childcare difficulties.

In terms of time modifications, Carmody and Baer (2009) conducted a meta-analysis to determine how long the MBSR program must be in order to maintain its effectiveness. Their findings did not demonstrate significant associations between time spent in weekly MBSR sessions and the mean differences in outcomes, including reducing psychological distress. Replication of these findings is needed, although this

suggests that shorter MBSR courses may potentially be as effective as the traditional 8-week format. In one sense the 6-week group may be a preferable design for minority participants, who may experience greater familial, financial, transportation, and time constraints. However, the 8-week format may be even more important for individuals with obligations that limit their participation in order to ensure that enough sessions are attended, given that that has been identified as a primary predictor of beneficial outcomes (Speca et al., 2000). Finally, since the active ingredients and mechanisms of MBSR are not yet fully understood, it is unclear whether the standard 8-week duration is necessary for the promotion and maintenance of beneficial changes (e.g., neurological and well-being) (Bishop, 2002; Davidson et al., 2003) over the long-term.

The Current Study

The Next Step: Additional Adaptations of MBSR for Latino Populations

The aim of this study was to pilot an adapted version of MBSR (MBSR-A) designed to enhance retention and effectiveness within Latino populations. Based on the existing literature, the rationale for this focus was two-fold: 1.) Could additional MBSR adaptations reduce the existing disparity in rates of persistence between Latinos and majority populations in MBSR? And 2.) If MBSR-A does demonstrate increased Latino retention, how might that influence outcomes (e.g., health, mindfulness, potential correlates/mediator variables)? Therefore, the first author (JAO) proposed the following novel adaptations to address the aforementioned issues that may preclude many Latinos from participating and/or persisting in MBSR programs. These adaptations included: (1) conducting a group Motivational Interviewing session, ending with (2) problem-solving barriers to successful participation and retention (e.g., guilt about engaging self-care,

socioeconomic impediments), (3) including a testimonial by a Latino individual who had previously taken the MBSR class, and (4) modifications to enhance engagement and perceived applicability of the intervention (e.g., dispelling myths about meditation, emphasizing strengths from one's culture).

Novel Adaptation 1: Group Motivational Interviewing

Motivational Interviewing (MI) is a client-centered therapeutic approach designed to increase motivation for change through the exploration and resolution of individuals' ambivalence (Miller & Rollnick, 2012). Roth et al. (2006) notes that a primary barrier to enrolling in an MBSR program for minority populations is a lack of rapport with or mistrust of health care providers. In line with the value of *personalismo* is the importance of cultivating trust and building relationships (Arredondo, 2006). The group MI component was added to address these issues, given the research supporting its effectiveness in enhancing rapport, participants' trust in the facilitator, and perceived applicability of the intervention (see Hettema, Steele, & Miller, 2005; Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010). The MI component took place in a group format during the orientation session. Although MI has traditionally been done individually, there is support for the use of MI in group settings (D'Amico, Osilla, & Hunter, 2010; LaBrie, Lamb, Pedersen, & Quinlan, 2006).

A primary intention of MI is to assist clients in examining how a target behavior or change may fit with their own values and priorities (Miller & Rollnick, 2012). Given the tendency towards collectivism in Latino culture, the group MI was geared towards evoking the potential benefits of MBSR for participants themselves, as well as for their loved ones. The primary open question used in the intervention to facilitate this was: "In

what ways might being more present and balanced be beneficial for you and your family?

This was designed to enhance the alignment of MBSR with the value of *familismo* that is common in Latino culture (e.g., La Roche, 2002). Research also supports incorporating MI into the beginning of a treatment in order to enhance engagement and retention (Carroll et al., 2006; McKee et al., 2007; Swanson, Pantaloni, & Cohen, 1999).

Novel Adaptation 2: Problem-Solving Barriers to Retention

Once motivation and commitment were explored in the MI portion of the orientation session, the focus then shifted to problem-solving barriers to engagement and retention in the adapted version of MBSR (MBSR-A) used in the current study. These included potential socioeconomic issues such as lack of transportation, inflexible work schedules, childcare issues, lack of family or community support to engage in the course and/or home practice, challenges provoked by doubt, guilt, judgment, and impatience, and struggles with giving oneself permission and time for this and other self-care practices. The purpose of this component was for participants to be able to discuss and generate strategies and plans to circumvent barriers to successful participation and course retention. Addressing such potential obstacles was important given participants' context of often substantial familial, health, occupational, and time obligations.

As noted above, the idea of putting oneself before others, particularly for Latinos and members of other collectivistic cultures, can be challenging (La Roche, 2002; Sue, 1998). Thus, it was important to address these issues at the beginning of the intervention in order to help avoid the possibility of them hindering successful engagement and retention. The group generated ideas to circumvent these issues, such as a shared phone list for participants who were willing to assist with transportation. The instructor (JAO)

also offered recommendations with participants' permission, including exploring the benefits of mindfulness as a self-care practice and the potential for that to enhance internal resources for themselves and their loved ones.

Novel Adaptation 3: Community Member Providing Testimonial

The addition of a testimonial in class #1 from a Latino previous MBSR participant was designed to enhance buy-in, engagement, and perceived applicability through word of mouth, which can be an effective recruitment method in certain close-knit communities (Rodriguez, Rodriguez, & Davis, 2006; Yancey, Ortega, & Kumanyika, 2006). Although Roth and colleagues (2006) reported that participants occasionally dropped in to provide their stories and encouragement, the use of a testimonial was not incorporated systematically into the Roth et al. MBSR courses. In the current study, the person providing the testimonial was invited to share whatever he felt comfortable communicating to participants. This individual ultimately discussed the benefits he had experienced for himself and his family, how and why he maintains a mindfulness practice, and obstacles he had had to overcome with mindfulness and meditation not being part of his culture or background. He also normalized how strange mindfulness and meditation may appear initially, encouraged participants to have an open mind, and to practice as often as they were able to.

Research shows that doubt regarding the perceived acceptability, credibility, and effectiveness of treatment options during initial clinical visits may be responsible for increased early attrition rates in treatment (Smeets et al., 2008; Sue & Zane, 1987). This fits with what has been observed in MBSR programs, as the greatest attrition after the orientation session tends to occur within the first two to three weeks of the program (Roth

et al., 2006; Salmon et al., 1998). Therefore, Adaptations #3 (testimonial) and #4 (modifications to enhance perceived applicability; see below) in particular were designed to help participants identify with and feel that they belonged in the intervention. These additions were aimed at bolstering their belief in the potential for MBSR-A to lead to health-promoting benefits for people like them. A fundamental intention behind the adaptations in MBSR-A was to help participants to answer the question of “Why would someone like me see value in doing something like this (MBSR)?”

Novel Adaptation 4: Increasing Perceived Applicability of MBSR for Latinos

As previously noted, MBSR-A included a number of adjustments aimed at increasing the perceived applicability of the intervention among Latino participants. These included: having only self-identified Latinos as participants in the MBSR groups, adding in a potluck lunch into the final class and the retreat, bringing in Christian insight meditation books to the first class to demonstrate the parallels between traditions, and integrating readings by Latino authors (e.g., poems by Pablo Neruda). In addition, facilitator self-disclosure regarding initial challenges and personal benefits of mindfulness practice was included. This was based on the aforementioned value of *personalismo* regarding the importance of cultivating trust through reciprocal exchange of personal information, the absence of which may promote mistrust (Arredondo, 2006; Falicov, 1998).

Additional modifications to enhance perceived applicability included utilizing the term “mindful movement” instead of “yoga”. Few participants were familiar with yoga and some reported negative associations with it (e.g., “No one I know does yoga, it’s weird”). This finding has also been noted in previous studies of MBSR with Latinos

(Roth et al., 1997). Therefore, the terminology was adapted with the intention of making the practice more accessible. Another example of a change to enhance perceived applicability was creating time in class #1 to explore myths about meditation. Myths that participants mentioned included: “Mindfulness/meditation is for white people”, “my family says that meditation is witchcraft and against Christianity”, “I can’t meditate because my mind is never empty.” The purpose of this discussion was to dispel inaccurate perceptions, foster a sense of inclusivity, and communicate that mindfulness is not something for “other” people, but can be accessed by anyone, regardless of cultural background, SES, religious beliefs, prior mindfulness experience, etc.

Mini-meditations were also emphasized in the course, in addition to the 45-minute formal practices (e.g., body scan, sitting meditation, standing and lying mindful movement, walking). These practices included enhancing awareness through “mindful moments”, the STOP (Stop, Take a breath, Observe, Proceed), and RAIN [Recognize the sensation, thought, or emotion, Allow it to be present as much as possible, Investigate the experience with curiosity, Non-identify with the experience (e.g., this physical sensation of pain is present now, but it is not who I am)] techniques based on Stahl and Goldstein’s (2010) work.

In addition to the mindful raisin eating exercise (Kabat-Zinn, 1990) that is part of the standard intervention, three mindful eating practices were integrated into MBSR-A. These practices highlighted the importance of food in Latino culture and participants’ relationship to eating, using foods that may have been more culturally familiar (e.g., plantain chips vs. potato chips). Class #6 included a guided forgiveness practice, similar to the Roth et al. (2006) study. Class #7 explored available tools to navigate life’s

challenges, including drawing on strengths and resources from one's culture and community. Participants identified such tools as "connecting with others, acceptance, faith, counting your blessings, humility, resolve, this too shall pass, and compassion".

Research Aims and Hypotheses

The main outcomes in the present study were health/functioning, mindfulness, and potential mediator variable change scores. The change scores were calculated by subtracting the pre-assessment from the post-assessment score of interest. There were two categories of health/functioning (termed 'health-related') variables: Non SF-36 and SF-36 measures. The Non-SF 36 health variables included: *anxiety, depression, resilience and perceived stress*, while the SF-36 health variables included: *SF-36 total score, physical health (physical role, physical functioning, bodily pain, and general health) and mental health (emotional well-being, emotional role, social functioning, and vitality)*. The change in mindfulness variables included the five subscales of the Five Facet Mindfulness Questionnaire (*act aware, describe, non-judge, non-react, and observe*), referring to the manner of relating to one's experience. The relationships between the mindfulness, health, and potential mediator variables were also assessed in the current study.

There were six potential mediator variables in the current study, specifically: *curiosity, decentering (EQ decenter and TMS decenter), reflection, rumination, and self-regulation* (see below for measures used to assess each factor). These variables were included based on research suggesting their function as correlates or possible mediators of the relationship between mindfulness and positive health outcomes (e.g., Shapiro et al., 2006; Carmody et al., 2009). However, due to the study design and small sample size

(Fritz & MacKinnon, 2007), and primary aim to pilot the feasibility of the above adaptations, mediational analyses were not conducted in the current study. Instead these potential mediator variables were explored as outcome variables, along with the mindfulness and health-related measures.

Aim 1: To examine retention and engagement of Latino participants in MBSR-A.

Hypothesis 1a: The retention rate of Latino participants in MBSR-A will be greater than the highest previous reports of Latino retention in MBSR (66%; based on attending at least 5 out of 8 sessions, including 7th or 8th class and/or an exit interview; Roth & Robbins, 2004).

Hypothesis 1b: Greater number of sessions attended (engagement) will be correlated with improvements in the measures of health, mindfulness, and potential mediators.

Hypothesis 1c: Lower baseline anxiety, depression, perceived stress, and greater income will predict treatment retention in MBSR-A.

Aim 2: To determine whether the participants who complete MBSR-A will have changes in health, mindfulness, and potential mediator variables from baseline to post-intervention.

Hypothesis 2a: MBSR-A completers will show improvements in the health-related variables.

Hypothesis 2b: MBSR-A completers will show improvements in the mindfulness-related variables.

Hypothesis 2c: MBSR-A completers will show improvements in the potential mediator variables (greater curiosity, decentering, reflection, self-regulation and decreased rumination).

Aim 3: To identify the potential mediator variable changes that were associated with improvements in mindfulness-related changes from baseline.

Hypothesis 3a: Curiosity, decentering, reflection, and self-regulation change scores will be positively correlated with mindfulness change scores.

Hypothesis 3b: Rumination change scores will be negatively correlated with mindfulness change scores.

Aim 4: To identify the mindfulness and potential mediator variables that were associated with improvements in health-related changes from baseline to post-intervention.

Hypothesis 4a: Mindfulness change scores will be correlated with improvements in health variable change scores.

Hypothesis 4b: Increases in curiosity, decentering, reflection, self-regulation change scores and decreases in rumination will be correlated with improvements in health variable change scores.

Chapter 2

Method

Participants

A community sample of Latino individuals from Albuquerque's South Valley and surrounding metro area were invited to participate in the current study. Screening for eligibility was determined via a telephone call with each potential participant. Inclusion criteria consisted of: self-identifying as Latino/Hispanic or a member of a sub-group of this ethnicity, being at least 18 years old at the time of screening, willingness to enroll in the course, to attend all of the sessions, and to participate in the research study. Exclusion criteria for this study included: active suicidality, current substance abuse, mania or psychosis, being deemed unable to engage in physical activity by their medical provider, or inability to speak English proficiently.

Although New Mexico has the largest Latino population of any state (46.7%; Pew Hispanic Center, 2011), only 7.5% report being Spanish monolinguals (Pew Hispanic Center, 2011). Therefore, the intervention was held in English with the goal of piloting a Spanish equivalent in the future, pending the results of the adaptations in the current study. Only two individuals met any of the exclusionary criteria (Spanish monolinguals; $n = 2$). These individuals were given information regarding additional Spanish mindfulness-based resources in the South Valley community.

Procedure*Recruitment and Screening*

This study was approved by the University of New Mexico (UNM) Institutional Review Board. Participants were recruited through email announcements, provider

referrals, and hard-copy fliers. Study advertisements were distributed to First Choice Community Healthcare primary care providers, the Rio Bravo location of the Presbyterian Hospital, and South Valley community health organizations *Centro Sávila*, and *Casa de Salud*. Previous MBSR participants were also given the opportunity to obtain fliers if they wished to recruit friends and family.

The informed consent process was completed during the orientation session, which occurred during the week prior to the first session of the course. During this time, participants were able to ask questions about the intervention and the research study. Potential candidates were screened by the instructor (JAO) for the aforementioned inclusion and exclusion criteria to ensure that they met the eligibility requirements for the research study. The orientation session lasted approximately 1.5 hours. The group Motivational Interviewing (Adaptation #1) and problem-solving components (Adaptation #2) were also completed during the orientation session (see above for a description of the adaptations).

Data Collection

All participants received the adapted MBSR (MBSR-A) intervention. Data collection took place at the First Choice Family Health Commons in the South Valley of Albuquerque, which has been in operation since 1972 (DeFelice, 2011). Approximately 72% of the patients served by First Choice identify as Hispanic/Latino and 51% are on Medicaid, Medicare, or Indigent Care (DeFelice, 2011). This site was chosen for its location in a predominantly Latino community and long history of serving the needs of South Valley residents. The pre-intervention survey was administered at the beginning of the first session and the post-intervention survey was given at the end of the final (8th)

session (see Appendices A – L). The final section of the post-intervention survey queried participants regarding barriers they encountered to staying in the program and reasons that they were motivated to circumvent those. Each questionnaire took approximately 60 minutes to complete, for a total of approximately 120 minutes for the pre and post questionnaires. No financial compensation was provided to participants, however the MBSR-A intervention was given free of charge. There was a \$5 suggested donation per class; participants determined their own level of contribution. All participants were offered the opportunity to attend all future retreat sessions (described below).

