

IMPACT OF BRIEF MEDITATION TRAINING ON STRESS, DISTRESS,
AND QUALITY OF LIFE FOR HOMELESS ADULTS

by

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A Dissertation Submitted to the Faculty
of the California Institute of Integral Studies
in Partial Fulfilment of the Requirements for the Degree of
Doctor of Psychology in Clinical Psychology

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ABSTRACT

Although the efficacy of meditation-based interventions has been widely studied, research with homeless groups is minimal. Homeless people suffer from increased levels of stress, emotional distress, and negative life events that can present a complicated web of inseparable stressors. Without question, food, shelter, and case management services are the first line of intervention and stabilization. However, mind-body practices such as meditation may have the potential to reduce the negative impacts on stress and quality of life that may accompany housing instability.

The objective of the current study was to investigate the impact of brief training in Integrative Restoration Yoga Nidra (iRest), a yoga-based meditation program, on perceived stress, psychological distress, and quality of life in sheltered homeless adults. Self-report measures were collected from 117 meditation group participants and 79 participants who received shelter and services only. Due to significant baseline differences in the treatment and comparison groups, between-group comparisons could not be made. However, an examination of within-group differences suggests that treatment group participants did experience statistically significant improvements after only four

to six sessions of iRest training. Results from this study suggest that brief iRest training may be effective in reducing negative psychological states and enhancing quality of life for homeless adults experiencing significant distress. Nevertheless, these findings must be interpreted with caution due to the lack of sufficient control group data. This study highlights the importance of investigating the potential of brief meditation training for homeless and high-risk, low-income populations and the need for future research in this area.

DEDICATION

This paper is dedicated to the thousands of men, women, and children living in shelters or on the streets. In particular, this paper is in honor of all the residents of the Mary Isaak Center who participated in this study. Please do not forget, there is a sacred and undeniable strength within you; may it see you through adversity and give you peace and refuge, breath by breath.

This paper is also dedicated to the great lineage of yogic visionaries of healing and compassion, whose insights surpass the limits of race and culture, time and space, and body and mind, for the benefit of humanity.

ACKNOWLEDGMENTS

I am eternally grateful to my family, friends, and mentors, without whose unwavering support, this monumental goal could not have been achieved. To Sanj, the love of my life, we did it B! Thank you for always believing in me. You have been my rock for 15 years. I am so grateful to share this journey with you and I love you more and more with every step. To my angel Sohum Dev, I thank your sweet soul for your patience and spark. Your spirit brought light and showered joy on this challenging road. To my parents, your love, encouragement, and assistance meant so much through this process. You showed me the importance of compassion and service throughout my life and there is no greater honor than to follow in your footsteps as doctors, healers, and humanitarians. To Krishna, you are brilliant and beautiful! Thanks for being an amazing big brother and helping me through all my statistical freakouts! To Nandamama, thank you for introducing me to Yoga Nidra and setting this course in motion 11 years ago. To the wonderful Baluja clan: Mom, thank you for all your help! You were always there when we needed you. Shibani, Anju, and Dad, thanks for all the love and cheerleading!

To my venerable chair, Dr. Mera Atlis, I am so grateful for all your help in making the impossible possible! Your confidence in my success truly carried me forward through many seasons of doubt. To the illustrious Dr. Ron Pilato, your involvement in this project meant so much. Thanks for being a warm ray of sunshine and for bearing with me until the very last moment. To the esteemed Dr. Cassi Vieten, it has been a great honor to work with you. Thanks for your

expertise, patience, and extraordinary vision. To my cherished guru, Dr. Richard Miller, you have brought the immeasurable healing of Yoga Nidra to so many around the world. I extend my humble appreciation to you for taking me under your wing. Thanks for your loving encouragement, guidance, and wisdom. Words cannot convey my gratitude for all that you have taught, inspired, and awakened. I must also give my heartfelt thanks to the kind participants that took the time to join this study and to John Records, Lauren Darges, Charlene Farrell, and all the MIC/IONS/IRI staff and teachers who made this project possible.

And finally, my sincere appreciation to the incomparable circle of friends, *soulsistas*, and comrades who have guided, inspired, reassured, and pulled me out of the fire (more times than I care to count) – Kris, Kim, Erin, Naveen, Natty, Ifa Amy, Sam H., Maheen, Keith M., and Anna D! Patrick (P-nut): Thanks for your precious friendship and sage advice. You taught me long ago to spread my wings and believe in my voice. Dr. JennyJenn: Thank you for all the love and support and your divine and radiant presence! Like *Snuggly*, this too could not be birthed without you! Sharifa: I am forever grateful for your loving friendship and mystical soul. Thank you for being there at the best and worst of times. You carried me through this in infinite ways my dear friend. Kenyatta: Thanks for the deep talks, reminding me not to lose perspective, and to laugh and dance along the way! Christina: Thanks for being such dedicated caregiver. This would not have happened without you. Above all, I bow to the grace of the Great Goddess that blessed me with the strength and endurance to climb this mountain and stand at this summit today. Om Shree Durgayei Namaha.

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CHAPTER 1: INTRODUCTION

A growing body of empirical literature suggests that meditation training can effectively reduce stress (Grossman, Niemann, Schmidt, & Walach, 2004; Tang et al., 2009), improve regulation of psychological distress (Astin, 1997; Jain et al., 2007; Shapiro, Carlson, Astin, & Freedman, 2006), and improve subjective well-being and quality of life (Brown & Ryan, 2003; Carmody & Baer, 2008; Shapiro, Oman, Thoresen, Plante, & Flinders, 2008). Recent reviews examine the growing potential for utilizing meditation-based interventions for the general public (Chiesa & Serretti, 2009), those with psychiatric conditions (Chiesa & Serretti, 2009; Rubia, 2009) and substance-use disorders (Dakwar & Levin, 2009). Beneficial outcomes of meditation and mind-body training have also been documented for individuals experiencing higher levels of distress due to illnesses such as chronic pain (Kabat-Zinn, 2005), cancer (Banerjee et al., 2011; Brown & Ryan, 2003; Carlson, Speca, Patel, & Goodey, 2004; Carlson, Ursuliak, Goodey, Angen, & Speca, 2001; Smith, Richardson, Hoffman, & Pilkington, 2005), Multiple Sclerosis (Pritchard, Elison-Bowers, & Birdsall, 2009), psoriasis (Kabat-Zinn et al., 1998) and HIV (Creswell, Myers, Cole, & Irwin, 2009). Potential benefits have also been reported for those with histories of abuse (Kimbrough, Magyari, Langenberg, Chesney, & Berman, 2009) and those experiencing acute traumatic stress and uncontrollable life events such as war and conflict (Staples, Abdel, Atti, & Gordon, 2011), incarceration (Samuelson, Carmody, Kabat-Zinn, & Bratt, 2007) and mass disasters (Gerbarg, Wallace, & Brown, 2011).

One population with which meditation practices have yet to be studied are homeless adults. Heightened levels of psychological distress experienced by those who are homeless are well-documented (Wong & Piliavin, 2001). Homelessness affects individuals, families, and children across all races, genders, ages, and geographic areas (U.S. Department of Housing and Urban Development [HUD], 2010). In 2010, more than 1.59 million people spent a night in an emergency shelter or a transitional housing program (HUD, 2010, p. ii). While accurate counts of the homeless are difficult to obtain, it is estimated that approximately 2 to 3.5 million people in the United States experience homelessness on an annual basis (National Law Center on Homelessness and Poverty, 2004, p. iii). With the urgent need for emergency housing services and prevention programs expanding from year-to-year (HUD, 2011), this form of extreme poverty is aptly referred to as “the homeless crisis.”

Though stress and coping are perhaps one of the most widely studied topics in psychology today (Hobfoll, Schwarzer, & Chon, 1998), there appears to be a gap in the scientific literature around the potential for stress reduction training programs to be of benefit to homeless adults (Davey & Neff, 2001; Milburn & D’Ercole, 1991; Plasse, 2002; M. I. Szerlip & H. M. Szerlip, 2002). Though the potential for stress reduction programs to improve health and illness such as cardiovascular disease (M. I. Szerlip & H. M. Szerlip, 2002) and psychological disorders, only one qualitative study was completed with homeless adults (Plasse, 2002) and two empirical studies with homeless children (Davey, 1998; Davey & Neff, 2001). Similarly, within the extensive body of meditation

research only three studies examine meditation training with homeless individuals (Grabbe et al., 2011; Hick & Furlotte, 2010; Plasse, 2002). These exploratory studies underscore the potential benefit for stress reduction program and meditation training with the homeless and call for further investigation.

Integrative Restoration Yoga Nidra (iRest) is a yoga-based, guided meditation practice that integrates relaxation, body scan, breath awareness, intention, witnessing and receptive awareness. One meditation session typically takes about 30-40 minutes. iRest is modeled after a meditation practice known as *Yoga Nidra* that originated on the Indian subcontinent and can be traced back to the teachings of yoga and *tantra* (Miller, 2005; Saraswati, 2003). Yoga Nidra was adapted and manualized for contemporary Western practice by Richard Miller, PhD in the form of iRest and is well-suited for Western audiences (Miller, 2005).

Standard psychological treatments, such as one-on-one psychotherapy, are not realistic approaches to address the psychological distress experienced by thousands of homelessness men and women each day. However, brief iRest meditation training may be a feasible alternative and offers several key advantages. First, iRest is approachable for those who are new to meditation. The practitioner is asked to simply rest in a comfortable position and follow the teacher's simple verbal instructions. Many find the explicit, step-by-step format to be more "user-friendly," which may reduce the ambiguity and apprehensiveness for those unfamiliar with meditation practice. Second, it is also adaptable to local needs, cultures, religions, age groups, and languages (Miller, 2005; Panda, 2003; Saraswati, 2003). iRest encourages participants to assume any position that

maximizes their comfort. (Yoga Nidra is traditionally practiced lying down or in sivasana or corpse pose). This aspect makes the practice more accessible to those with differing physical limitations or disabilities. Third, and of particular interest, iRest is a safe, cost-effective, brief intervention that can be added to existing services and provided in group or individual settings with minimal institutional and administrative support. Students are encouraged to engage in self-practice and are offered audio-recorded meditation sessions for personal use (Miller, 2005; Panda, 2003; Saraswati, 2005). In addition to the programmatic advantages of iRest, existing staff members can be trained to lead the programs “in house,” building the internal capacity of the organization to offer more sustainable training programs (Gerbarg et al., 2011). Such interventions may also have a greater reach, with few teachers providing training to large groups.

The larger body of research depicting the health benefits of meditation for stress and distress reduction coupled with the current data on iRest and traditional Yoga Nidra makes a compelling argument to test the potential of brief iRest meditation training with homeless adults. The small and growing pool of research studies on iRest and Yoga Nidra suggests positive outcomes for improved health and well-being and stress and distress reduction. Yoga Nidra training showed significant improvements in: perceived stress (Banerjee et al., 2011; Birdsall, Pritchard, Elison-Bowers, & Spann, 2011; Eastman-Mueller, Wilson, & Jung, 2012; Pritchard et al., 2009; Satyapriya, Nagendra, Nagarathna, & Padmalatha, 2009), depression and anxiety symptoms (Banerjee et al., 2011; Eastman-Mueller et al., 2012; Rani et al., 2011) state and trait anxiety symptoms (Kumar, 2008);

psychological and general well-being (Rani et al., 2011); stress symptoms (Deuskar, 2011; Kumar, 2008); emotional regulation (Bhusan & Sinha, 2001; Deuskar, 2011), autonomic function (Deuskar, 2011; Kumar & Joshi, 2009; Vempati, 2002), decreased cortisol release and negative mood (Borchardt, Patterson, & Seng, 2012) and improved self-esteem in cancer patients (T. Kovačič & M. Kovačič, 2010). Small-scale pilot studies also suggest that training iRest meditation may benefit populations facing distressing life events and trauma, such as soldiers and veterans (Engel, Jr. et al., 2011; Stankovic, 2011).