MBSR-A Intervention

All of the MBSR classes were taught by the same instructor (JAO), who has completed the MBSR in Mind-Body Medicine 7-day Professional Training with Jon Kabat-Zinn and Saki Santorelli, the Practicum in Mindfulness Based Stress Reduction 9-day Intensive course, and the MBSR Teacher Development Intensive training. The MBSR-A intervention followed the 8-week curriculum developed by Jon Kabat-Zinn of the University of Massachusetts Medical Center (Kabat-Zinn, 1990). Kabat-Zinn's curriculum focuses on increasing mindful awareness and attention by means of sitting, walking, and lying down meditation as well as hatha yoga, breathing, eating and body scan exercises, and group discussion of practice and challenges (see the Introduction section for additional program description).

The course was held in a group format with weekly sessions of 2.5 hours each for 8 weeks, in addition to a 1.5 hour orientation session prior to the first class. Participants were encouraged to be mindful of the limitations of their bodies at the present moment and to modify practices or positions as needed, particularly during the movement

exercises. An 8-hour “retreat” session also occurred between the 6th and 7th week of the course. The retreat provides an opportunity to deepen practice through extended practice of alternating periods of mindful movement, sitting, walking, and eating while in silence. Additional practices such as loving-kindness were incorporated into the retreat session in MBSR-A.

As noted above, MBSR-A included four primary adaptations: 1.) Group Motivational Interviewing, 2.) problem-solving to anticipate and circumvent barriers to successful participation and retention, 3.) testimonial by a Latino individual who had previously completed the program, and 4.) modifications to increase the perceived applicability of the intervention (e.g., dispelling myths about meditation, emphasizing strengths from one’s culture). Other adaptations that were utilized in MBSR-A based on previous studies included: appropriate outreach in the communities of interest, inclusion of weekly reminder phone calls/text messages to participants, offering the program on days and at times that were convenient for the population of interest, and providing the course on a donation basis.

At the beginning of each session the facilitator welcomed participants, led a “mindful moment” brief meditation, requested that participants log their practice from the previous week, reviewed home practice assignments (e.g., body scan, experience of pleasant and unpleasant events), discussed participant observations and any challenges encountered. The remainder of each session was spent primarily on experiential mindfulness practices (e.g., sitting, walking, yoga). A brief didactic component (e.g., What is stress? How do we respond to stress?) and discussion in both smaller and larger groups (e.g., How might this apply to our daily lives?) was incorporated into each class.

The sessions concluded with the assignment of home practice and each participant setting a practice-related intention for the week. A potluck was incorporated into the retreat and final class. Participants were also presented with certificates during the final session to acknowledge their accomplishment in completing the course and to commemorate their time together as a group.

Measures

The first author (JAO) attempted to select assessments that had been previously used with Latino samples that also possessed sufficient psychometric properties. All assessment instruments were given in English and were administered in pre- and post-intervention questionnaires. The exceptions to this included the demographic measures and assessment of discrimination and ethnic identity, which were only given at the pre-intervention time point.

Anxiety. The Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983) includes 14 items (e.g., “I felt tense or wound up”) that assess anxiety and depressive symptoms. Only the 7 anxiety items were utilized in the current study. Each question is answered on a four point Likert scale (1 = “not at all” to 4 = “very often”). The HADS has been shown to be a valid assessment of anxiety and depression (Bjelland, Dahl, Haug, & Neckelmann, 2002) with adequate sensitivity and specificity for mental disorders (Barth & Martin, 2005). The HADS has also demonstrated adequate internal consistency and external validity with Latino populations (Herrero et al., 2003) (Cronbach’s $\alpha = .83$).

Decentering. The Experiences Questionnaire (EQ; Fresco et al., 2007) is intended to assess the construct of decentering, or the ability to adopt an observer perspective

regarding one's experience (Safran & Segal, 1990). The *EQ decentering* questions include 14 items (e.g. "I am not so easily carried away by my thoughts and feelings") rated on a four point Likert scale (1 = "never" to 5 = "all the time"). Items assessing rumination were included as a control for participant response bias (Fresco et al., 2007) and were not used in the current study. The Decentering subscale demonstrated high internal consistency reliability in the present study (Cronbach's $\alpha = .95$). This measure has demonstrated satisfactory reliability and validity with Latino populations (Soler et al., in press).

Decentering and Curiosity. The Toronto Mindfulness Scale Trait-Version (TMS; Davis, Lau, & Cairns, 2009) is designed to assess mindfulness in daily life. It was developed following an initial version (Toronto Mindfulness Scale State-Version; Lau et al., 2006) that aims to assess momentary states of mindfulness. There are 13 items (e.g., "I am curious about each of my thoughts and feelings as they occur"), which are responded to on a 5 point Likert scale (0 = "not at all" to 4 = "very much"). Factor analyses yielded two subscales, *TMS curiosity* and *TMS decentering*, which demonstrated adequate internal consistency (Cronbach's $\alpha = .89$ and $.81$, respectively) in the current study.

Demographics. Participants answered questions related to demographic and background information. These questions included age, date of birth, weight, height, gender, years of education, marital status, employment status, type of employment, household annual income, and religious preference (Fetzer Institute, 1999) and perceived socioeconomic status (Adler, Epel, Castellazzo, & Ickovics, 2000).

Depressive symptoms. The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was used to assess depressive symptoms. The CES-D includes 20 items (e.g., “I felt that I could not shake off the blues even with help from my family or friends.”) The items are scored on a four point Likert scale (1 = “rarely or none of the time (*less than 1 day*)” to 4 = “most or all of the time (5-7 days).” This measure demonstrated adequate internal consistency reliability in the present study (Cronbach’s $\alpha = .84$) and has been used reliably with Latino populations (Liang, Tran, Krause, & Markides, 1989; Roberts, 1980).

Ethnic Identity. The Scale of Ethnic Experience (SEE; Malcarne et al., 2006) is a 32 item measure that assesses four domains (*ethnic identity, perceived discrimination, comfort in mainstream culture, and social affiliation*) related to acculturation. Each item (e.g., “I have a strong sense of myself as a member of my ethnic group”) was answered on a five point Likert scale (1 = “strongly disagree” to 5 = “strongly agree”). Higher scores indicate greater agreement with subscale statements (e.g., greater sense of ethnic identity, more perceived discrimination). The ethnic identity subscale is designed to measure the extent to which individuals experience ethnic-related pride and engagement in cultural activities (e.g., “Being a member of my ethnic group is an important part of who I am”). The SEE has shown adequate inter-item reliability across ethnically diverse populations and concurrent validity with alternate measures of acculturation (Malcarne et al., 2006). The internal consistency reliability in the current study is as follows: Ethnic Identity Cronbach’s $\alpha = .64$, Perceived Discrimination Cronbach’s $\alpha = .74$, Mainstream Comfort Cronbach’s $\alpha = .50$, and Social Affiliation Cronbach’s $\alpha = .69$.

Mindfulness. The Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) includes 39 items (e.g., “I pay attention to sensations, such as the wind in my hair or sun in my face”). Each statement is answered on a five point Likert scale (1 = “never or very rarely true” to 5 = “very often or always true”). This measure is designed to assess five aspects of mindfulness, including *observing, describing, acting with awareness, and non-judgment of and non-reactivity* to one’s experience. Cronbach’s $\alpha = .79$ for the Act Aware subscale, Describe Cronbach’s $\alpha = .93$, Cronbach’s $\alpha = .89$ for the Non-judge subscale, Non-react Cronbach’s $\alpha = .77$ and Observe subscale Cronbach’s $\alpha = .90$. This measure has shown good reliability with Latino populations (Cebolla i Martí et al., 2012).

Perceived Socioeconomic Status. The MacArthur Scale of Subjective Social Status (Adler, Epel, Castellazzo, & Ickovics, 2000) allows individuals to rate their perceived socioeconomic status, comparing themselves on a 10 point scale (1 = “worst off” to 10 = “best off”), in terms of their standing in their community and in the United States. Perceived social status has been found to strongly predict health status (Singh-Manoux, Marmot, & Adler, 2005). This scale has been used with Latinos and other ethnically diverse populations (Ostrove, Adler, Kuppermann, & Washington, 2000). Limited data exists on the psychometric properties of this instrument, however it has been shown to be related to other assessments of objective socioeconomic status and predict health even when controlling for them (Singh-Manoux et al., 2005).

Perceived Stress. The Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983) includes 10 questions to assess the extent to which individuals perceive situations in their lives as predictable and controllable, or overwhelming. Each item (e.g., “in the

last month, how often have you felt nervous and ‘stressed’?) is answered on a five point Likert scale (0 = “never” to 4 = “very often”). The Perceived Stress Scale has demonstrated adequate reliability in previous studies (Cohen, 1983) including with Latino populations (Remor, 2006).

Health Survey Short Form 36 (Physical and Mental Health). The Medical Outcomes Study Short Form 36 Health Survey (SF-36; Ware, Snow, Kosinski, & Gandek, 1993) includes 36 items that assess general health and mental, physical, and social functioning. Each question (e.g., “did you feel worn out?”) is answered on a five point Likert scale (1 = “all of the time” to 5 = “none of the time”). Examinations of the validity of the SF-36 demonstrate content, concurrent, criterion, construct, and predictive validity (McHorney, Ware, & Raczek, 1993). This measure has been used reliably with Latino populations (Arocho, McMillan, & Sutton-Wallace, 1998; Peek, Ray, Patel, Stoeber-May, & Ottenbacher, 2004). In the current study, internal consistency ratings were as follows: Cronbach’s $\alpha = .95$ for the Physical Functioning subscale, Cronbach’s $\alpha = .85$ for the Physical Role subscale, Emotional Role Cronbach’s $\alpha = .80$, Vitality (Energy and Fatigue) Cronbach’s $\alpha = .78$, Emotional Well-being Cronbach’s $\alpha = .83$, Social Functioning Cronbach’s $\alpha = .72$, Pain Cronbach’s $\alpha = .92$, General Health Cronbach’s $\alpha = .75$, Mental Health Cronbach’s $\alpha = .88$, Physical Health Cronbach’s $\alpha = .93$, and SF-36 Total Cronbach’s $\alpha = .93$.

Resilience. The Brief Resilience Scale (BRS; Smith et al., 2008) contains 6 items to assess resilience (e.g., “It does not take me long to recover from a stressful event”). Responses are rated on a five point Likert scale (1 = strongly disagree” to 5 “strongly agree”). This measure has previously demonstrated adequate test-retest reliability (Smith

et al., 2008) and internal consistency in the present study (Cronbach's $\alpha = .84$). Strengths of the BRS include that it has been normed on ethnically diverse populations (Smith et al., 2008) and its focus on assessing a primary meaning of resilience i.e., the ability to recover from stress (Agnes, 2005).

Rumination and Reflection. The Rumination-Reflection Questionnaire (Trapnell & Campbell, 1999) includes 12 items to assess rumination (e.g., “sometimes it is hard for me to shut off thoughts about myself”). Items are responded to on a five point Likert scale (1 = “strongly disagree” to 5 = “strongly agree”). Higher scores indicate greater ruminative tendencies. The *rumination* and *reflection* subscales both demonstrated adequate internal consistency (Cronbach's $\alpha = .91$ and $.88$, respectively) in the current study.

Self-Regulation. The Self-Regulation Scale (SRS; Schwarzer, Diehl, & Schmitz, 1999) is used to assess level of attention regarding maintaining a favorable emotional balance and goal oriented attention, which are important components of self-regulation (Diehl, Semegon, & Schwarzer, 2006). Each of the 10 items (e.g., “I can control my thoughts from distracting me from the task at hand”) is responded to on a four point Likert scale (1 = “not at all true” to 4 = “completely true”). This instrument has demonstrated a test-retest reliability of $.62$, significant convergent correlations with similar constructs (Diehl et al., 2006), and adequate internal consistency reliability in the present study (Cronbach's $\alpha = .87$).

Data Analysis

The hypotheses for the current study were tested using Pearson's chi-square tests, correlational analyses, binary logistic regression, and paired samples t-tests. Post-hoc

analyses were completed using independent samples t-tests. Chi-square tests were utilized in order to test Hypothesis 1a comparing current and previous retention rates of Latinos in MBSR interventions. Correlational analyses were employed to test Hypothesis 1b regarding the relationship of sessions attended to mindfulness, potential mediators, and health outcomes.

Binary logistic regression and post-hoc analyses using independent samples t-tests were conducted to compare baseline demographic and psychological factors for program completers (attended between 5 and 8 sessions; $n = 26$) and program non-completers (attended between 1 and 4 sessions; $n = 4$). For the dichotomous variable of treatment retention, a binary logistic regression was performed with retention status (completer vs. non-completer) as the outcome variable in order to test Hypothesis 1c. In addition, independent samples t-tests were performed post-hoc in order to compare the means of the SEE variables (*ethnic identity, perceived discrimination, mainstream comfort, and social affiliation*) for treatment completers versus non-completers.

Paired samples t-tests were utilized to examine pre to post changes on health and mindfulness variables in order to test Hypotheses 2a-2c. Cohen's d values (Cohen, 1988) were calculated to examine the effect sizes of the outcomes of interest related to Hypotheses 2a-2c and the post hoc analyses. Correlational analyses were used to identify the factors that were significantly associated with mindfulness change scores (Hypotheses 3a and 3b) and health-related change scores (Hypotheses 4a and 4b). The frequencies and percentages of responses to two qualitative questions ("What were the biggest barriers to staying in the program?" and "What made you stay in the program?") were also compiled. All analyses were conducted in SPSS 19.0 (SPSS Inc., 2010). There was very

little missing data in the current study. When missing data was present, those responses were excluded from the analyses. An alpha of 0.05 was used as the criterion for statistical significance.

Chapter 3

Results

Treatment Retention

The sample for the current study was comprised of Latino individuals from the greater Albuquerque area, primarily from the South Valley region (see Tables 1-5 for demographic characteristics). Thirty individuals began the study, twenty-six were classified as treatment completers, and complete pre- and post-treatment data were obtained for twenty-three participants (see Figure 1 for study participant flow chart). Participants were considered treatment completers if they attended at least 5 out of the 8 sessions, including the final session. This completion criteria was slightly more conservative than those used in previous studies of MBSR with Latino participants (attending minimum of 5 out of 8 sessions including 7th or 8th session or the exit interview; Roth et al., 1997; 2004).

There were three participants who met the completion criteria in the current study, but for whom complete data was not obtained (See Figure 1). This was due to illiteracy ($n = 2$) and one participant who could not be reached to return the post-questionnaire after leaving the final class early following news of a cancer diagnosis. On average, 6.5 individuals per group completed the study. Specifically, intervention completers were as follows: group 1 ($n = 7$), group 2 ($n = 6$), group 3 ($n = 6$), and group 4 ($n = 7$). The completers attended an average of 7.09 ($SD = 0.90$) out of 8 sessions, while the total sample attended an average of 6.41 sessions ($SD = 1.87$). All of the treatment completers ($n = 26$) attended the final (8th) session.

Of the 30 participants, four (13%) were considered to be treatment non-completers, due to only attending between 1 and 4 sessions (see Figure 1). On average, one individual dropped out per group. Treatment non-completers dropped out after sessions 3, 3, 2, and 2, respectively. Reasons given for attrition from the program included employment conflicts ($n = 1$), additional family responsibilities/demands ($n = 1$), and perceived conflict between meditation and Christian faith ($n = 1$). A reason for discontinuing the course could not be obtained for one participant. Reasons provided for missing sessions included: illness or emergencies among participants or family members, childcare issues, and conflicts with employment schedules.

Participant Demographics

Tables 1-4 display the demographic comparisons of treatment completers, non-completers, and all participants. None of the demographic variables comparing the completers to the non-completers met criteria for statistical significance except for *ethnic identity* (see Table 6). The average age of the total sample was 44.07 ($SD = 12.26$), 77.8% ($n = 21$) identified as female, none of the participants self-identified as transgender. The vast majority of participants identified as Catholic or Christian ($n = 26$), with the exception of one individual who espoused an Atheist/Agnostic perspective. Four MBSR-A groups were conducted between September 2012 and December 2013, and 61% ($n = 14$) of participants attended all 8 sessions.

Educational attainment in this sample was high overall, however the non-completers average level of education was “post high school, business or trade school,” while the completer’s educational level was between “1-3 years of college” and “Bachelor’s degree” (see Table 1). The average yearly household income for the total

sample was \$24,240 (see Table 2). The within-sample income was quite variable, ranging from an average of \$15,500 for the non-completers to an average of \$27,150 for the completers. The median income for the total sample and the completers was approximately \$35,000, compared to only \$14,000 for the non-completers. In addition, non-completers reported lower perceived socioeconomic status compared to completers on perceived status ratings relative to their community ($M = 4.00$ vs. $M = 6.09$; see Table 3) and to the rest of the United States ($M = 3.50$ vs. $M = 5.41$). Regarding employment, 70.4% ($n = 19$) of all participants were employed either full-time or part-time (see Table 4). Unemployment was lower in the completers (26.1%; $n = 6$) than the non-completers (50%; $n = 2$). The most frequently reported occupations were teacher ($n = 3$) and healthcare provider ($n = 3$). At the time of the initial questionnaire, 88.5% ($n = 23$) of completers, 75% ($n = 3$) of non-completers, and 85.2% ($n = 23$) of the total sample possessed health insurance (see Table 5).

In terms of ethnicity, 100% of the sample self-identified as Latino/Hispanic or as a member of a sub-group of Latino ethnicity. Specifically, ethnic identification was comprised of: Hispanic/Latino (70.4%; $n = 19$), Chicana (14.8%; $n = 4$), Mexican (7.4%; $n = 2$), Puerto Rican (3.7%; $n = 1$), and Mexican American (3.7%; $n = 1$). The total sample reported an average *ethnic identity* subscale score of 3.81 ($SD = 0.50$) on the Scale of Ethnic Experience (SEE; Malcarne, Chavira, Fernandez, & Liu, 2006). The responses ranged from 1 (“strongly disagree”) to 5 (“strongly agree”). While there do not appear to be strict cut-off scores for this measure, as a dimensional rating this score indicates a stronger sense identification with one’s ethnicity compared to mainstream culture (see Table 6).

Study Hypotheses

Findings related to Retention of Latinos in MBSR Interventions

How was MBSR-A related to retention for Latino participants? (Aim 1)

Hypothesis 1a. A primary aim of the current study was to examine the influence of MBSR-A on retention of Latino participants. Hypothesis 1a posited that the retention rate for Latinos in MBSR-A would be greater than retention of Latinos in prior MBSR research. Table 7 displays the results of the chi-square test, demonstrating that the current study retention rate (86%) was significantly greater than the highest retention found in previous studies of MBSR with Latinos (66%; Roth & Robbins, 2004).

How was MBSR-A related to engagement for Latino participants? (Aim 1)

Hypothesis 1b. This hypothesis stated that the number of sessions attended would be related to improvements in health, mindfulness, and the potential mediator variables. This hypothesis was supported for 1 of 24 measures, in that sessions attended was significantly related to improvements in resilience [$r(23) = 0.43, p < .05$] over the course of the intervention.

What factors were related to greater retention of Latino participants in MBSR-A? (Aim 1)

Hypothesis 1c. In order to identify the factors that differentiated participants who completed treatment from those who did not, logistic regression and independent samples t-tests were conducted to compare baseline psychological and demographic factors for treatment completers and non-completers. Table 8 displays the results of the binary logistic regression analyses with each variable as an individual predictor of treatment retention. Hypothesis 1c stated that lower baseline *anxiety, depression, perceived stress,*

and higher baseline *income* would predict greater retention of Latinos in MBSR-A. The variables were examined both as individual and simultaneous predictors. None of the variables significantly predicted treatment retention in either scenario.

Post-hoc analyses using independent samples t-tests were also conducted to investigate differences between treatment completers and non-completers on the SEE variables. Results revealed that those who completed the intervention reported a stronger sense of *ethnic identity* compared to those who dropped out (see Table 6). Data was also collected regarding participants' quantity of practice with the intention of exploring potential practice differences between completers and non-completers. Unfortunately, there was substantial missing data and variability in the amount and manner in which participants' recorded their practice. Therefore, the data was not able to be used.

Findings related to Health, Mindfulness and Potential Mediator Changes

Did those who completed MBSR-A show improvements in health from baseline? (Aim 2)

Hypothesis 2a. Table 9 displays the results for the pre- to post-intervention changes in the health-related variables. Hypothesis 2a posited that MBSR-A completers would show improvements in health-related variables. This hypothesis was strongly supported in that substantial pre/post improvements were found in *SF-36 total score*, *physical health* and three of its four subscales (*physical role*, *pain*, *general health*), *mental health* and all four of its subscales (*vitality*, *emotional well-being*, *emotional role*, and *social functioning*), and all of the non SF-36 health measures (*anxiety*, *depression*, *resilience*, and *perceived stress*). The only health-related variable that was not significant was the SF-36 *physical functioning* subscale. Overall, the participants who completed MBSR-A reported favorable changes on a variety of health and functioning variables.

Did treatment completers demonstrate enhanced mindfulness? (Aim 2)

Hypothesis 2b. The pre- to post-intervention changes in the five mindfulness subscales are featured in Table 10. Hypothesis 2b predicted that MBSR-A completers would demonstrate improvements in the mindfulness variables. The hypothesis was generally supported in that pre- to post-intervention increases were observed in four of the five mindfulness subscales, with the exception of the *describe* subscale. These findings suggest that completing MBSR-A is associated with improvements across multiple facets of mindfulness.

Did treatment completers show improvements in potential mediator variables? (Aim 2)

Hypothesis 2c. Table 11 contains the pre to post changes in the *curiosity*, *decentering*, *reflection*, *self-regulation*, and *ruminating* measures. Hypothesis 2c posited that MBSR-A completers would show improvements in these potential mediator variables. This prediction was strongly supported in that all of the potential mediators showed improvement from baseline to the end of the intervention. These results suggest that retention in MBSR-A is related to beneficial changes in variables that may help explain why mindfulness may positively impact health.

Which changes in potential mediator variables were related to improvements in mindfulness from baseline? (Aim 3)

Hypothesis 3a. Table 12 features the correlations among the changes in mindfulness subscales and changes in the potential mediator variables. Hypothesis 3a predicted that *curiosity*, *decentering*, *reflection*, and *self-regulation* change scores would be positively related to the mindfulness change scores, which was partially supported. *EQ decenter* and *self-regulation* were both positively related to all five of the mindfulness

subscales. *TMS decenter* was associated with the *act aware* and *non-judge* subscales, while *reflection* was related to *non-react*, *describe*, and *observe*, in the expected direction.

Hypothesis 3b. This hypothesis posited that the *rumination* change score would be negatively correlated with the mindfulness change scores. This prediction was generally supported in that *rumination* was related to all of the mindfulness subscales except for *describe* (see Table 12).

Which changes in mindfulness factors were associated with improvements in health-related change from baseline? (Aim 4)

Hypothesis 4a. Table 13 displays the results of the correlational analyses related to Hypothesis 4a, which stated that mindfulness change scores would be associated with improvements in health variable change scores. This prediction was partially supported. All of the mindfulness subscales were associated in the expected direction with *anxiety*, *depression*, *perceived stress*, and *resilience*, with the exception of *describe*, which was only associated with *perceived stress* and *resilience*. Of the SF-36 measures, only *vitality* was related to *non-react*.

What changes in potential mediator variables were associated with improvements in health-related change from baseline? (Aim 4)

Hypothesis 4b. The results of the correlational analyses between the changes in potential mediators and changes in health-related variables are shown in Table 14. Hypothesis 4b predicted that increases in *curiosity*, *decentering*, *reflection*, and *self-regulation*, change scores and decreases in *rumination* change scores would be associated with improvements in health change scores. *EQ decenter*, *rumination*, and *self-regulation*

were related to all of the non SF-36 health measures (*anxiety, depression, perceived stress, and resilience*) in the predicted directions. *TMS decenter* was negatively associated with *anxiety* and *perceived stress*, while *reflection* was related positively to *resilience* and negatively to *depression*. In terms of the SF-36 variables, both *vitality* and *emotional well-being* were negatively associated with *curiosity* and *ruminatation*.

Qualitative Findings Related to Retention

Finally, given that understanding retention of Latinos in MBSR is a primary focus of the current study, participants were queried regarding retention-related barriers and factors that motivated them to remain in the program. The qualitative data related to those questions is displayed in Tables 15 and 16, respectively. Overall, the most frequently endorsed barrier was time constraints (e.g., difficulty taking time for oneself, challenges balancing busy schedules), while the most cited reason for persisting in the course was related to benefits being derived from the program (e.g., greater sense of hope, feeling more positive about oneself and life in general).

Chapter 4

Discussion

Study Overview

The primary goal of the current study was to pilot an adapted version of MBSR with Latinos in order to examine its impact on retention and effectiveness with this population. Given the lower retention rate of Latinos (60-66%; Roth & Creaser, 1997; Roth & Robbins, 2004), compared to the (80-90%; Kabat-Zinn et al., 1985; Reibel et al., 2001; Speca et al., 2000) observed in majority populations it was uncertain whether adaptations to this intervention would be successful at increasing Latino retention. The 86% retention rate in the current study supports the use of MBSR-A in increasing engagement and retention of Latinos in MBSR interventions. This study also contributes to the scarce literature pertaining to MBSR with Latinos and other minority populations.

In addition, the results of this study support the effectiveness of this intervention for participants who remain engaged in the course. Retention in MBSR-A was strongly associated with improvements in health/functioning, potential mediators, and mindfulness changes from baseline overall. In general, the non SF-36 health indicators (*anxiety, depression, resilience, and perceived stress*) demonstrated greater improvements and stronger relationship with mindfulness and potential mediator changes compared to the SF-36 health measures. *EQ decenter, self-regulation, reflection* and *ruminat*ion were the mediators that demonstrated the strongest and most frequent associations with mindfulness and health outcomes. Given that Latinos overall face significant unmet health needs and health inequities (Vega et al., 2009; Wells et al., 2001), the health-

associated benefits that participants appear to have derived from this intervention are encouraging.

The retention and health-related findings of this study also provide evidence to dispel the myth that mindfulness may be too divergent from Latino culture or the predominant religious perspective [Catholicism; (Perl, Greely, & Gray, 2006)] of these individuals to allow for benefit. In the current study, one participant dropped out due to a perceived conflict with their religious faith, however this appeared to be an isolated occurrence. In fact, a number of individuals stated that they viewed meditation as a form of prayer, which has been echoed in the literature (Ameling, 2000). Multiple participants reported that meditation either did not conflict, or even enhanced their religious/spiritual practice, which has also been found in the literature (Astin, 1997; Roth & Calle-Mesa, 2006). Furthermore, involvement in MBSR has been shown to be related to increasing endorsement of spirituality (Carmody et al., 2008; Greeson et al., 2011). As part of Adaptation #4 (enhancing perceived applicability), the instructor (JAO) brought in books on Christian Insight Meditation (Culligan, Chowning, Goldstein, Ryan, & Meadow, 2007) for participants to peruse. This may have facilitated openness and noticing parallels between their Christian faith and mindfulness meditation, thereby enhancing willingness to engage in the intervention.

Study Hypotheses

Findings related to Retention of Latinos in MBSR Interventions

How was MBSR-A related to retention for Latino participants? (Aim 1)

Hypothesis 1a. As noted above, the retention rate in the current study was 86% (see Table 7), which was significantly higher than the 60% (Roth & Creaser, 1997) and

66% (Roth & Robbins, 2004) found in the few studies of MBSR with Latino populations. The completion criteria in this study was attending a minimum of 5 out of 8 sessions, including the 8th class, which was based on previous work in this area (Roth et al., 1997; 2004). In order to examine factors that may have contributed to the greater retention observed, participants provided qualitative responses to two questions: “What were the biggest barriers to staying in the program?” (see Table 15) and “What motivated you to stay in the program?” (see Table 16). As highlighted above, the greatest obstacles to retention appeared to be time constraints (e.g., difficult to take time for oneself, busy schedule).

Latinos may experience greater time constraints than the majority population due to higher prevalence of working “blue collar” jobs with unreliable shifts, greater likelihood of taking public transit and thus longer commutes, and more family members to care for with fewer resources to do so (Barbeau, Krieger, & Soobader, 2004; Sacker, Head, Gimeno, & Bartley, 2009; Vega & Lopez, 2001). This was corroborated by the qualitative findings of frequently cited barriers, which included: childcare issues, employment conflicts, and familial needs. Due to the tendency towards *familismo* and valuing the family over oneself, these individuals may also be less willing or experience more guilt in terms of taking time for themselves (La Roche, 2002; Smith & Montilla, 2006), despite the importance of self-care for long-term health (e.g., Coster & Schwebel, 1997).

In spite of a number of obstacles to retention, participants appeared to be motivated to remain in the course due in large part to derived emotional/psychological benefits (e.g., more optimistic, less reactive, more calm). Indeed, participants commented

throughout the course on the positive changes that they were noticing physically, mentally, and emotionally, which were mirrored in the Roth (2007; 2004) studies. Participants identified these experiences as incentives to continue with their practice and persist in the course, despite the above noted barriers. Regarding other primary motivators for retention, individuals also frequently endorsed: connection to group members, increased coping skills, honoring commitment to themselves and others to attempt to complete the course, and sense of belonging. This connection to the group fits with the values of *personalismo*, the importance of social relationships and the collective whole (Falicov, 1998; Smith & Montilla, 2006). Supportive group environments such as MBSR may provide a number of benefits including acquiring positive coping skills, social support, and an opportunity to express emotions and experiences, which may aid in promoting healing and even prolonging survival time (e.g., Fosbair, 1997; Telch & Telch, 1986; Trojan, 1989).