In November 2006, the Institute of Noetic Sciences began collecting treatment outcome data on brief meditation training in iRest with sheltered homeless adults (Vieten, 2007). Preliminary analyses from the first year found treatment benefits after four to six weeks of iRest training (Vieten, 2007). There was also indication that the iRest training showed feasibility for being introduced as a shelter-based intervention for homeless adults (Vieten, 2007). Quantitative analysis of the data indicated post-treatment reductions on several indices such as perceived stress, psychological distress, and negative affect. Although these preliminary results were promising, the lack of a control group made it difficult to determine whether these changes were correlated to participation in meditation training (Vieten, 2007).

Since these preliminary analyses were completed, additional data have been collected on several more groups and a comparison sample of shelter residents who did not participate in the iRest groups (referred to as the “shelter-only” comparison group). In 2010, the complete 3-year data set for the iRest and

shelter-only groups became available for investigation. The purpose of the current study is to evaluate these archival data to explore the effectiveness of brief iRest meditation training in reducing stress and psychological distress and in improving quality of life for homeless adults.

CHAPTER 2: LITERATURE REVIEW

This review of literature is comprised of six sections. The first two sections examine the topic of homelessness, highlighting the associated physical and psychological health risks for this population. Section three briefly explores the literature on meditation-based training for high-risk and high-distress populations, followed by a review of clinical studies utilizing meditation-based interventions with low-income and homeless populations. The final two sections provide background on iRest and Yoga Nidra and describe evidence related to stress reduction and improved well-being. The chapter concludes with a description of a pilot study conducted by the Institute of Noetic Sciences and preliminary data pointing to the feasibility of iRest training for homeless adults.

Stress and Homelessness

Homelessness has emerged as a major societal problem in both industrialized and developing nations (Toro, 2007). In the United States alone, approximately 2 to 3.5 million individuals experience homelessness on an annual basis (National Law Center on Homelessness and Poverty, 2004). However, compiling accurate counts on the population of homeless comes with numerous challenges. Many counts reflect the number of people who access services, such as those who use shelters or soup kitchens, but may underestimate the actual prevalence of homelessness nation-wide (National Coalition for the Homeless [NCH], 2009). The Annual Homeless Assessment Report (AHAR) to Congress is compiled by the U.S. Department of Housing and Urban Development (HUD) every year. According to the 2010 Annual Homeless Assessment Report, an

estimated 1.59 million people spent at least one night in an emergency or transitional housing facility, a 2.2% increase over 2009 (HUD, 2010, p. ii). The point-in-time estimates represent the total homeless count on a single night in January. In the 2011 point-in-time estimate, the number of persons experiencing homelessness was 636,017 (HUD, 2011, p. 1).

Roughly two-thirds, or 63%, of the total count is comprised of homeless individuals (HUD, 2011, p. 3) who identify no family affiliation. In terms of characteristics of this population, homeless individuals, compared to homeless families, are more vulnerable to living in unsheltered conditions or places not meant for human habitation, such as the streets, abandoned buildings, vehicles, parks, train stations, and so on (HUD, 2010). Homeless individuals are more likely to be Caucasian and male over the age of 30 with a disability or disabling condition (HUD, 2010). However, per capita, African American males between 31–50 years of age and people with disabilities are at a higher risk of becoming homeless (HUD, 2010, p. ii).

The 2011 HUD report offers a more hopeful outlook than years past. National rates of homelessness are slowly starting to decline due to the success of the federal Homelessness Prevention and Rapid Re-Housing Program which has helped 1 million people end or prevent imminent homelessness since 2009 (Gammon, 2011, para. 1). Though overall national trends in homelessness show declines, California had a 2.3% increase in homelessness from 2010 to 2011 (HUD, 2011, p.4). In fact, California has the highest rate of homelessness in the

United States, accounting for 21.4% of the total homeless population with over 62% living in unsheltered locations (HUD, 2011, p.4).

The condition of homelessness is likely to be a universally stressful life event with the potential for serious risks to physical and psychological health (Biswas-Diener & Diener, 2006; D. Hodgetts, Radley, Chamberlain, & A. Hodgetts, 2007; Hopper, Olivet, & Bassuk, 2010; Kearns, Smith, & Abbott, 1992; Murphy, 2006; Wong, 2002). Homelessness often comes with a cascade of stressful life events, such as eviction, job loss, relocation, illness, and abuse (Munoz, C. Vazquez, Bermejo, & J. J. Vazquez, 1999) and competing needs for basic safety, food, and health care (Murphy, 2006). Despite efforts to represent the varied stories of individuals confronting homelessness as citizens worthy of shelter and intervention, negative perceptions of homeless individuals persist (Morrell, 2007).

Those who find themselves homeless are on the lowest rung of the socioeconomic ladder. The gradient between health and socioeconomic status (SES) is well-established; showing that health decreases as financial and social capital decreases (Adler et al., 1994; Adler & Snibbe, 2003; Marmot, 2005). Reports on homelessness and health describe numerous disheartening risk factors associated with being homeless. These risks include physical, medical, environmental, social, psychological, and behavioral aspects coupled with limited access to prevention, education, and intervention services (Baum, Garafalo, & Yali, 1999; Murphy, 2006; Reus, 2012; Wong, 2002; Wong & Piliavin, 2001). A summary of these direct and indirect risk factors for those confronting

homelessness and extreme poverty is provided in Table 1. These factors are rarely discreet and are commonly interwoven, overlapping, and cyclical (Murphy, 2006). The combined impact of multiple and severe difficulties present in a single person can interact and aggravate each other, leading to a high aggregate of vulnerability in individuals facing homelessness (D. Hodgetts et al., 2007; Murphy, 2006).

As depicted by Table 1, homelessness itself can be considered a risk to human health and well-being. Living on the streets is often accompanied by higher morbidity, mortality, lower life expectancy than the general population (Barrow, Herman, Córdova, & Struening, 1999; Krueger & Chang, 2008), and increased violence (Shaw, Dorling, & Smith, 1999; Wenzel, Koegel, & Gelberg, 2000). The higher incidence of chronic illness, infectious diseases, and cancer is well documented (Chau et al., 2002; Hwang, 2001; Murphy, 2006; Schanzer, Dominguez, Shrout, & Caton, 2007; Turnbull, Muckle, & Masters, 2007). Severity of disease among the homeless can be quite high due to extreme poverty, delays in seeking care, use of emergency rooms as sources of primary care, non-adherence to medication, and the adverse impact of homelessness itself (Hwang, 2001).

Additionally, the combination of increased psychological stress, inadequate healthcare services, and unhealthy lifestyle factors (e.g., smoking, physical inactivity) was found to increase the risk of premature death for homeless adults (Krueger & Chang, 2008).

Table 1

Summary of Health Risks Associated With Homelessness

Risk	Findings	Citations
Physical	Higher likelihood of injury, fatal assault, sexual violence; sun exposure; frostbite and hypothermia	Hwang (2001); Murphy (2006); Shaw, Dorling, and Smith(1999)
Medical	Cancer, cardiovascular disease, chronic obstructive pulmonary disease; chronic illness and disability; Infectious diseases such as tuberculosis, hepatitis C, HIV/AIDS; Skin and foot disorders; undetected or uncontrolled diabetes, drug addiction and over-dose; poor immune health; higher rates of morbidity and mortality	Arranz, De Vicente, Muñoz, and De la Fuente (2009); Barrow, Herman, Córdova, and Struening (1999); Chau et al. (2002); Hwang (2001); Murphy (2006); Schanzer, Dominguez, Shrout, and Caton (2007)
Environmental	Hazardous waste, pollution, noise, exposure to violence and crime, deteriorated housing, overcrowding, minimal access to affordable healthy foods	Baum, Garafalo, and Yali (1999); Murphy (2006)
Social and psychosocial factors	Stigma and discrimination, social isolation, loss of social bonds, educational and occupational disadvantage	Matthews, Gallo, and Taylor (2010); Murphy (2006)
Psychological	Psychiatric disorders: depression, anxiety, post-traumatic stress disorder; substance abuse and co-occurring disorders; acute stress and insomnia, loss of control; traumatic events	Hopper, Olivet, Bassuk (2010); Matthews et al. (2010); Reus (2012); Substance Abuse and Mental Health Services Administration (SAMHSA, (2011)
Developmental	Childhood abuse, sexual abuse, domestic violence, childhood poverty and homelessness	Larkin and Park (2012); Stein, Leslie, and Nyamathi(2002)
Behavioral	Poor coping skills: unhealthy lifestyle, substance abuse and addiction, smoking	Krueger and Chang (2008); SAMHSA (2011)
Access to care	Lack of adequate primary and preventative health services; dependence on ER for primary and acute care	Ku, Scott, Kertesz, and Pitts (2010); Lang et al. (1997); Schanzer et al. (2007)

Note. Author's table.

Homeless adults are also likely to have strongly suppressed immune response suggesting that oxidative stress may be a key factor for higher morbidity and premature mortality rates in this population (Arranz, Vicente, Munoz, & De le Fuente, 2009).

Exposure to excessive stress negatively impacts the body's organ systems and optimal functioning (Cohen, Janicki-Deverts, & Miller, 2007; Lupien, McEwen, Gunnar, Heim, 2009; McEwen & Seeman, 1999). Chronic activation of the stress-response mechanism (e.g., living every day as if it were a crisis) may have a more pervasive damaging effect on the mind and body (Cohen, Janicki-Deverts, & Miller, 2007; McEwen & Seeman, 1999). Higher levels of chronic stress may intensify and exacerbate symptoms and deteriorate overall functioning for this already disadvantaged population (Baum et al., 1999). The combined negative impact of chronic stress and heightened distress may have an even greater detrimental effect on the overall health homeless adults in particular due to the limited access to prevention, early detection, and treatment (Baum et al., 1999; Hwang, 2001; Krueger & Chang, 2008; Milburn & D'Ercole, 1991; Murphy, 2006).

Homelessness and Mental Health

A World Health Organization (2003) report on global mental health avows, "No group is immune to mental disorders, but the risk is higher among the poor, homeless, the unemployed, persons with low education, victims of violence, migrants and refugees, indigenous populations, children and adolescents, abused women and the neglected elderly" (World Health Organization [WHO], 2003, p.

7). Epidemiological, behavioral health, population, and field studies with those facing homelessness and poverty underscore the increased risks of stress and distress on the health and well-being of this population (Baum et al., 1999; D. Hodgetts et al., 2007; Kuruvilla & Jacobs, 2007; Marmot, 2005; Matthews, Gallo, & Taylor, 2010; Stein, Dixon, & Nyamathi, 2008; Turnbull et al., 2007). While at the same time, only a small minority of these individuals ever receives formal mental health care (Reus, 2012). Baum et al. (1999) refer to the cumulative effects of economic, environmental, social and psychological factors on those living in poverty as the *stress burden*. This model points to the likelihood of multiple factors related to low-SES that can contribute to increased and prolonged exposure to the damaging effects of chronic stress (Baum et al., 1999).