Interestingly, while some participants identified lack of family support as a barrier, many reported that their family became more encouraging of their participation as they observed beneficial changes (e.g., less reactivity, more contentment) in the participant. This finding was also reported by Roth and colleagues (2006). Thus, compared to less collectivistic communities, some Latinos may ultimately experience greater support if they are seen as benefiting from the program, despite the potential for less encouragement from family and friends initially. It is possible that this could generalize to other populations that are more collectivistic as well.

Contribution of Adaptations to MBSR-A

The increased retention rate observed in the current study was likely due in part to the adaptations (group MI, problem-solving, testimonial, enhancements to perceived applicability) aimed at meeting the needs of Latino participants in MBSR. The intention of this study was to pilot the feasibility of these four primary adaptations. This is important to establish prior to investigating the individual contributions of these modifications to retention and effectiveness of the intervention. Thus, although there is not yet empirical data to support this notion, from the facilitator perspective the testimonial appeared to be a particularly impactful component. Participants expressed substantial appreciation for this personal endorsement, with statements such as: “He was like a beacon of light... it gives me hope with my health and that’s the first time I’ve felt hopeful in a long time” and “Even though he still had those health conditions, it was amazing to see how positively he was dealing with them, I really want to be in that place too.” Other studies have demonstrated greater effectiveness of testimonials on influencing individuals’ behavior compared to only receiving information, such as statistical data in support of a certain behavior change (e.g, Brosius & Bathelt, 1994).

The group MI portion likely played an important role in facilitating rapport and trust with the instructor and allowing participants to express how this intervention fit with their personal reasons and motivations. The value of building trust and personal relationships for many Latinos is important to not underestimate (La Roche, 2002; Arredondo, 2006). Ethnic minority clients have been shown to be more likely to obtain and utilize mental health services when the intervention is consistent with their values and beliefs (Flaskerud & Nyamathi, 2000; Sue & Zane, 1987; Zane et al., 1994). Indeed, a meta-analysis revealed that ethnic minorities may derive greater benefit from MI

compared to NLWs (Hettema et al., 2005). Within the group MI portion, a number of individuals expressed a desire to better their health and ability to cope with stress not just for themselves, but to also benefit their families. Indeed, multiple participants identified their loved ones as their primary motivation for being in the program. This is consistent with the tendency toward *familismo* in Latino culture (Falicov, 1998; Smith & Montilla, 2006). Therefore, having a reason that was larger than themselves may have bolstered their desire and willingness to complete the program.

While the group MI and testimonial may have helped to solidify participants' motivation to complete the program, the problem-solving component may have facilitated confidence in their ability to do so via strategies to circumvent potential barriers (e.g., sharing a telephone list to obtain/provide transportation if needed). Problem-solving has been shown to be an important component of various cognitive-behavioral interventions (Dobson, 2009; Lochman & Curry, 1986). Given potential socioeconomic barriers, the problem-solving adaptation may have been especially important in identifying several pathways for participants to maintain engagement in the program (e.g., ways to be able to attend class if their childcare or transportation becomes unavailable). Participants appeared highly engaged in the problem-solving component of the course. Additional solutions generated by the group included: talking with family members early on about participants' dedicating time to practice and inviting loved ones to engage in the mindfulness practices with them.

Finally, the adaptations designed to enhance the perceived applicability of MBSR for Latinos likely played a key role in boosting retention. These modifications may have enabled participants to experience a greater sense of identification or ownership over the

group, rather than feeling that the intervention was meant for “white people/other people”, as many participants mentioned at the beginning of the course. This perceived sense of belonging within the group was also corroborated by the qualitative findings. Research supports that higher ratings of perceived treatment credibility and positive treatment expectancies are related to increased adherence (Chambless, Tran, & Glass, 1997; Dew & Bickman, 2005) and treatment outcomes (Nock, Ferriter, & Holmberg, 2007; Smeets et al., 2008).

Participants also commented on experiencing a sense of safety and freedom in the all-Latino groups when discussing life challenges such as discrimination and familial pressures. This finding regarding the benefits of single-ethnicity groups has been reported in the literature (e.g., Yancey et al., 2006). In addition, participants reported valuing the opportunity to discuss resources that they derive from their culture/community and expressed appreciation for the mindful eating exercises and the inclusion of more “traditional” foods. Finally, participants were often surprised by and frequently commented on the usefulness of the mini-meditations (e.g., “mindful moments” and “STOP”). For example, “I never realized it could be possible to shift my whole perspective with just a few mindful breaths; the kids were still crying, my spouse was still needing my attention, but I was able to give myself a moment of calm within the storm.”

What factors were related to greater engagement of Latino participants in MBSR-A?

(Aim 1)

Hypothesis 1b. An additional objective was to identify factors that were associated with increased engagement of Latinos in MBSR. Interestingly, only *resilience* was associated with number of sessions attended. In a study of MBSR with cancer

patients, number of sessions attended was the best predictor of reductions in stress-related symptoms, accounting for 13.2% of the variance (Specia et al, 2000). Given this finding, it is interesting that more variables were not related to sessions attended, however this could be due to the small sample size. Overall, there is evidence that mindfulness-based interventions promote resilience (Hamilton, Kitzman, & Guyotte, 2006; Meiklejohn et al., 2012). Identifying factors that are linked to improved resilience has been a focus of enduring investigation (e.g., Garmezy, 1991; Masten et al., 1999). Therefore, the finding that greater attendance in MBSR may be related to an enhanced ability to bounce back from adversity is encouraging.

What factors were related to greater retention of Latino participants in MBSR-A?

(Aim 1)

Hypothesis 1c. An additional primary aim was to identify factors that may predict treatment retention for Latinos in MBSR. Lower baseline *anxiety, depression, perceived stress*, and higher *income* were hypothesized to predict greater retention (see Table 8). However, none of the variables were significant predictors of retention in the current study. This is likely due to small sample size, specifically comparing 23 treatment completers to a sample of only 4 treatment non-completers.

What distinguished treatment completers from non-completers?

Although *ethnic identity* was the only statistically significant demographic variable, overall the individuals who completed treatment were more likely to have higher income, education, full-time employment, perceived socioeconomic status and sense of ethnic identity compared to those who dropped out of the program (see Tables 1-4 and 6). These findings highlight the substantial impediment of low socioeconomic

status for successful participation in therapeutic interventions (e.g., Escarce, 2007). All but one of the participants who provided reasons for dropping out of the current study expressed a desire to continue the program, but reported that they were unable to do so due to socioeconomic issues (i.e., employment conflicts and additional familial demands). SES factors were corroborated in the qualitative findings as barriers to retention. In addition, these socioeconomic obstacles are similar to the reported reasons for attrition in the Roth (2004) study (e.g., various family needs, lack of childcare and/or transportation).

Despite the higher income of the completers compared to the non-completers, the mean and median incomes of both groups fell below those of Bernalillo county in which the First Choice site resides (\$48,398; Census, 2012). These salaries were also lower than the median income for Latinos nationally (\$39,000; Pew Hispanic Center, 2011). As part of the social determinants of health, low socioeconomic status, limited resource access, and resulting stress can significantly degrade individuals' and groups' health over time (Baum et al., 1999; Marmot et al., 2006; McEwen & Seeman, 1999). These findings provide further support for the need to account for potential socioeconomic barriers when designing interventions targeting Latino and other underserved populations. Without considering these factors, low participation of minorities in interventions may be erroneously attributed to lack of interest, relevance, or motivation. As noted in the qualitative findings, motivation was in fact strongly present and may have assisted participants in overcoming substantial challenges to attending and completing the program.

As noted previously, Latinos overall experience an interplay of factors that may increase (e.g., socioeconomic) as well as mitigate (e.g., social support, spirituality) risk for poor health outcomes. This portrait of vulnerability and resilience also emerged in the current study. For example, greater *ethnic identification* appeared to serve as a protective factor for retention, as those who completed the intervention scored significantly higher on this measure compared to those who dropped out (see Table 6). Ethnic identity has been shown to be a valuable protective factor for substance use and health outcomes (e.g., Alegria et al., 2008; Brook, Whiteman, Balka, Win, & Gursen, 1998). Historically, minority populations have been examined through a deficit model perspective [e.g., sole focus on risk factors, pathology (Betancourt et al., 2003; Penn et al., 1995)].

Meanwhile, the substantial strengths and resources that Latinos and other minority populations use to survive and even thrive (i.e. Latino Paradox) in challenging environments have historically been neglected. Thus, it is critical to attend to and call upon existing resilience factors, such as strong ethnic identity, when designing and adapting interventions for Latinos and other underserved populations. For example, in the current study, participants' tendency towards collectivism and sense of commitment and connection to the group appeared to enhance their willingness to persist in MBSR-A, and therefore increase their likelihood of deriving benefits from the intervention. This is key given that number of sessions attended has been found to be the best predictor of reductions in stress-associated symptoms (Specia et al., 2000).

Findings related to Health, Mindfulness and Potential Mediator Changes

Did those who completed MBSR-A show improvements in health from baseline? (Aim 2)

Hypothesis 2a. Among treatment completers, substantial pre- to post-intervention improvements were demonstrated in all of the health outcomes, with the exception of SF-36 *physical functioning* measure (see Table 9). Participants' mean *physical functioning* score at baseline was 81.96 (SD = 26.96) out of 100, where greater scores indicate better health/functioning, while the baseline mean of all other SF-36 measures was 56.77 (range = 43.41-66.74). Therefore, it is possible that some participants did not have much room for substantial improvement on this subscale compared to the other SF-36 measures. Additionally, the *physical functioning* measure of the SF-36 has been found to yield the smallest gains of any of the SF-36 scales, based on immediate post-assessment (Reibel et al., 2001).

It is also possible that changes in functioning may not be as impacted by this intervention compared to other indicators of health status, or that substantial changes in this domain may simply take longer to emerge. Roth and Robbins (2004) also found that SF-36 *physical functioning* scores did not increase after MBSR, even though multiple other scales did improve. They posited that the individuals in their study (predominantly Latina, urban, and sedentary) may have viewed themselves as unable to participate in more vigorous activities to which they may not be accustomed. The extent to which this may apply to the Latino population in Albuquerque in this sample is unclear.

Despite the non-significant finding with *physical functioning*, the *physical health* and *physical role* measures improved over the course of the program. The average baseline *physical role* score was 60.87 (SD = 41.17), while *physical health* was 67.43 (SD = 22.71). These subscales were lower at baseline compared to *physical functioning*; therefore there was more opportunity for them to improve over the course of the program.

Physical health is a composite scale of *physical functioning*, *physical role*, *pain*, and *general health*. It is likely that the *physical health* scale met criteria for significance because all of its subscales except for *physical functioning* improved significantly. The *physical role* subscale included items querying whether or not participants reduced the time they spent doing work or other activities or accomplished fewer things than they would have liked. The fact that this subscale increased from pre- to post-assessment suggests that patients' perception of their ability to engage in physical activities was enhanced, even if their physical functioning itself did not show substantial increases.

In addition to *physical health*, the improvements that met the most conservative tests for significance ($p < .001$) and the largest effect sizes were seen in *SF-36 total score*, *mental health*, *emotional role*, *vitality*, *emotional well-being*, *depression*, and *perceived stress* (see Table 9). These findings indicate that mental health factors appear to be the most highly impacted overall by the MBSR intervention. This is consistent with meta-analytic studies that have found greater improvements in psychological versus physical health indicators (Chiesa & Serretti, 2009; Grossman et al., 2004). The current findings are encouraging, particularly in primary care settings where psychological issues may receive less attention than physical ailments, despite their potential negative impact on health (CDC, 2011b; Chapman, Perry, & Strine, 2005; Jonas & Mussolino, 2000).

Moreover, Latinos have been found to be less likely to seek mental health treatment, to only do so in severe cases, and to demonstrate lower rates of persistence in treatment than majority populations (Escarce, 2007; Kouyoumdjian, Zamboanga, & Hansen, 2003; Vega & Lopez, 2001). This may be due to a number of factors including stigma of obtaining mental health treatment, lack of trust in institutional providers,

common practice of seeking out faith-based (e.g., priests) and familial assistance, as well as access, language, and resource barriers (Escarce, 2007; Kouyoumdjian et al., 2003; Vega & Lopez, 2001). Although MBSR should not be advocated as a replacement for mental health treatment, it may be a particularly valuable and accessible addition for this population who may be less likely to seek out mental health services.

Resilience also improved markedly from baseline to post-intervention (see Table 9). This finding was interesting because resilience has historically been viewed as a more stable “trait” measure (Block & Kremen, 1996), which therefore should not change significantly over the course of eight weeks. Resilience as a unitary construct has not been as frequently measured in MBSR studies as factors that may contribute to resilience (e.g., social support, personal mastery). Research does appear to support the relationship between resilience resources and positive health outcomes (e.g, decreased depressive and physical symptoms; Smith et al., 2011). The fact that participants’ general ability to recover from adversity was shown to improve over the course of this relatively brief intervention is promising.

Did treatment completers demonstrate enhanced mindfulness? (Aim 2)

Hypothesis 2b. For treatment completers, MBSR-A was found to be associated with improvements in mindfulness change scores, with the exception of the *describe* subscale (see Table 10). Previous research has shown significant improvements in FFMQ mindfulness scores over the course of MBSR, however the *describe* measure has been shown to yield the smallest effect size of all five mindfulness subscales (Carmody et al., 2009). It is possible that the *describe* subscale did not significantly improve because the intervention does not explicitly focus on providing participants with a greater vocabulary

to illustrate their experiences, which has also been noted in the literature (Baer, 2011). Nevertheless, participants did improve on the remaining four facets of mindfulness over the course of the MBSR-A intervention.

Did treatment completers show improvements in potential mediator variables? (Aim 2)

Hypothesis 2c. Among treatment completers, pre to post improvements in all of the six potential mediator variables (*curiosity, decentering (EQ and TMS), reflection, rumination, and self-regulation*) were observed (see Table 11). There is evidence to suggest that the health promoting effects generally attributed to mindfulness may actually be accounted for by other factors (e.g., Shapiro et al., 2006; Carmody et al., 2009). As noted previously, it is important to identify these potential mediating factors in order to isolate the active ingredients of mindfulness and to design more effective and parsimonious interventions.

Decentering, or the ability to adopt an observer perspective regarding one's experience (Safran & Segal, 1990), has been posited as a meta-mechanism that may potentially account for the relationship between mindfulness and positive health outcomes (Shapiro et al., 2006), which was supported in a subsequent study by Carmody et al. (2009). In the current study, the potential mediator measures that met the most conservative tests for significance ($p < .001$) were *TMS decenter* and *EQ decenter*, these variables also demonstrated the largest effect sizes ($d = 1.17$ and $d = 0.88$, respectively). Previous research has revealed increases in decentering following mindfulness interventions (Carmody et al., 2009; Orzech, Shapiro, Brown, & McKay, 2009; Sauer & Baer, 2010). Relationships between the potential mediator variables and other outcomes measures are discussed below. The fact that decentering, among other potential mediators

that may be important for health and well-being, improved markedly over the course of MBSR-A is noteworthy.