This stress burden may manifest as pronounced negative reactions to psychological stress such as pessimism, mood dysregulation, increased emotional distress, learned helplessness, negative coping strategies such as substance abuse, and heightened physiological arousal (Kassel, Stroud, & Paronis, 2003) and elevated levels of negative emotion (Matthews et al., 2010). Moreover, mental health disorders, such as mood disorders, anxiety disorders, and addiction are prevalent in the homelessness population (Hwang 2001; Reus, 2012; Schanzer et al., 2007; Substance Abuse and Mental Health Services Administration [SAMHSA], 2011). Nationally, an estimated 26.2% of the sheltered homeless adults suffer from a severe mental illness (HUD, 2010, p. 18), while only 5.7% of the American population suffers from a severe mental illness (Kessler, Chiu, Demler, & Walters, 2005, p. 624). However, actual rates of mental illness for the

homeless may be higher (NCH, 2009). The U.S. Conference of Mayors (2008) found that serious mental illness was the third leading cause of homelessness in single adults. Mental illness can also lead to poor physical health issues, leading to an increase in chronic illnesses and the inability to cope with disease (NCH, 2009).

The rates of psychotic disorders in the homeless population range between 10% and 13% and mood disorders between 20% and 40% (Schanzer et al., 2007, p. 464). This population is considered at higher-risk for depression (Blazer, Kessler, McGonagle & Swartz, 1994) with exposure to traumatic events increasing the depression risk (Banyard & Graham-Bermann, 1998; Wong & Piliavin, 2001). One large-scale study found that over 51% of homeless individuals diagnosed with mental illness had attempted suicide at some point in their lives (Desai, Liu-Mares, Dausey, & Rosenheck, 2003, p. 365).

In addition to the risk for depression and suicide, the risk of trauma and post-traumatic stress are also substantial for those who experience homelessness (Hopper et al., 2010). In 1991, Goodman, Saxe, and Harvey, argued that homelessness itself is a risk factor for emotional disorder and psychological trauma for the following reasons: (a) the instability and loss of one's housing may be experienced as a traumatic event; (b) conditions of shelter life may produce trauma symptoms; and (c) many become homeless after experiencing traumatic violence and abuse. Moreover, many of those who confront homelessness, particularly women and children, have histories of abuse and violence and are likely to have experienced poverty and homelessness in early life (Goodman,

Saxe, & Harvey, 1991; Larkin & Park, 2012; Tam, Zlotnick, & Robertson, 2003).

This has been substantiated by studies that found homeless adults and youth experience trauma and victimization at especially high rates as compared to the general population (Christensen et al., 2005; Larkin & Park, 2012; Unger, Kipke, Simon, Montgomery, & Johnson, 1997; Whitbeck, Hoyt, & Ackley, 1997).

Hopper, Bassuk, and Olivet (2010) argue for the inclusion of trauma-informed interventions into routine service provision, pointing out,

It is reasonable to assume that individuals who are homeless have been exposed to trauma. Research has shown that individuals who are homeless are likely to have experienced some form of previous trauma; homelessness itself can be viewed as a traumatic experience; and being homeless increases the risk of further victimization and re-traumatization. (p. 80)

Given this perspective, interventions that address acute stress of homelessness may be an opportunity for fostering growth and healing for these individuals (Hopper et al., 2010).

There is a higher incidence of substance abuse among the homeless population than in the general population, with 38% of the homeless population being alcohol dependent and 26% being abusers of some other substance (U.S. Conference of Mayors, 2008, p. 18). The U.S. Conference of Mayors (2008) found that substance abuse disorders were the largest cause of homelessness in single adults. A number of studies have found cyclical relationships between trauma history and problem substance use in homeless adults (Larkin & Park, 2012; Stein et al., 2002; Tam et al., 2003). Addiction itself combined with poor social supports is often seen as a catalyst to initiating and maintaining homelessness (Murphy, 2006).

Though accurate counts are difficult to obtain, many in the homeless population suffer from serious mental health issues in addition to substance use disorders, often referred to as dual diagnosis or co-occurring disorders (Burt, 2001; Tam et al., 2003). People with untreated mental illnesses may use street drugs as an inappropriate form of self-medication (Kirkpatrick & Byrne, 2009). Dually diagnosed homeless individuals experience additional obstacles to recovery such as increased risk for violence and victimization and frequent cycling between the streets, jails, and emergency rooms (Fisher & Roget, 2009; Folsom et al., 2005). Likewise, homeless people are more vulnerable to serious negative repercussions of drug and alcohol abuse. Psychological factors such as increased stress appraisal, emotional distress, depression, increased negative coping and less positive coping behaviors, were found to be associated with negative outcomes such as problem substance use, high-risk sexual behaviors, and mental distress (Galaif, Nyamathi, & Stein, 1999; Nyamathi, Stein, & Bayley, 2000; Stein et al., 2008). Physical and sexual violence, sexual exploitation, and contraction of infectious diseases were also heightened risk factors for those experiencing homelessness and addiction (Turnbull et al., 2007).

There is no question that urgent needs such as food, shelter, and case management services are the first tier of intervention when an individual is faced with homelessness (Hopper et al., 2010). However, there is a growing recognition for the need to implement positive and strengths-based approaches to increase healthy coping behaviors, as well as, the need for symptom-reduction for those confronting homelessness (Grabbe et al., 2011; Hick & Furlotte, 2010; D.

Hodgetts et al., 2007; Hopper et al., 2010). Furthermore, teaching concrete stress reduction and self-regulation skills to build resilience and reduce distress may be particularly beneficial to homeless individuals (Davey & Neff, 2001; Grabbe et al., 2011; Hick & Furlotte, 2010; Stein et al., 2002).

Stress, Distress, and Meditation

One approach that has shown clinical promise with several populations at higher risk for heightened stress and distress is meditation-based stress reduction training (e.g., Kabat-Zinn, 2005; Rubia, 2009; Williams, Duggan, Crane, & Fennel, 2006; Smith et al., 2005). Meditation training may be an unconventional yet accessible and cost-effective approach to stress reduction with homeless adults (Grabbe et al., 2011; Hick & Furlotte, 2010; Plasse, 2002). Meditation-based approaches such as Mindfulness Based Stress Reduction (MBSR) provide a means to enhance self-awareness, healthy coping, wellness, and life satisfaction (Hick & Furlotte, 2010) and may improve health outcomes for low-income populations (Roth & Stanley, 2002).

The term *meditation* is often used to describe an extremely diverse range of practices embedded in and derived from varied spiritual traditions and lineages (Lutz, Dunne, & Davidson, 2007). Walsh and Shapiro (2006) define meditation as “a family of self-regulation practices that focus on training attention and awareness to bring mental processes under greater voluntary control, usually with the aim of fostering psychological well being and maturity” (p. 88). The most widely researched meditation practices include Mindfulness Meditation, Transcendental Meditation (TM), and Zen meditation. Lutz, Dunne, and Davidson

(2007) assert the importance of differentiating such diverse approaches despite the possibility that engagement in such practices may lead to similar measurable outcomes.

There are several reasons that meditation training may be useful as a stress reduction intervention for homeless adults. Numerous studies have verified the efficacy of meditation and relaxation training in decreasing the *human stress response* (Benson & Klipper, 2000; Tang et al., 2009). For the general public, the benefits of relaxation and meditation training to reduce stress and improve well-being are documented (Baer, 2003; Brown & Ryan, 2003; Chiesa & Seretti, 2009), as well as for those confronting higher levels of stress such as chronic medical conditions (Arias, Steinberg, Banga, & Trestman, 2006; Baer, 2003; Benson & Klipper, 2000; Carmody & Baer, 2008; Creswell et al., 2008; Kabat-Zinn, 2005), psychiatric disorders (Chiesa & Seretti, 2010; Rubia 2009), substance use disorders (Dakwar & Levin, 2009), and cancer (Banerjee et al., 2011; Carlson & Garland, 2005; Carlson, Speca, Patel, & Faris, 2007; Carlson, Speca, Patel, & Goodey, 2004; Ledesma & Kumano, 2009; Pritchard et al., 2009).

Furthermore, recent reviews critically examine the use of meditation-based approaches, such as MBSR, as an intervention for those experiencing higher levels of distress due to mental illness and psychiatric disorders (Arias et al., 2006; Chiesa & Seretti, 2010; Rubia, 2009; Toneatto & Nguyen, 2007). Several studies report positive outcomes of MBSR with those experiencing psychiatric conditions such as mood and anxiety disorders (Kabat-Zinn, Massion, Kristeller, & Peterson, 1992; Miller, Fletcher, & Kabat-Zinn, 1995; Ramel,

Goldin, Carmona, & McQuaid, 2004) and those with histories of abuse (Kimborough et al., 2009). One study on Sahaja Yoga Meditation showed significant improvement of psychological distress and general mental health symptoms over a CBT control group (Morgan, 2001). Mindfulness-based Cognitive Therapy, which combines aspects of mindfulness meditation and cognitive-behavioral therapy, has also been researched extensively for the treatment of recurrent depression (Ma & Teasdale, 2004), bipolar disorder (Miklowitz et al., 2009; Williams et al., 2008), panic disorder (Kim et al., 2009), generalized anxiety disorder (Craigie, Rees, Marsh, & Nathan, 2008; Evans et al., 2008), and suicidal behavior (Williams et al., 2006).

Additionally, meditation training was found to improve immune response (Davidson et al., 2003), and autonomic regulation (Jevning, Wallace, & Beidebach, 1992; Tang et al., 2009; Travis, 1999; Vempati, 2002). Tang et al. (2009) found immediate measurable benefits on autonomic function, (heart rate variability, respiration rate, and skin conductance), and decreased cortisol production with novice meditators after just five sessions of meditation training. In another recent study, researchers found that three months of intensive meditation practice can potentially impact telomerase activity and immune cell longevity due potentially to decreases in negative mood and increases in perceived control (Jacobs et al., 2011).

A recent more recent focus of research on meditation training examines the utility of such practices for individuals in crisis and those experiencing significant distress due to uncontrollable life events. For example, pilot studies

evaluating applications of mind-body and meditation-based interventions show preliminary benefit for children traumatized by war and conflict in Gaza (Staples et al., 2011) and Kosovo (Gordon, Staples, Blyta, & Bytyqi, 2008), and survivors of mass disasters (Gerbarg et al., 2011). Another example is the number of meditation programs shown to be effective with prison populations (Samuelson et al., 2007). When seen as an acquired skill, meditation and relaxation training can expand a client's repertoire of coping, enhance positive emotions, optimism, locus of control, reduce helplessness and possibly alter one's appraisal of difficult life events as opportunities for growth and change (Overholser & Fisher, 2009).

Meditation-Based Training With Low-Income and Homeless Populations

Meditation-based protocols may be an unconventional yet effective approach to addressing the needs of low-income and homeless adults. However, as illustrated in Table 2, only four studies specified the inclusion of adults from low-income communities (Abercrombie, Zamora, & Korn, 2007; Roth & Creaser, 1997; Roth & Robbins, 2004; Roth & Stanley, 2002). Only three clinical studies specifically included homeless individuals (Grabbe et al., 2011; Hick and Furlotte, 2010; Plasse, 2002).

Based on the findings from these studies, MBSR program was shown to be a feasible, well-tolerated, cost-effective, and practical treatment program in community settings with economically disadvantaged groups (Roth & Calle-Mesa, 2006; Roth & Creaser, 1997; Roth & Robbins, 2004; Roth & Stanley, 2002). Furthermore, MBSR proved to be effective when administered in Spanish to address cultural and linguistic differences of the sample (Roth & Calle-Mesa,

2006; Roth & Creaser, 1997). The self-reported improvement, from pre to posttest, in general health and psychological health outcomes over the no-treatment control group (Roth & Robbins, 2004) are of particular importance.

Taken together with the significant decreases in the use of health care services at 1-year post-MBSR follow up, these studies cautiously suggest that MBSR may find effective application in diverse low-income communities (Roth & Stanley, 2002). Findings summarized in Table 2 are far from unequivocal. Three of the four studies had no control groups (Abercrombie et al., 2007; Roth & Creaser, 1997; Roth & Stanley, 2002) and one study collected non-randomized, “no-treatment” control group data (Roth & Robbins, 2004). While Roth and Robbins (2004) found significant differences in symptom reduction as compared to a no-treatment group, the study is limited by the lack of randomized and active controls, small sample size, and self-selection bias. None of the studies described in Table 2 are randomized control trials (RCT). RCTs are the “gold standard” in behavioral health research as they control for confounding variables and provide a more accurate picture of treatment effectiveness. This lack of control group data is problematic as it is not possible to attribute the improvements to participation in the MBSR groups since other non-specific factors cannot be ruled out. In addition, all but one study relied on self-report data. Self-report data is often met with skepticism because of the potential for bias related to impression management or social desirability (Diener, 2009).

Table 2

Summary of Studies on Mindfulness-Based Stress Reduction (MBSR) With Low-Income Populations

Study	Sample	<i>n</i>	Measures	Design	Findings	Conclusions
Roth and Creaser (1997)	Low-income, heterogeneous patient population	79	MSCL; SC-90-R; BDI; Coopersmith Self-Esteem Inventory; Rosenberg Self-Esteem Scale	UCT	Statistically significant decreases in medical and psychological symptoms and improvements in self-esteem were found. 60% retention rate. Participants reported meaningful changes in attitudes, beliefs, and behaviors.	MBSR can be an effective health care intervention when utilized by English and Spanish speaking patients in an inner-city health care center.
22 Roth and Stanley (2002)	Low-income, heterogeneous patient population	47	Number of medical visits and diagnoses	UCT	A significant decrease in the number of chronic care visits was found for total participants. The 36 patients who completed the course in Spanish demonstrated a significant decrease in total medical visits and chronic care visits.	MBSR may help contain healthcare costs by decreasing the number of visits made by inner-city patients to their primary care providers after completing the MBSR program.
Roth and Robbins (2004)	Low-income, heterogeneous patient population	68	Short Form-36 Health Survey; 2 additional questions	NRCT*	Significant improvements in general health, vitality, social functioning, and role limitations due to physical and emotional problems and no significant improvement on sleep quality or family harmony.	MBSR may be an effective behavioral medicine intervention for Spanish and English-speaking medical patients.

Study	Sample	<i>n</i>	Measures	Design	Findings	Conclusions
Abercrombie, Zamora, and Korn (2007)	Low-income, minority women	8	STAI; Self Compassion Scale	UCT	STAI scores on anxiety were significantly improved between pre and post measures and remained stable at 3 month follow up. No significant differences in self-compassion from baseline to follow up scores, though there was a trend toward improvement.	Participants showed some improvement in anxiety. Challenges in participant retention and suggestions for working with a low-income multi-ethnic population were examined.

Note. Author's table. MSCL = Medical Symptoms Checklist; SC = Symptom Checklist; BDI = Beck Depression Inventory; STAI = State-Trait Anxiety Inventory; UCT = uncontrolled trial; NRCT = non-randomized controlled trial.

*"No-Treatment" control group was used.

Despite their significant limitations, these studies evaluating meditation training with low-income groups can be viewed as providing a sufficient foundation on which to build future research pursuits. Recommendations provided by researchers are particularly useful as this branch of research continues to develop. For example, “A presumed limitation of mindfulness meditation is that it would be relevant only to middle- and upper-middle-class populations...A prevalent assumption has been that mindfulness-based stress reduction would not be utilized by minority populations...” (Roth, 1997, p. 51). It was found that, on the contrary, mindfulness-based stress reduction was immediately relevant to diverse inner-city patients seeking to alleviate stress, pain, and illness (Roth 1997).

Other authors describe the challenges in recruitment and retention of low-income populations (Abercrombie et al., 2007). Based on their pilot study with low-income multi-ethnic women, Abercrombie et al. (2007) strongly advocate for the need of culturally competent researchers, with an intimate understanding of the unique needs of their target populations. In addition, utilizing methods such as participatory action research (Brydon-Miller 1997) foster the involvement of target communities at all levels of research from inception and planning to implementation resulting in stronger community partnerships and more effective outreach and retention levels (Abercrombie et al., 2007). These researchers also found that compensation was a significant factor for the women in the study (Abercrombie et al., 2007).

Studies on meditation with low-income populations do warrant further investigation and allude to the feasibility of meditation training with economically disadvantaged groups such as homeless adults. As shown in Table 3, information on meditation with homeless participants is extremely limited, with only three studies to date. Overall, it appears that meditation training is a feasible and well-tolerated intervention for those confronting homelessness. With respect to more specific trends, results of the pre-post measures showed significant improvement in psychological functioning, resilience, and spirituality (Grabbe et al., 2011), as well as, trends toward improvements in self-compassion and life satisfaction (Hick & Furlotte, 2010). Although such exploratory results do not indicate treatment effectiveness per se, they do suggest that participants were likely to have responded favourably to the meditation interventions.

The data collected from qualitative and mixed method designs provide a more integrated evaluation of accessibility, acceptability, and perceived efficacy of meditation programs (Caspi & Burleson, 2005). Qualitative findings suggest that many of the homeless individuals who participated in the groups found benefit from learning meditation skills. Most of the participants had little or no meditation experience and the techniques were learned easily (Grabbe et al., 2011; Plasse, 2002). For example, in one group of homeless and addicted women, members reported that the meditation components helped them to relax and clear their minds and develop a greater sense of safety and trust, an objective that is especially difficult for this population (Plasse, 2002).

Table 3
Summary of Meditation Studies With Homeless Samples

Study	Sample	TX/control	N	Measures	Design	Findings	Conclusions
Plasse (2002)	Homeless and substance-addicted women	Transcendental Meditation and Relaxation Training	22	Interviews	Qualitative	Themes included (a) tensions in group living; (b) fear of relapsing and returning to the community; (c) concerns about children; (c) ideas about intimate partners; (d) connections with family members; (e) conflicts with authority; and (f) fears of death.	Meditation practice was learned easily, well tolerated, and facilitated safety, trust building, reflection and relaxation for the women in the group. Most women were novice meditators.
Hick and Furlotte (2010)	Severely economically disadvantaged adults	Radical Mindfulness Training	8	Self-Compassion Scale; Satisfaction with Life Scale	UCT	Overall mean appears to increase self-compassion and life satisfaction; however, changes did not reach significance. Some evidence of greater self-awareness, acceptance, and receptivity, less depression, and improvement in interpersonal relationships, communication and emotional reactivity in qualitative data.	Findings are limited due to small sample size. Non-significant increases in self-compassion and life satisfaction. Perceived treatment effectiveness reported by clients.
Grabbe et al. (2011)	Sheltered homeless youth (17-23years old)	Spiritual Self Schema (3-S) Modified for homeless youth	39	BSI-18; FACIT-Sp; Resilience Scale; MHC-Short Form; BIS	UCT	Significant improvement on measures of spirituality, mental wellness, psychological symptoms, and resilience. No significance on measures of impulsivity scores.	Mindfulness meditation programs are feasible for homeless youth.

Note. Author's table. BSI =Brief Symptom Inventory; FACIT-Sp =Functional Assessment in Chronic Illness Therapy-Spiritual wellbeing scale; MHC = mental health continuum; BIS = Barratt Impulsiveness Scale; UCT = uncontrolled trial.

In another study, homeless youth also identified a strong liking for meditation training and indicated they wanted more time for meditation practice (Grabbe et al., 2011). Overall, the program was well received and several shelter residents elected to repeat the class and take on leadership roles (Grabbe et al., 2011). Qualitative interviews collected by Hick and Furlotte (2010) also reflected participants' perceived effectiveness of the program. Overall themes included less depression, greater self-awareness and acceptance, and improvements in interpersonal relationships, communication and emotional reactivity. One participant described her shift in the areas of awareness, emotional regulation, and positive affect:

It [the course] helped me become more aware of what my mind does. It taught me how to notice my thoughts. I learnt how to be a better person and how to respond to difficult situations. I learnt what it is like to have some peace and happiness. (Hick & Furlotte, 2010, p. 292)

All of the studies mentioned in Tables 2 and 3 suffer from limitations common in behavioral health research such as, small sample sizes, no comparison or control groups, and using non-randomized, convenience samples (A. Aron & E. Aron, 2003). They are also prone to challenges unique to meditation research, including difficulty in measuring and standardizing individual differences across meditators and the quality of the meditation practice (Caspi & Burtson, 2005). Another vexing issue is the effect of participant drop out – a problem that is particularly salient to research with homeless populations with high turn over rates in shelters. Dropout rates for the three homeless studies from recruitment to completion ranges from 26.6% (Plasse, 2002 p. 118) to 45% (Grabbe et al., 2011, p. 6) and 68% (Hick & Furlotte, 2010, p. 288). Based on the three existing

studies, it appears that interventions offered at homeless shelter sites (Grabbe et al., 2011; Plasse, 2002) had higher completion rates (55% and 73.4% respectively) than the one offered in a community health care setting (32%) (Hick & Furlotte, 2010, p. 288). The study by Grabbe, Nguy, and Higgins (2011) was the only one to complete an attrition analysis and found no significant differences between completers and non-completers in demographic and pretest variables.

Despite their limitations, this group of pioneering studies begins to postulate many of the questions and considerations of the applicability of meditation training in homeless contexts. For example, are such programs feasible, well-tolerated, and efficacious? Do those experiencing homelessness see meditation training as beneficial? Can the inclusion of social and structural factors enhance the range of mindfulness and mind-body training programs? Are such interventions acceptable for groups with histories of trauma? Is meditation training accessible to those who are economically and educationally marginalized? And, can meditation training facilitate improvement in psychological functioning and well-being for those without the security of basic needs? The material hardships of homelessness cannot be changed by meditation alone, nor can meditation training profess to be a cure for the social and structural inequities that contribute to homelessness. Nonetheless, preliminary studies summarized in this section do point to the potential feasibility and acceptability of providing meditation training for homeless adults.

Integrative Restoration Yoga Nidra (iRest)

One meditation training program that is showing initial promise for ameliorating stress and distress for healthy and high-risk populations is Integrative Restoration Yoga Nidra (iRest). IRest is an adaptation of Yoga Nidra, a yoga-based meditative tradition that originated on the Indian subcontinent and can be traced back to the teachings of yoga and *tantra* (Kumar, 2008; Miller, 2005; Saraswati, 2003). The principles of the Yoga Nidra meditation have been actively practiced for centuries (Saraswati, 2003). Descriptions of this practice can be found in ancient Hindu texts such as the *Devi Mahatmya* and the *Bhagvata Purana* which are said to be written in the 4th–5th century C.E. and 9th–10th century C.E. respectively (Saraswati, 2003). Yoga Nidra meditation is a simplified version of the *Tantric Kriyas* and was developed for modern practice by Swami Satyananda Saraswati of the Bihar School of Yoga (Kumar, 2008).

Outside of India, yoga is commonly associated with physical postures, called *asana*. However, *asana* is only one aspect of the yoga tradition. Other aspects such as meditation, breathing, awareness and concentration, and regulation of the thoughts and senses are also essential elements of yoga philosophy that are intricately woven into the practice of Yoga Nidra (Miller, 2005). Yoga Nidra is referred to as both a meditation practice and a meditative state. The literal meaning of *yoga* in Sanskrit is “yoke” or to join. The word *nidra* is translated as “sleep” (Saraswati, 2003). Nidra also connotes a state of rest where the unconscious mind can be accessed. The usage of this term is multi-layered and paradoxical. The Yoga Nidra practice can be seen as a way that to

form a bridge of awareness between the conscious-awakened mind and subconscious-conditioned mind. Miller (2005) translates *Yoga Nidra* as “unconditioned awareness across all states” (p. 15). Similar to mindfulness, the practice can be seen as the cultivation of a receptive awareness, welcoming all physical (sensation and tension), mental (perception, association, and imagery), and emotional (conditioning and reactivity) cues (Miller, 2005). Once the initial techniques are understood, the meditator can then move toward deeper states of relaxation, integration, or spiritual realization (Miller, 2005; Saraswati, 2003).