What changes in potential mediator variables were related to improvements in mindfulness from baseline? (Aim 3)

Hypothesis 3a. Although the sample size and the design of the current study did not readily lend itself to mediational analyses (Fritz & MacKinnon, 2007), the significant associations of the change in potential mediators with change in both mindfulness (see Table 12) and health outcomes (see Table 14) are promising. Of the six potential mediators, *EQ decenter* and *self-regulation* and were related to all of the mindfulness subscales, in the expected direction. Compared to the five mindfulness measures that the *EQ decenter* was associated with, *TMS decenter* was related to only two (*act aware* and *non-judge*). The average correlation of *EQ decenter* with the five mindfulness variables was .71 versus the *TMS decenter* average correlation, which was only .30. Additionally, *EQ decenter* appears to have slightly higher reliability compared to the *TMS decenter* scale. In the current study, the internal consistency reliability of *EQ decenter* was .95 versus .81 for the *TMS decenter* measure. Overall, *EQ decenter* appears to be a more useful measure of decentering compared to the *TMS decenter* subscale.

Self-regulation has been one of the less commonly examined mechanisms of mindfulness, however it may be particularly important to its functioning and outcomes. The authors of the self-regulation measure used in this study (Diehl et al., 2006) report that the scale is intended to assess focus on a particular task, attention to maintain an emotional balance, regulate internal and external distractions, and exert effort towards a chosen outcome. Research demonstrates improvements in self-regulation over the course

of MBSR (Brown, Ryan, & Creswell, 2007; Carmody et al., 2009), and its relationship to positive health outcomes (Brown et al., 2007). It is also possible that self-regulation may be a particularly important mindfulness factor given its emphasis on directing attention selectively towards particular goals. For example, self-regulation may be important in building and maintaining a mindfulness practice or other health-promoting behaviors, which require sustained attention and effort.

According to the authors of the scale used in this study (Rumination-Reflection Questionnaire; Trapnell & Campbell, 1999), *reflection* refers to “intellectual self-attentiveness” (Trapnell & Campbell, 1990; p. 287). In the current study, *reflection* was related to all of the mindfulness measures with the exception of *act aware* and *non-judge*. Reflection may be a key mindfulness factor based on the potential to work synergistically with decentering in allowing individuals to take a step back and contemplate their circumstances. This stepping back may facilitate one’s ability to engage in self-regulation, repair distressing moods, and increase self-care through greater consciousness of current physical and emotional states (Bishop, 2002; Ryan & Deci, 2004). Thus, reflection may enhance clarification of valued actions (i.e. how they want to respond) and ability to do so in an adaptive fashion (i.e. self-regulation) in the context of one’s environmental demands.

Hypothesis 3b. *Rumination*, as characterized by Trapnell & Campbell’s (1999; p. 287) scale used in this study refers to “neurotic self-attentiveness”. Although *rumination* was not correlated with sessions attended per Hypothesis 1c, it was associated with decreases in the vast majority of the mindfulness variables (all except for *describe*; see Table 12). This supports previous findings regarding decreases in rumination being

related to increases in mindfulness (Jain et al., 2007; Matousek & Dobkin, 2010). For example, an investigation of healthy participants revealed a significant decrease in rumination also using the Rumination-Reflection Questionnaire (Trapnell & Campbell, 1999) for the MBSR condition, while no differences were found in the control condition (Shapiro et al., 2007; Jain et al., 2007). The finding that rumination scores decrease during MBSR is important, given then demonstrated relationship between rumination and intensifying anxiety and depression (Nolen-Hoeksema, 2000; Watkins, 2009). Therefore, it is promising that increases in virtually all of the mindfulness variables were related to decreases in this problematic cognitive process.

Which mindfulness changes were associated with improvements in health from baseline?

(Aim 4)

Hypothesis 4a. Overall, mindfulness change scores were associated with improvements in health-related change scores, particularly among *anxiety, depression, resilience, and perceived stress* (see Table 13). Similar changes in these and other health-related outcomes have been demonstrated in the literature (Chiesa & Serretti, 2009; Grossman et al., 2004). In the present study, improvements in these important facets of mental health appear to be related substantially to increases in mindfulness, which is encouraging. As noted above, this may be especially useful for Latinos who may underutilize resources that promote mental health (Flaskerud & Nyamathi, 2000; Sue & Zane, 1987; Zane et al., 1994). The theme of the SF-36 health variables demonstrating more associations with changes in mindfulness compared to the SF-36 health measures is discussed below.

As seen in analyses of Hypotheses 2b, 3b, and 4a, the *describe* subscale appears to be the least likely to change of all of the mindfulness factors. This variable demonstrated relationships to only two (*perceived stress* and *resilience*) of the four non SF-36 health outcomes. The describing aspect may also not be an ideal indicator of mindfulness gains because it is possible to describe an experience in a judgmental fashion (Baer, 2011), which is not consistent with the intention of mindfulness practice (Kabat-Zinn, 1990).

Finally, *non-react* was positively related to *vitality*. As noted, *vitality* in the current study refers to degree of energy and fatigue (Ware et al., 1993). Non-reactivity appears to be a particularly important aspect of mindfulness. In a society that encourages immediate action and substantial multi-tasking, the non-reactive capacity that may be facilitated by mindfulness practice (Baer, 2007), creates additional space for conscious responding. This may enhance vitality by enabling individuals to disengage from habitual patterns of reaction to arising stimuli. Non-reactivity has also been shown to be related to increased self-compassion, which has been associated with improved psychological functioning (Baer, 2007; Birnie, Speca, & Carlson, 2010).

Which potential mediator changes were associated with improvements in health-related change from baseline? (Aim 4)

Hypothesis 4b. Similar to Hypothesis 4a, the non SF-36 health indicators emerged as factors that were more strongly related potential mediators, than the SF-36 health variables (see Table 14). It is possible that this may be due to common method variance (Podsakoff & Organ, 1986), in that the non SF-36 health, mindfulness, and potential mediator measures all generally assess subjective internal experiences. In

contrast, the SF-36 measures of health tend to be related to aspects of functioning in the social and external world overall. *EQ decenter*, *self-regulation* and *rumination* were again revealed to have the most frequent and strongest relationships with primary outcome variables, particularly the non SF-36 health measures. *EQ decenter* continued to show a stronger relationship with outcomes compared to *TMS decenter* (four vs. two significant associations, respectively). Overall, the results of this study support that increased decentering (particularly *EQ decenter*), *self-regulation* and decreased *rumination* appear to be the front-runner potential mediators related to mindfulness and positive health outcomes. Therefore, these particular variables should be examined in future studies as potential mediators of the relationship between mindfulness and health, including within Latino and other underserved, understudied, and growing populations.

TMS curiosity maintained unusual associations with the health-related outcome variables, including a negative relationship with *vitality* and *emotional well-being*. It is possible that when vitality is low, individuals may be more curious to explore their experience in an attempt to figure out the cause of their low energy and greater fatigue. It may also be that high emotional well-being may lead to less curiosity because of low motivation (e.g., no sense of threat) to investigate one's experience at that time. Finally, strong and frequent associations between *reflection* and primary outcome measures (improvements in *resilience* and *depression*) repeatedly emerged in the current study, thereby providing further evidence of its influence on positive health outcomes.

Limitations

Two primary limitations in the current study were the lack of a control group and a non-randomized study design. Therefore, it cannot be claimed that the beneficial

findings in this study were due exclusively to effects of the treatment (Campbell, Stanley, & Gage, 1963). The primary rationale for not including a comparison group was that this study was intended to pilot the feasibility of a novel set of adaptations to MBSR for Latinos, rather than to compare effects across separate conditions. Additionally, research indicates that data from single-condition studies may not be more biased towards positive outcomes (Concato, Shah, & Horwitz, 2000). Corresponding with the main intention of the current study, there is evidence that single-group designs enable the investigation of factors associated with treatment engagement, given limited resources or pending funding (McCaul, Svikis, & Moore, 2001).

This sample was also limited to individuals who spoke English well enough to complete the intervention. Therefore, participants may have been more acculturated and the findings may not generalize to less acculturated Latino populations. The questionnaire data was based on participant self-reports, which are subjective measures and therefore vulnerable to bias and expectancies (e.g., Huang, Liao, & Chang, 1998). In addition, the current study was limited by a lack of long-term follow-up. Therefore, it is unknown whether participants maintained the beneficial health-related gains that were observed or continued their practice beyond the duration of the intervention.

Clinical Implications

The current study provides evidence that certain adaptations to MBSR may increase retention and effectiveness for Latino populations, including those experiencing socioeconomic barriers to successful participation in health-promoting interventions. An aspect of the current study that may be perceived as both a limitation and a strength is the uniqueness of New Mexico's Latino population. Although the current sample exhibited

lower income, Latinos in New Mexico overall have demonstrated higher median income (personal earnings) and education compared to U.S. Latinos as a whole (Pew Hispanic Center, 2011). Therefore, New Mexico's Latino community may not be representative of the overall U.S. Latino population. However, New Mexico's Latino population may provide a glimpse into what U.S. Latinos may look like in the future. This ethnic group is predicted to encompass a larger majority of the U.S. population over time (Census, 2012), which has and continues to occur in New Mexico. Eventually, it is likely that this group will begin to achieve education and income levels that are more comparable to the majority population, at which point it will bear an increasing resemblance to Latinos in New Mexico currently. Therefore, this is an important Latino population to engage in future research and clinical endeavors.

Recommended Adaptations for Latino Participants

In addition to the adaptations included in this study, the primary author (JAO) recommends retaining certain existing MBSR modifications based on the pioneering work in this area (e.g., Roth et al., 1997; 2004; 2006). Ideally, modifications should consider issues of access, engagement, retention, and outcomes for the target population. For example, offering childcare, which could not be provided in the current study. Involvement of diverse populations in both research and clinical endeavors is essential, including partnering with community organizations to identify the most necessary and beneficial components to address when designing/adapting interventions to meet the needs of a particular population. Such involvement may also result in increased participation from these communities, which provides potential individual and population-wide benefit, augments the integrity and generalizability of the

research/intervention, and builds minority individuals' confidence in clinical and research-related services, which has been historically and justifiably low (Marger, 2009; Sue, 2003; Sue & Zane, 1987). It is also important to engage a diverse spectrum of participants within a given population (e.g., less acculturated to highly acculturated, fewer disabilities to greater disabilities).

Furthermore, conducting appropriate outreach is important to increase awareness and engagement, including working with churches and other places of worship, schools, medical clinics, community health centers and Spanish-language media. To address successful participation and retention, the inclusion of weekly phone calls to participants, the option of shorter meditations and interventions, simplifying and using language appropriate for the audience, and the availability of childcare and bicultural, supportive staff is suggested. If possible, in order to account for the problem of access, offering convenient times and locations for the intervention, transportation options, appropriate medical billing to facilitate reimbursement and reduce financial burden on participants, and sliding scale fees or donation-based courses is recommended.

Directions for Future Research

It is promising that the retention rate for Latinos in this study was higher than previous work in this area and was also comparable to retention rates observed among majority populations who have participated in MBSR programs. However, the precise reasons for the improved outcomes that were observed are currently unknown. Therefore, it will be important to unpack these adaptations in future studies. The “heuristic” model of treatment adaptation indicates that such data can be used in developing specific treatment adaptations, which can be examined for effectiveness and utility in later

research (Barrera & Castro, 2006; Castro, Barrera Jr, & Martinez Jr, 2004; Lau, 2006). Research to better understand the factors that increase perceived applicability of MBSR and related interventions is critical. Particularly given that this may have allowed participants to overcome substantial socioeconomic and cultural (e.g., lack of familiarity) barriers to engagement and retention in the current study. It will also be important to identify additional factors related to missing sessions and dropping out and to intervene on these factors early or prior to treatment initiation.

In addition, the manner in which mindfulness and MBSR functions to promote positive health outcomes is not yet fully understood. Building off of this and previous studies, future research of MBSR with Latinos should include randomized controlled studies. Recommended designs include active comparable control conditions, including a comparison group that does not receive any of the adaptations that were included in this study. Dismantling studies are also recommended in order to assist in isolating the active ingredients and mechanisms of MBSR-A. Study designs should incorporate long-term follow-up of at least one year. Exit interviews with a focus on qualitative questions regarding participants' experience, barriers to retention, motivation and techniques used to overcome those barriers, and suggestions for program modifications should be utilized. Such data is vital to understanding the context that the MBSR intervention is occurring in, which may differ markedly from the original and more frequent contexts in which it has been applied.

It is also critical to continue to understand the effect of home practice and other factors that may be accounting for the relationship between mindfulness and the positive outcomes observed during and after participation in MBSR interventions. Due to

significant variation in the data, participants' practice could not be reliably interpreted in this study. Future studies should examine both the quantity and quality of home practice and its impact on outcomes, particularly among Latinos and other groups that may face greater obstacles to engagement in home practice (e.g., potentially less space, time, job flexibility, support from others for engagement).

Furthermore, studies should systematically assess cultural values and factors such as *familismo*, *personalismo*, *simpatía*, acculturation, and familial/community support for engagement in MBSR. This will facilitate understanding of how level of support may interact with participants' willingness and ability to adhere to the intervention. Additional potential mediators such as acceptance, psychological flexibility, and any other primary outcome variables should be measured on a weekly basis in order to determine the temporal sequence of any beneficial outcomes that are observed. Finally, policy implications include the importance of addressing factors that may impede full participation and retention in cost-effective, preventative, and health-promoting interventions such as MBSR.

Conclusions

Across multiple years of facilitating MBSR interventions, it was evident to the primary investigator (JAO) that essential demonstrations of congruence and perceived applicability of this program for Latinos were missing from the standard course. The importance of providing a contextually meaningful rationale, particularly for time- and effort-intensive activities, appears to be a primarily neglected factor in designing interventions for minority populations. In essence, the adaptations in the current study were efforts to address the often unspoken question from participants of "Why should

someone like me care about trying to do something like this?” Furthermore, the first author felt it was important for participants to be able to answer that question for themselves via the group MI, experiencing the testimonial, and modifications to enhance perceived applicability of the program. In addition to increasing perceived fit with one’s values and priorities, the adaptations were also intended to reduce potential dissonance of MBSR being unfamiliar or not having a significant place in Latino culture.

Given the challenges that many marginalized individuals face in seeking and maintaining psychological treatment, the fact that MBSR-A was shown to improve mental and physical health outcomes while also demonstrating increased retention of Latinos is highly encouraging. Taken together these findings show that there is not just a need, but also a way to help address the currently unmet health concerns and health inequities that Latinos and other marginalized groups experience. Ideally, this and future studies will assist in continuing to understand the nature of MBSR, its effects, and ways to broaden its applicability and impact for underserved populations. MBSR interventions have a valuable role to play in complementing biomedical treatment in a cost-effective, time-bound, and person-centered approach to the alleviation of suffering.