Banerjee et al. (2011) provide this description of the practice:

These practices are thought to build inner awareness and attention of mental phenomena. This is known to alter the perceptions of mental responses to both external and internal stimuli, slow down reactivity, and responses to such stimuli, and instill a greater control over stressful situations, which promotes physical well-being and mental calmness. (p. 245)

Yoga Nidra was adapted and manualized in the form of iRest as a secular meditation-based approach to reduce distress and improve psychological functioning by psychologist Richard Miller, PhD (Miller, 2005). IRest is a guided practice comprised of several steps, including: the development of intention; body scan; awareness of breath and energy; the systematic neutralization of negative physical and emotional cues, beliefs, and memories; the embodied experience of joy and wellness; and freedom from a sense of separateness or ego (Miller, 2005). The practice can be seen as an integration of mindful and concentrative meditation (Orenstein, 1971). Originally, Yoga Nidra was a path to higher consciousness and Samadhi states (Saraswati, 2003). Today the practice has found application in a diverse range of contexts including, homeless shelters, VA hospitals,

military bases, fertility clinics, and schools, as well as, yoga studios (Integrative Restoration Institute, 2011, para. 4). The practice lends itself to adaptation (Miller, 2005; Panda, 2003) and many teachers have tailored the practice to be used with specific populations and presenting issues. Yoga Nidra is a safe and inexpensive intervention that can be offered as a stand-alone or an adjunctive treatment (Miller, 2005; Panda, 2003). iRest also lends itself to clinical research because the meditation sessions follow a script, offering a higher degree of uniformity to the intervention.

The iRest protocol has many advantages as an intervention for homeless adults. First, iRest can be done in any position (lying down, seated, or standing) that offers the optimal comfort to the practitioner. Therefore, it is more accessible for people with different physical disabilities than other meditation practices, such as Vipasana which primarily emphasizes sitting meditation. Second, the iRest is designed for the beginning practitioner who may find it difficult to maintain focus (Deuskar, 2011). The practice is guided with simple instructions to lead the practitioner toward progressively deeper states of relaxation (Deuskar, 2011). Once an individual is introduced to the practice, it can be easily self-administered or practiced with an audio recording.

Research on iRest and Yoga Nidra is still in its infancy. The number of clinical studies on iRest and Yoga Nidra as an intervention for stress and well-being is relatively small but growing. As shown in Table 5, there have been six RCTs (Borchardt et al., 2012; Banerjee et al., 2011; Deuskar, 2011; T. Kovačič & M. Kovačič, 2010; Rani et al., 2011; Satyapriya et al., 2009), one non-

randomized controlled trial (Kumar, 2008), seven uncontrolled trials (Birdsall et al., 2011; Bhushan & Sinha, 2001; Eastman-Mueller et al., 2012; Hardy, 2009; Kumar & Joshi, 2009; Pritchard et al., 2009; Vempati, 2002) and one qualitative study (Stankovic, 2011). However, only six of these studies were published in peer-reviewed journals (T. Kovačič & M. Kovačič, 2010; Kumar & Joshi, 2009; Pritchard et al., 2009; Rani et al., 2011; Stankovic, 2011; Vempati, 2002).

Among studies presented in Table 4, a recent comparison study by Borchardt et al. (2012) provides strong evidence for the potential reduction of physiological and psychological stress after training in iRest. Borchardt et al. (2012) evaluated the effect of iRest meditation on stress markers of salivary cortisol and positive and negative mood. Outcomes from participants ($n=25$ per group) who completed four weeks of iRest training, progressive relaxation training, and a control group that listened to an audio book recording were compared. Those who participated in the iRest groups demonstrated significant improvements in positive and negative affect scores and marginally significant reductions in cortisol compared to the other two groups. This study is yet to be peer-reviewed and was limited to young adult women participants (18–25 years old) limiting generalizability.

Larger studies and more diverse samples will help to flesh out the treatment effects of iRest on physiological stress. However, it is the first study to measure cortisol response after brief iRest meditation training and the results reflect a positive trend despite the small sample size.

Table 4

Summary of Yoga Nidra and Integrative Restoration Yoga Nidra (iRest) Studies on Stress Reduction

Study	Sample	Tx / control	N	Measure(s)	Design/ duration	Findings	Conclusions
Bhushan and Sinha (2001)	Heterogeneous (age 19-50)	Yoga Nidra	27	STAI	UCT/15 sessions	Significant reductions in anxiety and hostility for those experiencing higher levels of distress at baseline. Those with lower levels of distress did not show significant reductions.	Yoga Nidra is a useful technique that can be used to improve emotional regulation.
Vempati (2002)	Males (age 20-46) experienced yoga practitioners	Guided meditation/ supine rest	35	Oxygen consumption; breath volume; EKG; heart rate variability (HRV); skin conductance	UCT/ 1 session meditation; 1 session resting	Significant decrease in oxygen consumption and increase in breath volume after the guided meditation. Reduced sympathetic activity in those with baseline ratios of LF/HF greater than 5 after guided meditation. Those with lower ratios at baseline showed no significant change.	Results suggest that sympathetic activity decreased after guided relaxation based on yoga, depending on the baseline levels.
Kumar (2008)	Graduate students	Yoga Nidra and yoga/ yoga only	80/30	Eight State Questionnaire	NRCT/ 6 months daily practice	Results showed significant improvements in stress and anxiety over the control group after intervention.	Yoga Nidra added to yoga practice can be considered an effective practice to reduce stress over yoga practice alone.

Study	Sample	Tx / control	N	Measure(s)	Design/ duration	Findings	Conclusions
Kumar and Joshi (2009)	College students	Pranayama and Yoga Nidra	40	EEG; GSR	UCT/ 40 sessions	Results showed significant changes in alpha EEG and GSR in positive directions post-treatment.	Yoga Nidra and pranayama may improve mental relaxation and immunity in college students
Pritchard, Elison-Bowers, and Birdsall (2009)	Multiple Sclerosis and cancer patients	iRest training	16	PSS	UCT/ 6 sessions	Stress scores were significantly reduced after intervention.	iRest can be an effective short-term, cost-effective stress reduction program for those living with chronic illness.
Hardy (2009)	Older adults (age 71-85)	Yoga Nidra	11	HRV	UCT/ 24 sessions	HRV was not affected by participation in Yoga Nidra program.	Yoga Nidra training in this sample of older adults did not result in an increase in parasympathetic predominance as assessed by HRV.
Satyapriya, Nagendra, Nagarathna, and Padmalatha (2009)	Healthy pregnant women (age 20-35)	Integrated yoga and guided meditation program/ standard prenatal exercises	45/45	PSS; HRV	RCT/ 16 weeks	Findings showed that significant improvements in stress and HRV in the treatment group over the control group. PSS scores decreased significantly in the treatment group and increased in the control group.	The findings suggest that an integrated approach of yoga and Yoga Nidra were effective in reducing perceived stress and improving autonomic balance.

Study	Sample	Tx / control	<i>N</i>	Measure(s)	Design/ duration	Findings	Conclusions
T. Kovačič and M. Kovačič (2010)	Breast cancer patients, post-operative	Yoga relaxation training adjunct/ Standard care	16/16	Rosenberg Self-Esteem Scale	RCT/ 3 weeks	Treatment group showed significant improvements in self-esteem, at all time points, over control group.	Yoga relaxation training and self-practice could be a useful therapeutic intervention for post-operative breast cancer patients who may encounter reductions in self-esteem.
Rani et al., (2011)	Women with menstrual disorders	Yoga Nidra/ Rx therapy	75/75	Psychological General Wellbeing Index	RCT/ 6 months	Anxiety, depression, positive wellbeing, vitality and general health improved significantly over the control group.	Findings suggest that regular practice of Yoga Nidra may improve general and psychological wellbeing for patients with menstrual irregularities.
Eastman-Meuller et al. (2012)	College students	iRest training	81	PSS; BDI; Penn State Worry Questionnaire; Five Factor Mindfulness Questionnaire; STAI; Qualitative interviews	UCT/ 8 sessions	Significant reduction in PSS, depression, and worry, and increases in mindfulness. Qualitative data reflected participant improvement in coping and relaxation skills and greater self-awareness.	Results suggest the iRest practice is an effective intervention for college students seeking coping strategies for stress. iRest practice may be a cost effective strategy to decrease stress, worry and depression in the college population.

Study	Sample	Tx / control	N	Measure(s)	Design/ duration	Findings	Conclusions
Birdsall, Pritchard, Elison-Bowers, and Spann (2011)	College counselors	iRest Training	22	PSS; POMS	UCT/ 6 sessions	Significant reductions in perceived stress and fatigue were found. Differences in vigor, anger, tension, confusion, and depression were not significant.	Yoga Nidra requires little training and is a relatively inexpensive, effective intervention to reduce stress and fatigue for school counselors.
Deuskar (2011)	Working mothers from low-income households	Yoga Nidra/NT	42/53	SSSI; blood pressure; blood glucose; hemoglobin	RCT/ 30 sessions	Treatment group had significant reductions in both self-report and physiological stress measures, including: autonomic arousal, attentional deficit, depression, striated muscle tension, worry (state level), negative emotion (state level), blood pressure.	The reductions in stress symptoms and physiological parameters indicate that Yoga Nidra practice may be an effective program to reduce stress and restore health for working women. However, due to the limitations of this study treatment and control comparisons must be interpreted with caution.
Banerjee et al. (2011)	Breast cancer patients undergoing radiotherapy	Integrated yoga program/ supportive counseling	35/23	PSS; HADS; DNA damage	RCT-AC/ 6 weeks	Treatment group showed significant decrease in HADS scores, whereas the control group displayed increases. PSS scores decreased significantly in the treatment group, while showed not change in control group. Post-radiotherapy DNA damage in the yoga group was slightly less than in the control group.	An integrated yoga program may modulate stress, distress and DNA damage levels in breast cancer patients during radiotherapy.

Study	Sample	Tx / control	N	Measure(s)	Design/ duration	Findings	Conclusions
Stankovic (2011)	Male military combat veterans	iRest training	11	In-class discussion; anonymous questionnaires; anonymous evaluations; 1-year follow up call	Qualitative/ 8 sessions	Participants reported reduced emotional reactivity and better regulation of rage and anxiety; increased feelings of relaxation, peace, self-awareness, and agency. Challenges identified: mental focus and intrusive memories.	Results suggest iRest classes for military personnel would be a feasible intervention and may provide benefits to those suffering from combat-related PTSD to regain locus of control over their symptoms and experience positive mood states.
Borchardt, Patterson, and Seng (2012)	Female students (age 18-25)	iRest/ progressive relaxation (PR)/ audio book	25/ 25/25	Salivary cortisol; PANAS	RCT-AC/ 4 weeks	Negative affect was significantly reduced in all groups from session 1 to session 4. Those in the iRest group also demonstrated significantly higher scores on positive affect over other groups. Marginally significant decrease in cortisol levels between pre and post measures in iRest group.	Brief meditation training in progressive relaxation and iRest can lead to improved physiological relaxation and better mood states. In particular, iRest lead to lowered cortisol levels and negative mood and increased positive mood.