Table 1. *Descriptive Statistics for Gender, Education, and Relationship Status*

	Completers (N = 23)		Non-Completers (N = 4)		All Participants (N = 27)	
	N	%	N	%	N	%
Gender						
Female	17	73.9	4	100	21	77.8
Male	6	26.1	0	0	6	22.2
Education						
Completed high school	1	4.3	1	25	2	7.4
Post HS, business, trade school	3	13	1	25	4	14.8
1-3 years of college	5	21.7	1	25	6	22.2
Bachelor's degree	4	17.4	1	25	5	18.5
Graduate school	10	43.5	0	0	10	37.4
Relationship Status						
Single	6	26.1	0	0	6	22.2
Married	12	52.2	2	50	14	51.9
Partnered	1	4.3	1	25	2	7.4
Divorced	3	13	1	25	4	14.8
Widowed	1	4.3	0	0	1	3.7

Note. Completers refers here to individuals who completed the intervention and have complete data (N = 23).

Table 2. *Descriptive Statistics for Income*

	Completers (N = 23)		Non-Completers (N = 4)		All Participants (N = 27)	
	N	%	N	%	N	%
Income						
Under \$3,000	2	8.7	1	25	3	11.1
\$5,000 - \$6,999	1	4.3	1	25	2	7.4
\$9,000 - \$10,999	1	4.3	0	0	1	3.7
\$15,000 - \$16,999	1	4.3	0	0	1	3.7
\$21,000 - \$24,999	2	8.7	1	25	3	11.1
\$25,000 - \$29,999	2	8.7	0	0	2	7.4
\$30,000 - \$39,999	4	17.4	0	0	4	14.8
\$40,000 - \$49,999	1	4.3	0	0	1	3.7
\$50,000 - \$59,999	1	4.3	0	0	1	3.7
\$70,000 - \$99,999	3	13	0	0	3	11.1
<\$100,000	5	21.7	1	25	6	22.2

Note. Income refers to annual household income in U.S. Dollars. Completers here refers to individuals who completed the intervention and have complete data (N = 23).

Table 3. *Descriptive Statistics for Perceived Socioeconomic Status*

	Completers (N = 23)		Non-Completers (N = 4)		All Participants (N = 27)	
	M	SD	M	SD	M	SD
Perceived SES						
Versus Community	6.09	2.11	4.00	2.58	5.77	2.27
Versus United States	5.41	2.11	3.50	2.52	5.12	2.23

Table 4. *Descriptive Statistics for Employment Status and Health Insurance Coverage*

	Completers (N = 23)		Non-Completers (N = 4)		All Participants (N = 27)	
	N	%	N	%	N	%
Employment Status						
Full-time	10	43.5	0	0	10	37.4
Part-time	6	26.1	2	50	8	29.6
Full-time and part-time	1	4.3	0	0	1	3.7
Unemployed	6	26.1	2	50	8	29.6
Health Insurance						
None	3	13	1	25	4	14.8
Employer/university	9	39.1	1	25	10	37.4
Medicare	4	17.4	1	25	5	18.5
Medicaid	1	4.3	1	25	2	7.4
Private	2	8.7	0	0	2	7.4
Disability	2	8.7	0	0	2	7.4
State-assisted	2	8.7	0	0	2	7.4

Note. Completers here refers to individuals who completed the intervention and have complete data (N = 23).

Table 5. *Frequency Table for Participants' Occupation at Baseline (N = 27)*

	N	%
Occupation		
Administrative	1	4.3
Cosmetologist	1	4.3
Full-time student	1	4.3
Healthcare provider	3	13
Home health aide	1	4.3
Office management/family business	1	4.3
Retired	1	4.3
Sales	2	8.7
School Principal/Administrator	2	8.7
Social Worker	2	8.7
Teacher	3	13
Unemployed	8	34.8
Volunteer research assistant	1	4.3

Table 6. *Independent Samples t-tests Comparing SEE Measures in Completers and Non-Completers*

	Completed (N = 23)		Non-Completers (N = 4)		<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Ethnic Identity	3.90	0.47	3.29	0.40	2.42	p<.05	1.40
Perceived Discrimination	3.63	0.52	3.47	0.27	0.59	n.s.	0.41
Mainstream Comfort	3.34	0.49	3.21	0.34	.50	n.s.	0.31
Social Affiliation	2.94	0.67	2.50	1.15	1.09	n.s.	0.48

Table 7. *Pearson Chi-square Results for Treatment Retention*

Group	Completed Treatment	Did not complete Treatment	% Retention
Previous Work	45	23	66
Current Study	26	4	86

$\chi^2 (1) = 4.38, p = 0.036, \Phi = 0.21.$

Table 8. *Logistic Regression Results Predicting Treatment Retention*

Predictor	<i>B</i>	<i>SE</i>	Wald χ^2	CI Lower	CI Upper	<i>p</i>
Baseline Anxiety	0.73	0.92	0.62	0.34	12.58	n.s.
Baseline Depression	-0.07	0.96	0.01	0.14	6.18	n.s.
Baseline Stress	-0.54	0.90	0.36	0.10	3.38	n.s.
Baseline Income	0.12	0.09	1.63	0.94	1.34	n.s.

Note. B = unstandardized coefficient. SE = standard error. CI = confidence interval.

Table 9. *Pre/Post-Intervention Results for Change in Health-Related Variables*

	Pre		Post		<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Physical Function	81.96	26.96	83.04	27.08	0.68	n.s.	0.14
Physical Role	60.87	41.17	85.87	30.92	3.18	p<.01	0.68
Emotional Role	43.48	40.43	85.51	24.26	5.92	p<.001	1.36
Vitality	43.41	19.10	61.23	17.00	4.90	p<.001	0.86
Emotional Well-being	57.57	19.21	72.17	13.46	3.99	p<.001	0.87
Social Function	65.22	24.41	76.10	21.62	2.65	p<.05	0.56
Pain	66.74	27.34	77.50	22.07	2.29	p<.05	0.49
General Health	60.14	17.59	69.58	15.00	3.61	p<.01	0.77
Mental Health	52.42	20.93	73.75	15.21	5.84	p<.001	1.27
Physical Health	67.43	22.71	79.00	20.92	4.05	p<.001	0.85
SF-36 Total	59.92	18.59	76.37	15.85	5.57	p<.001	1.18
Anxiety	2.34	0.66	1.89	0.57	3.38	p<.01	0.72
Depression	1.17	0.58	0.62	0.41	5.45	p<.001	1.21
Perceived Stress	2.00	0.57	1.33	0.69	4.90	p<.001	1.03
Resilience	3.36	0.75	3.73	0.64	2.87	p<.01	0.60

Table 10. *Pre/Post-Intervention Results for Change in Mindfulness Variables*

	Pre		Post		<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Act Aware	3.13	0.69	3.58	0.68	2.57	p<.05	0.53
Describe	3.22	0.91	3.36	0.82	1.00	n.s.	0.22
Non- Judge	3.07	0.76	3.57	0.81	2.64	p<.05	0.56
Non- React	2.83	0.59	3.57	0.81	5.03	p<.001	1.09
Observe	3.18	0.86	3.84	0.78	3.24	p<.01	0.67

Note. N = 23, *df* = 22 for all analyses.

Table 11. *Pre/Post-Intervention Results for Change in Potential Mediator Variables*

	Pre		Post		<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Curiosity	2.27	0.89	2.67	0.72	2.13	p<.05	0.45
EQ Decenter	2.92	0.79	3.62	0.76	4.22	p<.001	0.88
TMS Decenter	1.86	0.84	2.54	0.80	5.64	p<.001	1.17
Reflection	3.41	0.63	3.77	0.60	3.28	p<.01	0.68
Rumination	3.51	0.77	2.95	0.66	3.48	p<.01	0.73
Self- Regulation	2.77	0.49	3.01	0.43	2.67	p<.05	0.56

Note. N = 23, *df* = 22 for all analyses.

Table 12. *Bivariate Correlations between Change in Mindfulness Variables and Change in Potential Mediator Variables*

	Act Aware	Describe	Non- Judge	Non- React	Observe
Curiosity	0.29	0.28	-0.42	-0.15	0.28
EQ Decenter	0.68**	0.66**	0.75**	0.74**	0.73**
TMS Decenter	0.52*	0.24	0.47*	0.09	0.19
Reflection	0.32	0.42*	0.13	0.53**	0.50*
Rumination	-0.64**	-0.29	-0.67**	-0.75**	-0.52*
Self- Regulation	0.65**	0.66**	0.67**	0.78**	0.75**

Note. * $p < .05$ ** $p < .01$. $N = 23$ for all analyses.

Table 13. *Bivariate Correlations between Change in Mindfulness Variables and Change in Health Variables*

	Act Aware	Describe	Non- Judge	Non- React	Observe
Physical Function	-0.19	-0.30	-0.05	0.03	-0.11
Physical Role	0.21	0.12	0.08	0.26	0.31
Emotional Role	-0.06	-0.15	0.17	0.09	0.03
Vitality	0.19	-0.16	0.38	0.57**	0.19
Emotional Well-being	0.20	-0.20	0.38	0.39	0.04
Social Function	-0.01	-0.53	0.16	-0.00	-0.18
Pain	0.08	-0.14	0.17	0.29	0.07
General Health	0.13	-0.10	0.05	0.31	0.26
Mental Health	0.07	-0.32	0.33	0.33	0.03
Phys Health	0.18	-0.04	0.13	0.37	0.29
SF-36 Total	0.13	-0.22	0.27	0.38	0.16
Anxiety	-0.73**	-0.29	-0.63**	-0.52*	-0.42*
Depression	-0.46*	-0.21	-0.58**	-0.62**	-0.44*
Perceived Stress	-0.67**	-0.46*	-0.65**	-0.64**	-0.63**
Resilience	0.69**	0.47*	0.59**	0.66**	0.60**

Note. * $p < .05$ ** $p < .01$. $N = 23$ for all analyses.

Table 14. *Bivariate Correlations between Change in Potential Mediator Variables and Change in Health Variables*

	Curiosity	EQ Decenter	TMS Decenter	Reflection	Rumination	Self- Regulation
Physical Function	-0.11	-0.34	-0.23	-0.20	0.14	-0.17
Physical Role	-0.10	0.30	-0.08	0.33	-0.30	0.28
Emotional Role	-0.27	0.20	0.01	-0.16	0.01	0.07
Vitality	-0.55**	0.30	-0.33	0.20	-0.52*	0.31
Emotional Well-being	-0.52*	0.19	-0.26	0.41	-0.64**	0.16
Social Function	0.00	-0.15	0.10	-0.21	-0.22	-0.19
Pain	-0.34	0.25	-0.22	0.37	-0.22	0.22
General Health	-0.11	0.14	0.19	0.07	-0.30	0.18
Mental Health	-0.36	0.19	-0.13	0.10	-0.38	0.11
Physical Health	-0.25	0.30	-0.14	0.33	-0.34	0.30
SF-36 Total	-0.38	0.27	-0.15	0.27	-0.40	0.21
Anxiety	-0.02	-0.57**	-0.51*	-0.35	0.82**	-0.53**
Depression	0.14	-0.51*	0.05	-0.51*	0.65**	-0.47*
Perceived Stress	-0.09	-0.70**	-0.54**	-0.37	0.78**	-0.82**
Resilience	-0.07	0.72**	0.18	0.52**	-0.66**	0.55**

Note. * $p < .05$ ** $p < .01$. $N = 23$ for all analyses.

Table 15. *Frequency Table for Qualitative Responses to Barriers to Retention*

	N	%
“What were the biggest barriers to staying in the program?”		
“Making time for practice and the class each week with being so busy.”/“Hard to take time for myself.” (Time/prioritization)	10	37.4
“Finding someone to pick up kids after school.” (Childcare issues)	5	18.5
“Getting called into work.” (Employment demands/conflicts)	4	14.8
“Family functions/commitments.”	4	14.8
“Participating in yoga and other practices with pain/injuries.” (Physical pain)	4	14.8
“Deaths of loved ones.”	3	11.0
“My sister laughs when she sees me meditate, she thinks it is crazy.” (Lack of family support/encouragement)	3	11.0
“Getting motivated to go to all the classes when there is so much going on in my life.” (Motivation)	3	11.0
“Not knowing if this was going to be helpful for me at first.” (Unsure about perceived applicability/utility)	3	11.0
“Driving 80 miles for the class.” (Distance to course)	2	7.4
“No major barriers because I made the commitment to do this.”	2	7.4
“Being the only male in the class.” (Gender imbalance)	1	3.7
“My fear of change.”	1	3.7

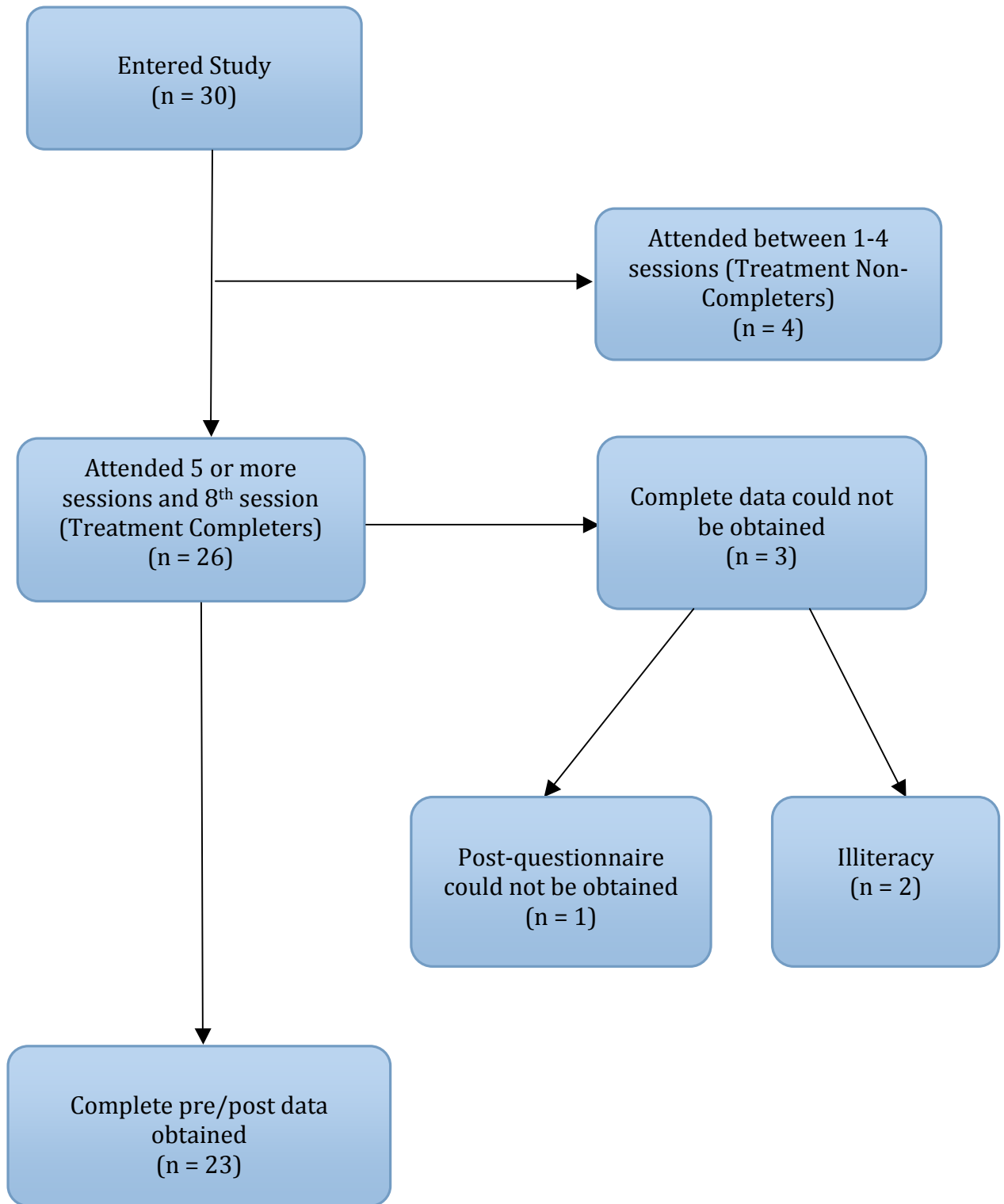
Note. N = 27. Total responses add up to more than 27 because some participants cited multiple barriers.

Table 16. *Frequency Table for Qualitative Responses to Motivation to Remain in MBSR*

	N	%
“What made you stay in the program?”		
“I always left the class feeling calm and content. It gave me hope that things were going to be ok.”/“Started to feel more sure and positive about my life.” (Emotional/Psychological benefits)	8	29.6
“I enjoyed the group and instructor and the group.” (Connection with group)	7	25.9
“I made a commitment (to myself and/or the group).” (Commitment)	5	18.5
“The course allowed me to reframe how I think about things, to focus on what is important and to be able to find productive ways to handle unpleasant experiences and stress.”/“I have a real outlet now.” (Coping skills/tools)	5	18.5
“The fact that we were all Latino, it gave a sense of comfort and understanding of other’s situations that I would not have felt otherwise.” (Sense of belonging)	5	18.5
“I felt the exercises were very helpful.”/“I realized I needed to change how I was dealing with stress in my life.” (Perceived utility/need)	4	14.8
“Improved relationship with spouse, listening skills at work, and greater love of myself.” (Better relationship with self and others)	3	11.0
“I stayed because it allowed me to pay attention to myself, which is hard to with such a big family.” (Self-care)	3	11.0
“I realized I can help myself, and move toward a healthier, less toxic life; everything I put into practice made a big difference.” (Self-reliance)	3	11.0

Note. N = 27. Total responses add up to more than 27 because some participants cited multiple reasons.

Figure 1. *Flow Chart for Study Participants*



Appendix A

Hospital Anxiety and Depression Scale - Anxiety Subscales

Instructions: Think about **the past 2 weeks** and place a check in one blank for each statement.

1. I felt tense or wound up.

- Most of the time
 A lot of the time
 From time to time
 Not at all

2. I got a sort of frightened feeling like butterflies in my stomach.

- Not at all
 Occasionally
 Quite often
 Very often

3. I got a sort of frightened feeling as if something awful was about to happen.

- Very definitely and quite badly
 Yes, but not too badly
 A little, but it didn't worry me
 Not at all

4. I felt restless as if I had to be on the move.

- Very much indeed
 Quite a lot
 Not very much
 Not at all

5. Worrying thoughts went through my mind.

- A great deal of the time
 A lot of the time
 From time to time but not too often.
 Only occasionally

6. I got sudden feelings of panic.

- Very much indeed
 Quite a lot
 Not very much
 Not at all

7. I could sit at ease and feel relaxed.

- Definitely
 Usually
 Not often
 Not at all

Appendix B

Experiences Questionnaire (EQ Decentering Items)

1=Never 2=A little 3=Moderately 4=Quite a bit 5=All the time

1. I remind myself that thoughts aren't facts.	1	2	3	4	5
2. I am better able to accept myself as I am.	1	2	3	4	5
3. I am kinder to myself when things go wrong.	1	2	3	4	5
4. I can slow my thinking at times of stress.	1	2	3	4	5
5. I am not so easily carried away by my thoughts and feelings.	1	2	3	4	5
6. I notice that I don't take difficulties so personally.	1	2	3	4	5
7. I can separate myself from my thoughts and feelings.	1	2	3	4	5
8. I can take time to respond to difficulties.	1	2	3	4	5
9. I can treat myself kindly.	1	2	3	4	5
10. I can observe unpleasant feelings without being drawn to them.	1	2	3	4	5
11. I have the sense that I am fully aware of what is going on around me and inside me.	1	2	3	4	5
12. I can actually see that I am not my thoughts.	1	2	3	4	5
13. I am consciously aware of a sense of my body as a whole.	1	2	3	4	5
14. I view things from a wider perspective.	1	2	3	4	5

Appendix C

Toronto Mindfulness Scale - Trait Version - (TMS Decentering and TMS Curiosity)

Please circle how much you agree with each item. There are no right or wrong answers.

0=Not at all 1=A little 2=Moderately 3=Quite a bit 4=Very much

- | | | | | | |
|--|---|---|---|---|---|
| 1. I experience myself as separate from my changing thoughts and feelings. | 0 | 1 | 2 | 3 | 4 |
| 2. I am more concerned with being open to my experiences than controlling or changing them. | 0 | 1 | 2 | 3 | 4 |
| 3. I am curious about what I might learn about myself by taking notice of how I react to certain thoughts, feelings or sensations. | 0 | 1 | 2 | 3 | 4 |
| 4. I experience my thoughts more as events in my mind than as a necessarily accurate reflection of the way things 'really' are. | 0 | 1 | 2 | 3 | 4 |
| 5. I am curious to see what my mind is up to from moment to moment. | 0 | 1 | 2 | 3 | 4 |
| 6. I am curious about each of my thoughts and feelings as they occur. | 0 | 1 | 2 | 3 | 4 |
| 7. I am receptive to observing unpleasant thoughts and feelings without interfering with them. | 0 | 1 | 2 | 3 | 4 |
| 8. I am more invested in just watching my experiences as they arise, than in figuring out what they could mean | 0 | 1 | 2 | 3 | 4 |
| 9. I approach each experience by trying to accept it, no matter whether it is pleasant or unpleasant. | 0 | 1 | 2 | 3 | 4 |
| 10. I remain curious about the nature of each experience as it arises. | 0 | 1 | 2 | 3 | 4 |
| 11. I am aware of thoughts and feelings without over-identifying with them. | 0 | 1 | 2 | 3 | 4 |
| 12. I am curious about my reactions to things | 0 | 1 | 2 | 3 | 4 |
| 13. I am curious about what I might learn about myself by just taking notice of what my attention gets drawn to. | 0 | 1 | 2 | 3 | 4 |

Appendix D

Demographics and Background Information

1. Age _____ 2. Date of Birth _____ 3. Weight _____ 4. Height _____

5. Gender: _____ Male _____ Female _____ Transgender

6. Years of Education

_____ 0-4 Years _____ Post high school, business or trade school

_____ 5-8 Years _____ 1-3 years of college

_____ High school incomplete _____ 4 years of college

_____ High school completed _____ Graduate school

7. Current marital/relationship status

_____ Single _____ Divorced _____ Single

_____ Married _____ Partnered _____ Widowed

8. Are you presently employed or volunteering?

_____ Yes, Full-time _____ Yes, Part-time _____ No

8a. If employed or volunteering, briefly describe type of work:

9. What was your family income last year? This should include income from work plus other sources such as disability, social security, etc.

_____ Under \$3,000 _____ \$15,000-\$16,999 _____ \$50,000-\$59,999

_____ \$3,000-\$4,999 _____ \$17,000-\$18,999 _____ \$60,000-\$69,999

_____ \$5,000-\$6,999 _____ \$19,000-\$20,999 _____ \$70,000-\$99,999

_____ \$7,000-\$8,999 _____ \$21,000-\$24,999 _____ \$100,000 and over

_____ \$9,000-\$10,999 _____ \$25,000-\$29,999 _____ \$11,000-\$12,999

_____ \$30,000-\$39,999 _____ \$13,000-\$14,999 _____ \$40,000-\$49,999

10. What is your religious preference?

_____ Catholic _____ Christian, non-Catholic _____ Native/Traditional _____

Jewish _____ Muslim _____ Atheist/Agnostic _____ Other

(Specify:) _____



Use the following scale to rate yourself on where you see your standing in the community (Ques. 11) and in the United States (Ques. 12). Worst are off those who have the least money, least education, and least respected or no jobs. Best off are those who have the most money, most education, and more respected jobs. Circle one number for each question.

	Worst Off			Moderately Well Off				Best off		
11. In your community	1	2	3	4	5	6	7	8	9	10
12. In the United States	1	2	3	4	5	6	7	8	9	10

Appendix E

Center for Epidemiologic Studies Depression Scale

Instructions: Read the list below of ways you may have felt. Circle the number corresponding to how often you have felt this way during the past week:

0 = Rarely or none of the time (less than 1 day); 1 = Some or a little of the time (1-2 days); 2 = Occasionally; Moderately (3-4 days); 3 = Most or all of the time (5-7 days)

- | | | | | |
|--|---|---|---|---|
| 1. You were bothered by things that usually don't bother you. | 0 | 1 | 2 | 3 |
| 2. You did not feel like eating; your appetite was poor. | 0 | 1 | 2 | 3 |
| 3. You felt that you could not shake off the blues even with help from your family or friends. | 0 | 1 | 2 | 3 |
| 4. You felt that you were just as good as other people. | 0 | 1 | 2 | 3 |
| 5. You had trouble keeping your mind on what you were doing. | 0 | 1 | 2 | 3 |
| 6. You felt depressed. | 0 | 1 | 2 | 3 |
| 7. You felt that everything you did was an effort. | 0 | 1 | 2 | 3 |
| 8. You felt hopeful about the future. | 0 | 1 | 2 | 3 |
| 9. You thought your life had been a failure. | 0 | 1 | 2 | 3 |
| 10. You felt fearful. | 0 | 1 | 2 | 3 |
| 11. Your sleep was restless. | 0 | 1 | 2 | 3 |
| 12. You were happy. | 0 | 1 | 2 | 3 |
| 13. You talked less than usual. | 0 | 1 | 2 | 3 |
| 14. You felt lonely. | 0 | 1 | 2 | 3 |
| 15. People were unfriendly. | 0 | 1 | 2 | 3 |
| 16. You enjoyed life. | 0 | 1 | 2 | 3 |
| 17. You had crying spells. | 0 | 1 | 2 | 3 |
| 18. You felt sad. | 0 | 1 | 2 | 3 |
| 19. You felt that people disliked you. | 0 | 1 | 2 | 3 |
| 20. You could not get "going". | 0 | 1 | 2 | 3 |

Appendix F

Scale of Ethnic Experiences

Read each item and indicate how much you agree or disagree with the statements below.

1=Strongly Disagree 2=Disagree 3=Neither agree nor disagree 4=Agree 5=Strongly Agree

- | | | | | | |
|--|---|---|---|---|---|
| 1. Holidays related to my ethnicity are not very important to me. | 1 | 2 | 3 | 4 | 5 |
| 2. Generally speaking, my ethnic group is respected in America. | 1 | 2 | 3 | 4 | 5 |
| 3. My ethnic group has been treated well in American society. | 1 | 2 | 3 | 4 | 5 |
| 4. Ethnicity was not important to my parents. | 1 | 2 | 3 | 4 | 5 |
| 5. At a social gathering, I would feel most comfortable if the majority of the people there were members of my own ethnic group. | 1 | 2 | 3 | 4 | 5 |
| 6. I feel like I belong to mainstream American culture. | 1 | 2 | 3 | 4 | 5 |
| 7. My ethnic background plays a very small role in how I live my life. | 1 | 2 | 3 | 4 | 5 |
| 8. I do not feel it is necessary to learn about the history of my ethnic group. | 1 | 2 | 3 | 4 | 5 |
| 9. I'm what most people think if as a typical American. | 1 | 2 | 3 | 4 | 5 |
| 10. I feel most comfortable talking about personal things with people from my own ethnic group. | 1 | 2 | 3 | 4 | 5 |
| 11. I do not feel a part of mainstream American culture. | 1 | 2 | 3 | 4 | 5 |
| 12. Ethnic pride is not very important to a child's upbringing. | 1 | 2 | 3 | 4 | 5 |
| 13. My ethnic group does not have the same opportunities as other ethnic groups. | 1 | 2 | 3 | 4 | 5 |
| 14. I have a strong sense of myself as member of my ethnic group. | 1 | 2 | 3 | 4 | 5 |
| 15. I think that friendships work best when people are from the same ethnic group. | 1 | 2 | 3 | 4 | 5 |
| 16. I believe that my sense of ethnicity was strongly influenced by my parents. | 1 | 2 | 3 | 4 | 5 |
| 17. I think of myself as a typical American. | 1 | 2 | 3 | 4 | 5 |

- | | | | | | |
|--|---|---|---|---|---|
| 18. I find it easiest to trust people from my own ethnic group. | 1 | 2 | 3 | 4 | 5 |
| 19. I often have to defend my ethnic group from criticism by people outside of my ethnic group. | 1 | 2 | 3 | 4 | 5 |
| 20. Being a member of my ethnic group is an important part of who I am. | 1 | 2 | 3 | 4 | 5 |
| 21. Discrimination against my ethnic group is not a problem in America. | 1 | 2 | 3 | 4 | 5 |
| 22. I prefer my close friends to be from my own ethnic group. | 1 | 2 | 3 | 4 | 5 |
| 23. My parents gave me a strong sense of cultural values. | 1 | 2 | 3 | 4 | 5 |
| 24. My ethnic group is often criticized in this country. | 1 | 2 | 3 | 4 | 5 |
| 25. I believe that it is important to take part in holidays that celebrate my ethnic group. | 1 | 2 | 3 | 4 | 5 |
| 26. In America, the opinions of people from my ethnic group are treated as less important than those of other ethnic groups. | 1 | 2 | 3 | 4 | 5 |
| 27. When I was growing up ethnicity played a very little part in our family life. | 1 | 2 | 3 | 4 | 5 |
| 28. I understand how to get along well in mainstream America. | 1 | 2 | 3 | 4 | 5 |
| 29. In my life, I have experienced prejudice because of my ethnic group. | 1 | 2 | 3 | 4 | 5 |
| 30. I have taken time to learn about the history of my ethnic group. | 1 | 2 | 3 | 4 | 5 |
| 31. I have not felt prejudiced against in the U.S. because of my ethnicity. | 1 | 2 | 3 | 4 | 5 |
| 32. The term "American" does not fit me. | 1 | 2 | 3 | 4 | 5 |

33. How much do you feel discriminated against because of your ethnicity?

None at all A little Moderately Very much A great deal

Appendix G

Medical Outcomes Study Short Form 36 Health Survey

(SF-36 Physical Health, Mental Health, associated subscales)

1. In general, would you say your health is:

 Excellent Very good Good Fair Poor

2. Compared to 1 year ago, how would you rate your health in general now?

 Much better Somewhat better About the same Somewhat worse Much worseDoes your health now limit you in these activities? If so, how much?