Note. Author's table. STAI = State-Trait Anxiety Inventory; EKG = Electrocardiogram; HRV = Heart Rate Variability; EEG = electroencephalogram; GSR = Galvanic Skin Response; PSS = Perceived Stress Scale; BDI = Beck Depression Inventory; POMS = Profile of Mood States; SSSI = Smith Stress Symptoms Inventory; HADS = Hospital Anxiety and Depression Scale; UCT = uncontrolled trial; NRCT = Non-randomized controlled trail; RCT = Randomized controlled trial; RCT-AC = Randomized control trial with active control group.

Two studies with breast cancer patients who learned Yoga Nidra also found significant improvements over randomized control groups (Banerjee et al., 2011; T. Kovačič & M. Kovačič, 2010). T. Kovačič and M. Kovačič (2010) found that with post-operative breast cancer patients in Slovenia, self-esteem scores for the guided yoga relaxation training group improved significantly at one week and four weeks as compared to a standard-treatment control group. Researchers found that once introduced to the guided meditation, participants were able to induce relaxation successfully in their home practice. These results demonstrate that the relaxation training can provide an efficient, effective, low-cost intervention for women recovering from breast cancer surgery, a life-altering and distress provoking situation where there is often a substantial loss of self-esteem. Again, in this study the sample size was small, and included women only. It is also unclear if other factors were ruled out such as social support.

Banerjee et al. (2011) evaluated an integrated Yoga Nidra and gentle yoga program with women undergoing radiation treatment for breast cancer also had significant findings. This study measured the treatment group against an active control group who received supportive counseling. Results revealed that those in the yoga group showed significant decreases in perceived stress, anxiety and depression, while the depression and anxiety levels increased in the control group. Furthermore, DNA damage was slightly less in the yoga group than the control, despite the fact that the yoga group completed more cycles of chemotherapy than the controls. Though this was a high quality study, there were many limitations, namely its small sample size, its female-only sample, and the program was an

integration of gentle yoga and Yoga Nidra. Based on the findings, the authors speculate that the reduced DNA damage in the yoga group as compared to the control group may be linked to lower psychological stress and distress scores, pointing to the link between psychological stress and negative effects on physiological stress at the molecular level (Banerjee et al., 2011). The study shows preliminary evidence of the potential benefit of incorporating yoga-based interventions to alleviate psychological stress and distress for breast cancer patients undergoing radiation therapy.

Overall, in the studies presented in Table 4, there are strong indications that Yoga Nidra interventions may be effective in reducing overall levels of psychological stress. Several studies show significant reductions in perceived stress (Banerjee et al., 2011; Birdsall et al., 2011; Eastman-Mueller et al., 2012; Pritchard et al., 2009; Satyapriya et al., 2009) and stress symptoms (Kumar, 2008; Deuskar, 2011). These findings were consistent across all studies surveyed. In some studies, self-report data was corroborated by improved physiological markers such as, decreased blood pressure and striated muscle tension (Deuskar, 2011); improved sympathetic and parasympathetic balance (Satyapriya et al., 2009); and lower levels salivary cortisol (Borchardt et al., 2012).

Although some studies suggest significant reductions in psychological distress measures after Yoga Nidra interventions (Banerjee et al., 2011; Borchardt et al., 2012; Deuskar, 2011; Eastman-Mueller et al., 2012; Kumar 2008; Rani et al., 2011;), there is less consistency among studies. For example, in some studies, significant decreases in depression and anxiety (Banerjee et al., 2011; Deuskar,

2011; Kumar 2008; Rani et al., 2011) and emotional distress (Borchardt et al., 2012) were found over control groups. Some studies also suggest increased emotional regulation for feelings of anxiety and hostility (Bhushan & Sinha, 2001) as well as depression and worry (Eastman-Mueller et al., 2012). However, Birdsall et al. (2011) did not find reductions in distress measures of depression, anger, confusion and tension in college counselors. It appears that studies that show inconsistent results, beyond the overall self-reported measures of psychological distress, tended to be smaller pilot projects, suggesting that more systematic and sophisticated methodologies may be needed to expand our understanding of the impact of Yoga Nidra interventions on psychological distress. In fact, many of the studies presented in Table 4 are compromised by significant limitations, such as the lack of random assignment, small sample sizes, heavy reliance on self-report, and the exclusion of scores for those who did not complete posttest measures. In addition, some of these studies examined outcomes of yoga-based interventions of which Yoga Nidra was just a part of a larger protocol (Banerjee et al., 2011; Kumar & Joshi, 2009; Satyapriya et al., 2009). Therefore, it cannot be assumed in these studies that changes are due to the Yoga Nidra meditation intervention specifically.

Though it cannot be concluded that Table 4 studies are transferable or analogous to the homeless population in the United States, it is important to point out that meditation practices may provide comfort in the face of overwhelming life events to reduce emotional distress and reactivity and improve self-esteem and autonomic balance without changing life's unforgivable conditions. It is also

important to remember that the complexities of stress and distress in the homeless population are unlikely to be addressed by any single approach, including Yoga Nidra. Nonetheless, this base of relevant evidence suggests that it is valuable to evaluate the potential for meditation training to benefit a complex and vulnerable population such as homeless adults. Theoretically, the potential for reducing psychological stress and distress within homeless populations may help individuals develop healthier psychological functioning and self-regulation skills, which in turn might contribute to better rehabilitative outcomes.

iRest Studies—Institute of Noetic Sciences

In 2003, The Committee on the Shelterless (COTS), a homeless shelter and service agency, teamed up with the Institute of Noetic Sciences (IONS), a leading research center on consciousness and transformation (www.noetic.org). This collaboration resulted in the development of the *At Home Within* project. The purpose of the project was to teach various mind-body-spirit practices such as iRest meditation, drumming, qi gong, yoga, and somatic experiencing to homeless adults seeking shelter at the Mary Isaak Center and assess whether the classes helped to reduce stress, improve mood, foster subjective well-being, and increase the residents capacity to respond to difficult life events.

Preliminary analyses conducted by IONS show the first two iRest groups ($n=26$) demonstrated statistically significant mean differences on nearly all outcome measures (Vieten, 2007), suggesting that the treatment program was feasible and potentially beneficial to group participants (see Appendix A). Program staff reported that the iRest training was the best tolerated of any of the

interventions with high rates of completion. Staff also commented that the iRest program appeared to be more accessible to the residents (Vieten, 2007). Despite promising preliminary findings, because of the lack of a control group, it is impossible to determine whether positive changes were due to the iRest training or other factors such as housing or group support.

Data were collected over three years from 2006–2009 and are yet to be published. The purpose of the current study was to examine the subset of data from 196 subjects. Data for those who participated in the iRest groups and a treatment-as-usual, “shelter-only” comparison group were evaluated to examine the impact of brief meditation training in iRest on stress, distress, and quality of life in homeless adults. All study participants resided at the shelter for four weeks and were provided housing, meals, and case management services. The treatment group completed four training sessions on site, for 2 hours once a week. Quantitative and qualitative measures of perceived stress, psychological distress, positive and negative affect, and life satisfaction were collected. Given that meditation and relaxation training have shown empirical support for alleviating distress, anxiety, and depression in other high-risk and low-income populations, it was important to examine whether meditation training in iRest could offer similar benefits to homeless adults seeking emergency and temporary shelter under obvious extenuating circumstances (Vieten, 2007).

Overall, it was predicted that the data would show improvement in both groups, as housing is a significant factor in reducing distress (Wolf, Burnam, Koegel, Sullivan, & Morton, 2001; Wong 2002). It was also predicted that those

participating in the treatment group will show greater decreases in overall perceived stress and emotional distress along with greater improvement in quality of life. In other words, the current study examined whether iRest meditation training with homeless adults resulted in statistically significant self-reported reductions in perceived stress, reductions in psychological distress levels, and increases in subjective well-being over the shelter-only group.

CHAPTER 3: METHODS

The current study utilized archival data collected by IONS for the At Home Within (AHW) research project. The AHW project was the result of collaboration between IONS and the Committee on the Shelterless. The purpose of the AHW project was to examine outcomes from a variety of mind–body health classes administered to shelter residents at the Mary Isaak Center for the homeless in Petaluma, California. The Mary Isaak Center is the adult services arm of the Committee on the Shelterless and provides emergency shelter, transitional housing, meals and a variety of services such as case management, life skills classes, and drug and alcohol recovery programs to more than 800 homeless adults a year (Committee on the Shelterless, 2011, para. 1).

The AHW study was conducted from November 2006 through August 2009, with principal investigator Cassandra Vieten, PhD, developing the research design. Written approval to use this archival data set was obtained from Dr. Cassandra Vieten, and is included in Appendix B.

Participants

The sample used for the current study consisted of 196 homeless adults admitted to the Mary Isaak Center shelter in Petaluma, California between January 1, 2007 and August 1, 2009. A total of 117 study participants underwent the iRest training and 79 were part of a “treatment-as-usual” comparison group that received housing and services only. Approximately 61% of participants in the combined sample completed the study. This is comparable to the studies

described in Tables 2 and 3 (Grabbe et al., 2011; Roth & Creaser, 1997) reporting completion rates between 55 and 60%

Pre-intervention demographic surveys were collected from 169 participants at the outset of the iRest training period. A full summary of the demographic data is provided in Table 5. The age of participants ranged from 18 to 66 years, with an age mean of 45.99 years (standard deviation = 9.09). Questions about participants' gender were not collected for this data set and, thus, cannot be reported. The majority of the participants identified as Caucasian (63.5%), single, and unemployed (79.6%), with most having received at least a high school diploma. The duration of homelessness of the individual participants ranged from newly homeless to chronically homeless. A substantial percentage (35.7%) was homeless for a duration of six to 24 months. In addition, 67 (34.2%) reported a history of psychiatric diagnosis, while 76 (38.8%) reported they were currently taking psychiatric medications. A large number of respondents reported having previous meditation experience (38.2%). Chi-square analyses on all demographic variables indicated that there were no significant differences between treatment and comparison groups. Of the total sample, 43.6% dropped out for the Yoga Nidra group and 34.2% dropped out of the shelter-only group. Pearson Chi-Square analysis indicated no statistically significant differences for drop-out rates between the groups ($p = .234$, two-tailed).

Table 5

Summary of Demographic Variables for Yoga Nidra and Shelter-Only Groups

Variable and descriptors	iRest (<i>N</i> = 117)		Shelter-Only (<i>N</i> = 79)	
	<i>n</i>	%	<i>n</i>	%
Race/ethnicity				
African-American	5	4.3	3	3.8
Caucasian	72	61.5	56	70.9
Latino	4	3.4	3	3.8
Mixed race	7	6.0	1	1.3
Native American	7	6.0	7	8.9
No response	22	18.8	9	11.4
Marital status				
Single	55	47.0	34	43.0
Divorced	19	16.2	18	22.8
Married/long-term partner	14	12.0	18	22.8
Widowed	4	3.4	1	1.3
No response	25	21.4	8	10.1
Education				
8th grade or less	2	1.7	0	0.0
Some high school	11	9.4	7	8.9
High school diploma	33	28.2	28	35.4
Some college or junior college	36	30.8	28	35.4
Technical school	8	6.8	5	6.3
College degree	5	4.3	2	2.5
Graduate degree	1	0.9	0	0.0
No response	21	17.9	9	11.4
Employment status				
Employed	22	18.8	17	21.5
Unemployed	73	62.4	54	68.4
No response	22	18.8	8	10.1
Homeless status				
Newly > 6 months	22	18.8	15	19.0
Transitional 6-24 months	44	37.6	26	32.9
Long-term, 2 years+	26	22.2	29	36.7
No response	25	21.4	9	11.4

Psychiatric diagnosis				
Yes	40	34.2	27	34.2
No	55	47.0	43	54.4
No response	22	18.8	9	11.4
Psychiatric medication				
Yes	45	38.5	31	39.2
No	47	40.2	40	50.6
No response	25	21.4	8	10.1
Attrition				
Dropped	51	43.6	27	34.2
Completed	66	56.4	52	65.8

Note. Author's table.