Circle one number for each.

1 = yes, limited a lot 2 = yes, limited a little 3 = no, not limited at all

- | | | | |
|---|---|---|---|
| 3. <u>Vigorous activities</u> , such as running, lifting heavy objects, participating in strenuous sports. | 0 | 1 | 2 |
| 4. <u>Moderate activities</u> , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf. | 0 | 1 | 2 |
| 5. Lifting or carrying groceries. | 0 | 1 | 2 |
| 6. Climbing several flights of stairs. | 0 | 1 | 2 |
| 7. Climbing one flight of stairs. | 0 | 1 | 2 |
| 8. Bending, kneeling, or stooping. | 0 | 1 | 2 |
| 9. Walking more than a mile. | 0 | 1 | 2 |
| 10. Walking several blocks. | 0 | 1 | 2 |
| 11. Walking one block. | 0 | 1 | 2 |
| 12. Bathing or dressing yourself. | 0 | 1 | 2 |

During the **past 4 weeks**, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

13. Cut down on the amount of time you spent on work or other activities

 Yes No14. Accomplished less than you would like Yes No15. Were limited in the kind of work or other regular daily activities Yes No

16. Had difficulty performing work or other regular daily activities (for example, it took extra effort)

Yes No

During the **past 4 weeks**, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious):

17. Cut down on the amount of time you spent on work or other activities

Yes No

18. Accomplished less than you would like

Yes No

19. Didn't do work or other regular daily activities as carefully as usual

Yes No

20. During the **past 4 weeks**, to what extent has your physical health or emotional problems interfered with your social activities with family, friends, neighbors, or groups?

Not at all Slightly Moderately Quite a bit Extremely

21. During the **past 4 weeks**, how much did pain interfere with your normal work, including both work outside the home and housework?

Not at all Slightly Moderately Quite a bit Extremely

22. How much bodily pain have you had during the **past 4 weeks**?

None Very mild Mild Moderate Severe Very severe

23. During the **past 4 weeks**, how much of the time has your physical health or emotional problems interfered with your physical activities like visiting friends or relatives?

All of Most of Some of A little of None of
the time the time the time the time the time

Please circle the number closest to the way you have been feeling **over the last month**

1 = All of the time 2 = Most of the time 3 = A good bit of the time
4 = Some of the time 5 = A little of the time 6 = None of the time

- | | | | | | | |
|---|---|---|---|---|---|---|
| 24. Did you feel full of pep? | 1 | 2 | 3 | 4 | 5 | 6 |
| 25. Have you been a nervous person? | 1 | 2 | 3 | 4 | 5 | 6 |
| 26. Have you felt so down in the dumps that nothing could cheer you up? | 1 | 2 | 3 | 4 | 5 | 6 |
| 27. Have you felt calm and peaceful? | 1 | 2 | 3 | 4 | 5 | 6 |
| 28. Did you have a lot of energy? | 1 | 2 | 3 | 4 | 5 | 6 |
| 29. Have you felt downhearted and blue? | 1 | 2 | 3 | 4 | 5 | 6 |
| 30. Did you feel worn out? | 1 | 2 | 3 | 4 | 5 | 6 |
| 31. Have you been a happy person? | 1 | 2 | 3 | 4 | 5 | 6 |
| 32. Did you feel tired? | 1 | 2 | 3 | 4 | 5 | 6 |

How true or false is each of the following statements for you?
 Circle one number for each.

1 = definitely true 2 = mostly true 3 = don't know 4 = most false 5 = definitely false

- | | | | | | |
|--|---|---|---|---|---|
| 33. I seem to get sick a little earlier than other people. | 1 | 2 | 3 | 4 | 5 |
| 34. I am as healthy as anybody I know. | 1 | 2 | 3 | 4 | 5 |
| 35. I expect my health to get worse. | 1 | 2 | 3 | 4 | 5 |
| 36. My health is excellent. | 1 | 2 | 3 | 4 | 5 |

Appendix H

Five Facet Mindfulness Questionnaire

Instructions: Please rate each of the following statements using the scale provided. Write the number in the blank that best describes your own opinion of what is generally true for you.

1 = never or very rarely true 2 = rarely true 3 = sometimes true 4 = often true 5 = very often or always true

- | | | | | | |
|--|---|---|---|---|---|
| 1. When I'm walking, I deliberately notice the sensations of my body moving. | 1 | 2 | 3 | 4 | 5 |
| 2. I'm good at finding words to describe my feelings. | 1 | 2 | 3 | 4 | 5 |
| 3. I criticize myself for having irrational or inappropriate emotions. | 1 | 2 | 3 | 4 | 5 |
| 4. I perceive my feelings and emotions without having to react to them. | 1 | 2 | 3 | 4 | 5 |
| 5. When I do things, my mind wanders off and I'm easily distracted. | 1 | 2 | 3 | 4 | 5 |
| 6. When I take a shower or bath, I stay alert to the sensations of water on my body. | 1 | 2 | 3 | 4 | 5 |
| 7. I can easily put my beliefs, opinions, and expectations into words. | 1 | 2 | 3 | 4 | 5 |
| 8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted. | 1 | 2 | 3 | 4 | 5 |
| 9. I watch my feelings without getting lost in them. | 1 | 2 | 3 | 4 | 5 |
| 10. I tell myself I shouldn't be feeling the way I'm feeling. | 1 | 2 | 3 | 4 | 5 |
| 11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions. | 1 | 2 | 3 | 4 | 5 |
| 12. It's hard for me to find the words to describe what I'm thinking. | 1 | 2 | 3 | 4 | 5 |
| 13. I am easily distracted. | 1 | 2 | 3 | 4 | 5 |
| 14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way. | 1 | 2 | 3 | 4 | 5 |
| 15. I pay attention to sensations, such as the wind in my hair or sun on my face. | 1 | 2 | 3 | 4 | 5 |
| 16. I have trouble thinking of the right words to express how I feel about things. | 1 | 2 | 3 | 4 | 5 |
| 17. I make judgments about whether my thoughts are good or bad. | 1 | 2 | 3 | 4 | 5 |

18. I find it difficult to stay focused on what's happening in the present. 1 2 3 4 5
19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it. 1 2 3 4 5
20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing. 1 2 3 4 5
21. In difficult situations, I can pause without immediately reacting. 1 2 3 4 5
22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words. 1 2 3 4 5
23. It seems I am "running on automatic" without much awareness of what I'm doing. 1 2 3 4 5
24. When I have distressing thoughts or images, I feel calm soon after. 1 2 3 4 5
25. I tell myself that I shouldn't be thinking the way I'm thinking. 1 2 3 4 5
26. I notice the smells and aromas of things. 1 2 3 4 5
27. Even when I'm feeling terribly upset, I can find a way to put it into words. 1 2 3 4 5
28. I rush through activities without being really attentive to them. 1 2 3 4 5
29. When I have distressing thoughts or images I am able just to notice them without reacting. 1 2 3 4 5
30. I think some of my emotions are bad/ inappropriate, I shouldn't feel them. 1 2 3 4 5
31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow. 1 2 3 4 5
32. My natural tendency is to put my experiences into words. 1 2 3 4 5
33. When I have distressing thoughts/images, I just notice and let them go. 1 2 3 4 5
34. I do jobs or tasks automatically without being aware of what I'm doing. 1 2 3 4 5
35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about. 1 2 3 4 5
36. I pay attention to how my emotions affect my thoughts and behavior. 1 2 3 4 5
37. I can usually describe how I feel at the moment in considerable detail. 1 2 3 4 5
38. I find myself doing things without paying attention 1 2 3 4 5
39. I disapprove of myself when I have irrational ideas 1 2 3 4 5

Appendix I

Perceived Stress Scale

Instructions: The questions in this scale ask you about your feelings and thoughts during **the last month**. For each question, circle 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. The best approach is to answer fairly quickly. That is, don't try to count up the number of times you felt a particular way, simply indicate the response that seems like a reasonable estimate.

0 = Never 1 = Almost never 2 = Sometimes 3 = Fairly Often 4 = Very Often

- | | | | | | |
|--|---|---|---|---|---|
| 1. In the last month, how often have you been upset because of something that happened unexpectedly? | 0 | 1 | 2 | 3 | 4 |
| 2. In the last month, how often have you felt that you were unable to control the important things in your life? | 0 | 1 | 2 | 3 | 4 |
| 3. In the last month, how often have you felt nervous and "stressed"? | 0 | 1 | 2 | 3 | 4 |
| 4. In the last month, how often have you felt confident about your ability to handle your personal problems? | 0 | 1 | 2 | 3 | 4 |
| 5. In the last month, how often have you felt that things were going your way? | 0 | 1 | 2 | 3 | 4 |
| 6. In the last month, how often have you found that you could not cope with all the things that you had to do? | 0 | 1 | 2 | 3 | 4 |
| 7. In the last month, how often have you been able to control irritations in your life? | 0 | 1 | 2 | 3 | 4 |
| 8. In the last month, how often have you felt that you were on top of things? | 0 | 1 | 2 | 3 | 4 |
| 9. In the last month, how often have you been angered because of things that happened that were outside of your control? | 0 | 1 | 2 | 3 | 4 |
| 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? | 0 | 1 | 2 | 3 | 4 |

Appendix J

Brief Resilience Scale

Please read each statement and circle the number for how much you disagree or agree.

1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree

- | | | | | | |
|---|---|---|---|---|---|
| 1. I tend to bounce back quickly after hard times. | 1 | 2 | 3 | 4 | 5 |
| 2. I have a hard time making it through stressful events. | 1 | 2 | 3 | 4 | 5 |
| 3. It does not take long to recover from stressful events. | 1 | 2 | 3 | 4 | 5 |
| 4. It is hard for me to snap back when something bad happens. | 1 | 2 | 3 | 4 | 5 |
| 5. I usually come through difficult times with little trouble. | 1 | 2 | 3 | 4 | 5 |
| 6. I tend to take a long time to get over set-backs in my life. | 1 | 2 | 3 | 4 | 5 |

Appendix K

Rumination-Reflection Questionnaire - (RRQ Rumination and RRQ Reflection)

Instructions: For each of the statements below please indicate your level of agreement or disagreement by circling one of the scale categories to the right of each statement.

1=Strongly Disagree; 2=Disagree; 3=Neither agree nor disagree; 4=Agree; 5=Strongly Agree

- | | | | | | |
|---|---|---|---|---|---|
| 1. My attention is often focused on aspects of myself I wish I'd stop thinking about. | 1 | 2 | 3 | 4 | 5 |
| 2. I always seem to be "re-hashing" in my mind recent things I've said or done. | 1 | 2 | 3 | 4 | 5 |
| 3. Sometimes it is hard for me to shut off thoughts about myself. | 1 | 2 | 3 | 4 | 5 |
| 4. Long after an argument or disagreement is over with, my thoughts keep going back to what happened. | 1 | 2 | 3 | 4 | 5 |
| 5. I tend to "ruminate" or dwell over things that happen to me for a really long time afterward. | 1 | 2 | 3 | 4 | 5 |
| 6. I don't waste time re-thinking things that are over and done with. | 1 | 2 | 3 | 4 | 5 |
| 7. Often I'm playing back over in my mind how I acted in a past situation. | 1 | 2 | 3 | 4 | 5 |
| 8. I often find myself re-evaluating something I've done. | 1 | 2 | 3 | 4 | 5 |
| 9. I never ruminate or dwell on myself for very long. | 1 | 2 | 3 | 4 | 5 |
| 10. It is easy for me to put unwanted thoughts out of my mind. | 1 | 2 | 3 | 4 | 5 |
| 11. I often reflect on episodes in my life that I should no longer concern myself with. | 1 | 2 | 3 | 4 | 5 |
| 12. I spend a great deal of time thinking back over my embarrassing or disappointing moments. | 1 | 2 | 3 | 4 | 5 |
| 13. Philosophical or abstract thinking doesn't appeal to me that much. | 1 | 2 | 3 | 4 | 5 |
| 14. I'm not really a meditative type of person | 1 | 2 | 3 | 4 | 5 |
| 15. I love exploring my "inner" self. | 1 | 2 | 3 | 4 | 5 |
| 16. My attitudes and feelings about things fascinate me. | 1 | 2 | 3 | 4 | 5 |
| 17. I don't really care for introspective or self-reflective thinking. | 1 | 2 | 3 | 4 | 5 |

- | | | | | | |
|---|---|---|---|---|---|
| 18. I love analyzing why I do things. | 1 | 2 | 3 | 4 | 5 |
| 19. People often say I'm a "deep" introspective type of person. | 1 | 2 | 3 | 4 | 5 |
| 20. I don't care much for self-analysis. | 1 | 2 | 3 | 4 | 5 |
| 21. I'm very self-inquisitive by nature. | 1 | 2 | 3 | 4 | 5 |
| 22. I love to meditate on the nature and meaning of things. | 1 | 2 | 3 | 4 | 5 |
| 23. I often love to look at my life in philosophical ways. | 1 | 2 | 3 | 4 | 5 |
| 24. Contemplating myself isn't my idea of fun. | 1 | 2 | 3 | 4 | 5 |

Appendix L

Self-Regulation Scale

1 = Not at all 2 = Barely true 3 = Somewhat true 4 = Completely true

- | | | | | |
|---|---|---|---|---|
| 1. I can concentrate on one activity for a long time, if necessary. | 1 | 2 | 3 | 4 |
| 2. If I am distracted from an activity, I don't have any problem coming back to the topic quickly. | 1 | 2 | 3 | 4 |
| 3. If an activity arouses my feelings too much, I can calm myself down so that I can continue with the activity soon. | 1 | 2 | 3 | 4 |
| 4. If an activity requires a problem-oriented attitude, I can control my feelings. | 1 | 2 | 3 | 4 |
| 5. It is difficult for me to suppress thoughts that interfere with what I need to do. | 1 | 2 | 3 | 4 |
| 6. I can control my thoughts from distracting me from the task at hand. | 1 | 2 | 3 | 4 |
| 7. When I worry about something, I cannot concentrate on an activity. | 1 | 2 | 3 | 4 |
| 8. After an interruption, I don't have any problem resuming my concentrated style of working. | 1 | 2 | 3 | 4 |
| 9. I usually have a whole bunch of thoughts and feelings that interfere with my ability to work in a focused way. | 1 | 2 | 3 | 4 |
| 10. I stay focused on my goal and don't allow anything to distract me from my plan of action. | 1 | 2 | 3 | 4 |

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