Research Design and Procedures

The Institutional Review Board of IONS granted approval to conduct the original AHW study. Data from the seven separate groups that underwent iRest training along with all the shelter-only comparison participants were included in the final analysis. The following is a description of the methods used to conduct the AHW study including a summary of participant recruitment, informed consent, data collection, and intervention procedures.

Recruitment and Informed Consent

Participants were recruited exclusively from Mary Isaak Center through case managers, flyers posted within the facility, and an information table situated in the shelter's main common area. Individual case managers informed clients of the availability of meditation training classes and referred potential participants to the research staff. Monetary compensation of a \$25 gift card was given to those who completed the final assessment measures.

The AHW study aimed to include a representative sample of sheltered homeless individuals. Therefore, individuals with histories of mental illness, drug and alcohol abuse, illness or disability were not excluded from involvement unless such conditions posed a health risk or seriously impaired their ability to participate. The following inclusion-exclusion criteria were used to determine eligibility for participation in the research project:

- The inclusion criteria required participants to (a) be over the age of 18 and (b) commit to attend classes for the duration of the training session.
- The exclusion criteria included (a) lack of English fluency as determined by research assistants at the time of screening and (b) a medical or psychiatric disorder that would prevent engagement or posed a health risk as assessed by case manager (e.g., active psychosis, severe depression, severe panic or anxiety symptoms).

Interested candidates were screened and given further instructions to attend a pre-intervention informational meeting. Participants who chose to enroll were asked to sign informed consent forms that described the purpose of the study, expectations of participants, compensation, risks, confidentiality, and investigator contact information (Appendix C) and complete the baseline assessment questionnaires. Participants with low English literacy levels were allowed to have forms read to them by a research assistant. Participants were given a number at intake, and no other identifying information accompanied their survey packets.

The study design was quasi-experimental design and groups were not randomly assigned. Participants voluntarily selected to join the iRest training group or the shelter-only comparison group. Considerations such as limited availability, work schedules, recovery group meeting, or outside commitments precluded some residents from joining in the treatment groups.

The time requested of study participants included (a) participation in meditation training for two hours per week for four weeks (treatment group only); (b) completion of demographic survey and baseline assessment measures (both groups); (c) completion of pre-training qualitative interview (both groups); (d) completion of post-training assessment measures (both groups); and (e) completion of post-training qualitative interview (both groups). Assessment packets took approximately 60 minutes to complete at each collection point.

Completed paper survey packets were collected by administrative staff, relayed to the principal investigator, and stored in a locked filing cabinet housed in the IONS offices. Surveys were compiled and entered by research assistants into the web site surveymonkey.com. All electronic data were entered using research ID numbers only—no personally identifiable information such as names or dates of birth were entered electronically. Data were downloaded from surveymonkey.com into Microsoft Excel spreadsheets. Data were reviewed for errors and cleaned. The data files were then imported into SPSS for statistical analysis.

Instruments

Treatment group and a shelter-only comparison group participants completed identical measures of stress, psychological distress and affect, and life satisfaction. Pre and post survey packets were all completed by hand and included four measures: the Perceived Stress Scale, the Positive and Negative Affect Schedule, the Symptom Questionnaire, and Quality of Life Satisfaction Scale, in that order. Quantitative measures were completed in the timeframe prior to and just after completing the iRest course. Pretest packets also included the demographic questionnaire (Appendix D). Designated research assistants conducted a brief, structured, three-question qualitative interview, pre and post, with each individual participant for both the treatment and shelter-only groups (Appendix E).

The *Demographic Questionnaire* (Appendix D) included questions about personal background for each participant, including age, ethnicity, marital status, education, substance use history, psychiatric diagnosis, perceived health status, and other information. It was written and developed by the principal investigator. Gender was inadvertently left out of the demographic questionnaire. Due to this omission, analysis related to gender cannot be completed for the current study.

The *Perceived Stress Scale* (PSS) (Cohen, Kamarck, & Mermelstein 1988) is a 10-item, self-report inventory and is widely used in behavioral science research. The original version of the PSS measure (Cohen et al., 1983) had 14 questions. However, a 10-question condensed version was created by Cohen and Williamson (1988). The PSS was administered to each participant through a

written paper survey, and was the first measure in the survey packet. This instrument measures perceived stress, or the degree to which an individual appraises situations as stressful, and was designed to measure how unpredictable, uncontrollable, and overloaded respondents view their lives (Cohen, Kessler, & Gordon 1995). The participant is asked to reflect on events over the last month. Questions are intentionally general and nonspecific. For example, “In the last month, how often have you felt that you were unable to control the important things in your life?” Responses are structured with a 5-point Likert scale (0, 1, 2, 3, 4: Never, Almost Never, Sometimes, Fairly Often, Very Often) for each question.

The data for the archival study were collected using the condensed version of the instrument, the PSS-10, which has been shown to have a higher internal reliability (Cronbach’s $\alpha = .78$) and tighter factor structure than the original PSS. The PSS-10 was used to operationalize the dependent variable known as “perceived stress.” It yields a single summary score. Six out of 10 questions directly measure perceived stress, while questions four, five, seven, and eight indirectly measure perceived stress. Thus, scores for indirect measurements of perceived stress are reverse-scored; 0 = 4, 1 = 3, 2 = 2. Higher scores on the PSS-10 indicate higher perceived stress. Evidence has also been found that this scale is a valid measure for those with greater vulnerability to depressive symptoms caused by stressful life events (Cohen, 1994). The PSS was designed for people with at least a junior high school education. Though the PSS measure has an extensive track record with diverse populations with high internal reliability

levels, in the current sample, alpha scores were somewhat lower (pretest: Cronbach's $\alpha = 0.45$, posttest: Cronbach's $\alpha = 0.55$).

The *Positive and Negative Affect Schedule* (PANAS-X) (Watson & Clark, 1994) was developed to measure two dominant and distinct dimensions of emotional experience: Positive Affect (PA) and Negative Affect (NA) (Watson & Clark, 1994). Watson, Clark, and Tellegen (1988) have defined NA as a global dimension of psychological distress. The original PANAS measure was developed by Watson et al. (1988). The current study utilized Watson & Clark's PANAS-X (1994), an expanded version of the original scale, consisting of a list of 60 items describing a broader range of feelings and emotions. It was administered to each participant through a written paper survey, and was the second measure in the survey packet. This measure asks participants to rate how often they felt a specific emotion (i.e., cheerful, disgusted, strong, scared) over the last month. Responses are given using a 5-point Likert scale that ranges from 1 to 5 (very slightly to not at all, a little, moderately, quite a bit, extremely) and takes about 10 minutes to complete. Positive and negative items are interspersed and listed in counterbalanced sequence.

The dimension of PA reflects the extent to which a person feels enthusiastic, jovial, and active (Watson, Clark, & Tellegen, 1988). High scores on the PA scale indicate an individual respondent is experiencing feelings of cheerfulness, confidence and pleasurable engagement; whereas, the dimension of NA reflects the degree to which one is experiencing acute or aversive emotional states such as, anger, fear, and disgust (Watson et al., 1988). Both PA and NA

have received increasing attention in behavioral science research. High levels of NA are implicated with decreased health outcomes and higher mortality, while higher levels of PA are associated with lower morbidity and predict better coping with stressful life events (Pressman & Cohen, 2005). The PANAS-X appears to be an excellent measure of the major dimensions underlying PA and NA and to demonstrate a high degree of sensitivity when used to measure change between-subjects and within-subjects (Watson & Clark, 1994). The PANAS-X was found to be both a reliable and valid measure with high internal consistency (ranging from 0.83 to 0.90 for PA and 0.85 to 0.90 for NA) and to have high test-retest reliability. In the current sample, this measure also showed high internal consistency as calculated by Cronbach's alpha (pre and posttest: Cronbach's $\alpha = 0.86$). In general, the PA and NA scales are shown to have high internal consistency, are largely uncorrelated, and show appropriate stability over a two-month period of time. When short-term instructions are used, the instrument is sensitive to mood fluctuations, whereas when longer periods are specified, they exhibit trait-like stability (Watson et al., 1988, p. 1069). The PANAS-X allows for the calculation of General Dimension Scales (Positive Affect Scale and Negative Affect Scale), Basic Negative Emotion Scales (Fear, Hostility, Guilt, and Sadness), Basic Positive Emotion Scales (Joviality, Self-Assurance, Attentiveness), and other specific affective states (Shyness, Fatigue, Surprise, Serenity).

The *Symptom Questionnaire* (SQ) (Kellner, 1987) is a 92-item forced choice, self-report measure. Items are simple phrases or one-word questions for

which the participant responds to with “yes or no” or “true or false.” Participants were asked to describe how they felt over the last week. For example, Item 1 is “nervous.” The participant would then answer yes to report if they felt nervous over the last week. It was administered to each participant through a written paper survey, and was the third measure in the survey packet.

Responses are used to calculate a SQ total score. This instrument can be broken down into four distress symptom scales: (a) anxiety, (b) depression, (c) hostility-irritability, and (d) somatization and four subscales of well-being: (a) relaxation, (b) contentment, (c) somatic well-being and (d) friendliness. Each distress scale score ranges from 0 to 17, while each well-being scale score ranges from 0 to 6. The higher the SQT score the more severe the level of psychological distress (Kellner, 1987). These scales have a high test–retest reliability, have been validated across various clinical samples. The SQ has been validated (Fava, Pilowsky, Pierfederaci, Bernardi, & Pathak, 1982; Fava et al., 1986) and was found to be particularly suitable for measuring depression and hostility in clinical studies (Kellner, 1987). The current sample showed high internal consistency scores on this measure (pretest Cronbach’s $\alpha = 0.92$; posttest Cronbach’s $\alpha = 0.93$).

The *Quality of Life Satisfaction Scale* (QOLS) (Flanagan, 1978) is a self-report inventory measuring six conceptual domains: (a) material and physical well-being; (b) relationships with others; (c) social, civic, and community participation; (d) personal development and fulfillment; (e) recreation; and (f) independence. The QOLS examines the construct of subjective well-being

(SWB), based on evaluations of functioning and life satisfaction (Burckhardt & Anderson, 2003). The original QOLS scale was developed by Flanagan (1978) with 15 questions and later adapted to include the factor of “independence” to address the issues of those living with chronic illness (Burckhardt, Woods, Schultz, & Ziebarth, 1989). The 16-item version of the questionnaire was administered to each participant through a written paper survey, and was the fourth measure in the survey packet. Scores from this measure will be used to assess changes in subjective well-being and overall quality of life.

This instrument asks participants to rate their level of current satisfaction with various life domains. Answers are given using a 7-point Likert scale ranging from 1 to 7 (terrible, unhappy, mostly dissatisfied, mixed, mostly satisfied, pleased, delighted). For example, Item 1 asks the participant to rate their level of satisfaction related to material comforts: home, food, conveniences, and financial security. The QOLS is scored by summing the score on each item to yield a summary score in the range of 16–112. The average score for healthy populations is approximately 90 (Burckhardt & Anderson, 2003). Measures of life satisfaction have been used in past research with homeless groups (Biswas-Diener & Diener, 2006). Unlike measures of stress or psychological symptomology, SWB is concerned with how people experience their lives in positive ways, including cognitive judgments and affective reactions and meaningful engagement (Diener, 2009). Measuring well-being provides a more complete picture of stress and mental health (Diener, 2009).

Since its inception, the QOLS has been used to gather quantitative data from diverse groups (Burckhardt & Anderson, 2003) from healthy and various clinical populations. In fact, this instrument was developed with a focus on representing differing points of view and experiences, as Flanagan (1978) describes in his early work, and substantial efforts were made to include ethnic minorities, rural inhabitants, senior citizens, low-income groups, and those with chronic illness when the measure was being developed (Burckhardt & Anderson, 2003).

The QOLS has shown strong evidence for content validity given the large numbers of descriptive studies in its early development (Burckhardt & Anderson, 2003). The adapted QOLS has high internal consistency and test–retest reliability (Burckhardt & Anderson, 2003), as well as, convergent and discriminant construct validity (Burckhardt, Anderson, Archenholtz, & Hägg, 2003). When evaluated for this sample, measures appeared to show high consistency levels pretest Cronbach’s $\alpha = 0.91$; posttest Cronbach’s $\alpha = 0.87$).

Qualitative Interviews were conducted at the outset and at the end of the AHW study for all the study participants (see Appendix E for a complete copy of the interview questions). Some of the interview questions were “What do you usually do when you get upset or experience difficult emotions?” “What are your long term goals?” “What five adjectives describe you, and what five adjectives best describe your life?” Interview responses were written down at the time of the interview and were not audio recorded.

Intervention: iRest Training

The iRest training consisted of four 2-hour classes scheduled in the evening once a week at the shelter-site. Classes were taught by Richard Miller, PhD and assistant teachers. All instructors completed advanced teacher training in iRest. A teaching guide was created by Richard Miller for the research study to ensure there would be consistency between each training session (R. Miller, personal communication, January 20, 2009). Teachers were unpaid and all volunteered their time.

Classes were given in an experiential group format. Chairs were set up in a circle for the initial portion of the class. Classes began with a brief welcome, followed by an overview about the content of the evening's class. Several minutes were typically spent with participants spreading out and assuming a comfortable position. The participants then spent between 30 and 45 minutes led in a guided iRest practice by the instructor. The remainder of the class was spent answering questions and sharing experiences from the session.

CHAPTER 4: RESULTS

The current study utilized archival data from a quasi-experimental, pre-post, self-report survey design to evaluate outcomes on measures of psychological stress, emotional distress and quality of life for sheltered homeless adults. The purpose of the current study was to compare outcome data between two samples; one that participated in a four-week iRest meditation training program ($n=115$) and one that received four-weeks of shelter and services only ($n=79$).

To assure that statistical assumptions for making group comparisons were not violated, distributions and internal consistency of raw and standardized scores were examined. The skewness and kurtosis of all outcome measures used in making group comparisons were less than 1.00 suggesting that the scores being used in this sample are likely to be normally distributed.

Treatment and Shelter-Only Groups—Between Group Comparisons

Although not a randomized control group, data were collected on shelter-only participants to provide insight into how levels of stress level, negative mood, and life satisfaction scores might compare between individuals who did not participate in iRest meditation training to those who did. However, should the iRest and shelter-only groups be statistically different on pretreatment measures, interpretations of post-treatment group comparisons are likely to be too confounded to be meaningful. Hence, a two-factor, univariate, analysis of variance (ANOVA) was conducted on the pretest questionnaire data for each dependent variable in order to examine whether or not there were significant differences between treatment and shelter-only groups (see Appendix F for

between-group ANOVA data). The iRest group participants had significantly lower baseline life satisfaction scores on the Quality of Life Satisfaction scale of the PANAS-X ($F= 4.057, p= 0.045$) compared to the shelter-only group.

Although no statistically significant differences were found on nominal and demographic variables between groups, the higher baseline distress scores for the iRest treatment group suggest that statistical post-treatment comparisons could not be meaningfully interpreted. Therefore, statistical examinations of between-group differences were not included in the final reporting of the results.

Treatment and Shelter-Only Groups—Within Group Comparisons

Further analysis of the data was conducted using paired sample *t*-tests in order to understand the nature of within-group experiences at pre- and posttest time points. Tables 6, 7, and 8 provide pre- and posttest data for the overall sample, iRest group, and shelter-only group; dependent variables for four additional data points from the Symptom Questionnaire (SQ) distress subscales for anxiety, depression, somatic symptoms, and hostility are also included. For the shelter-only and iRest groups combined, statistically significant mean differences were detected on perceived stress, emotional distress, and quality-of-life scales in the expected directions, indicating that the entire sample showed differences after four weeks (see Table 6).

The sample was then split into iRest and shelter-only groups to determine if pre and post scores showed significant mean differences by group. Paired sample *t*-tests were used to further evaluate within-group outcomes on dependent

Table 6

*Shelter-Only and iRest Groups Combined (N=196): Paired Sample t-Tests
Comparing Pre- and Post-Test Differences in Mean Scores*

Measure	Pre		Post		95% CI	df	t	p	d
	M	SD	M	SD					
PSS**	2.9	0.8	2.5	0.7	0.2 - 0.4	117	5.2	0.000	0.45
NA**	20.7	8.6	18.9	7.8	0.7 - 2.9	115	3.2	0.002	0.22
QOLS*	70.2	17.6	72.5	14.9	-4.6 - -0.0	116	-2.0	0.047	0.14
PA	32.1	8.3	32.7	8.1	-2.0-0.7	115	-0.9	0.366	0.08
Anx**	8.9	6.5	7.3	6.2	0.8 -2.6	115	3.9	0.000	0.27
Dep**	7.6	6.2	5.9	6.0	0.8 - 2.7	115	3.6	0.000	0.22
Som**	9.8	6.5	8.4	6.1	0.5 - 2.2	115	3.2	0.002	0.28
Hos*	5.4	5.1	4.4	4.9	0.1 - 1.9	115	2.3	0.023	0.20

Note. Author’s table. CI = Confidence interval; PSS = Perceived Stress Scale; NA = Negative affect scale of the Positive and Negative Affect Schedule (PANAS); PA = Positive affect scale of the PANAS; QOLS = Quality of Life Satisfaction Scale; Anx = anxiety scale; Dep = Depression scale; Som = Somatic symptoms scale; Hos = hostility scale.

* $p < .05$, two-tailed .

** $p < .005$, two-tailed.

variables. As shown in Table 7, the iRest group showed statistically significant differences in the direction of improvement on all preliminary outcome variables: perceived stress ([PSS], $p < 0.0001$, two-tailed, Confidence Interval [CI] .25 to .60), psychological distress (NA, $p < 0.002$, CI 1.01 to 4.27), and quality of life satisfaction (QOLS, $p < 0.020$, CI -7.42 to -0.67). Furthermore, statistically significant mean differences were found on all four of the additional SQ-anxiety ($p < 0.003$, CI 0.7 to 3.2), SQ-depression ($p < 0.002$, CI 0.8 to 3.3), SQ-somatic

symptoms ($p < 0.002$, CI 1.0 to 3.2), and SQ-hostility ($p < 0.019$, CI 0.2 to 2.6) scales. Significance values presented here are based on the more stringent two-tailed threshold for significance to provide a more accurate representation of outcomes.

Table 7

Yoga Nidra Group (n =117): Paired Sample t-Tests Comparing Pre- and Post-Test Differences in Mean Scores

Measure	Pre M	SD	Post M	SD	95% CI	df	t	p	d
PSS**	2.9	0.9	2.5	0.7	0.3 - 0.6	65	4.8	0.000	0.54
NA**	22.0	9.5	19.4	8.3	1.0 - 4.3	63	3.3	0.002	0.30
QOLS*	67.4	18.4	71.5	16.3	-7.4 - -0.7	64	-2.4	0.020	0.23
PA	31.3	8.6	32.5	8.2	-3.0 - 0.7	63	-1.3	0.211	0.14
K Anx**	9.6	7.1	7.6	6.6	0.7 - 3.2	65	3.1	0.003	0.28
K Dep**	8.4	6.6	6.4	6.2	0.8 - 3.3	65	3.2	0.002	0.31
K Som**	10.4	7.2	8.4	6.0	1.0 - 3.2	65	3.8	0.002	0.31
K Hos*	5.7	5.7	4.3	5.1	0.2 - 2.6	65	2.40	0.019	0.26

Note. Author's table. PSS = Perceived Stress Scale; NA =negative affect scale of the Positive and Negative Affect Schedule or PANAS; PA = positive affect scale of the PANAS; QOLS = Quality of Life Satisfaction Scale; K = Kellner Symptom Questionnaire; Anx = anxiety scale; Dep = Depression scale; Som = Somatic symptoms scale; Hos = hostility scale.

* $p < .05$, two-tailed.

** $p < .005$, two-tailed.

The one outcome measure that did not show a statistically significant difference is the positive affect (PA) scale, representing the construct of positive mood, though change in scores was in the direction of improvement. These results

indicate that those in the iRest treatment group showed significant changes on most outcome variables, namely global and specific measures of perceived stress, emotional distress, and life satisfaction after undergoing brief meditation training in iRest. It is likely that the experience of positive mood was unaffected by the treatment condition. It is also possible that observed power associated with this scale was lower than that of other measures used in this study (0.24), suggesting that PA scores should be generally interpreted with caution.

Analyses of the shelter-only comparison group, showed statistically significant differences on two variables, perceived stress scores (PSS, $p < .039$, CI 0.02 to 0.35) and SQ-anxiety scores ($p < 0.026$, CI 0.2 to 2.6). As shown in Table 8, this group showed no change on quality of life scores and minimal change on NA scores as well as the remaining SQ distress subscales. Positive mood scores for this sample showed a slight reduction. These results suggest that the provision of four weeks of housing and services alone, without the iRest training, was likely to account for some of the reduction in perceived stress.

The t -test statistic helps to determine that the mean differences were unlikely to be caused by chance effects. However, for t -test statistics to be more accurate representations of treatment effects, calculations of effect size and confidence intervals are needed to provide a more nuanced picture from the data (Wright, 2003). Cohen's d , used as a standardized measure of effect size, was calculated for all outcomes using the formula $d = (X1 - X2) / \text{mean } SD$ (see Table 7). When examining the effect sizes, the shelter-only group experienced statistically

significant changes on perceived stress and anxiety with small effect sizes ($d = 0.30$ and $d = 0.24$ respectively). See Table 8.

For the iRest treatment group, effect sizes show that the treatment effect can be considered medium for the perceived stress scores ($d = 0.54$), and small for NA ($d = 0.30$), quality of life ($d = 0.23$), anxiety ($d = 0.28$), depression ($d = 0.31$), somatic symptoms ($d = 0.31$) and hostility ($d = 0.26$) suggesting that the four sessions of iRest training had a small degree of influence on outcomes (see Table 7).

Overall, the paired sample t -tests showed that there were statistically significant differences in pre- and posttest scores for the combined group after four weeks of temporary shelter. Statistically significant differences were also detected within groups on seven measures for the iRest treatment group and on two measures for the shelter-only group. However, there is not enough information to conclude that the iRest participants had better outcomes over the shelter-only group (see Chapter 5 for an exploration of study limitations).

Table 8

Shelter-Only Group (n=79): Results of Paired Sample t-Tests Comparing Pre- and Post-Test Differences in Mean Scores

Measure	Pre <i>M</i>	<i>SD</i>	Post <i>M</i>	<i>SD</i>	95% CI	<i>df</i>	<i>t</i>	<i>p</i>	<i>d</i>
PSS*	2.8	0.7	2.6	0.6	.02 - 0.4	51	2.30	0.026	0.31
NA	19.1	7.2	18.4	7.1	-.8 - 2.3	51	1.0	0.325	0.10
QOLS	73.8	16.1	73.9	13.0	-3.1 - 2.8	51	-0.1	0.918	0.01
PA	33.0	8.0	33.0	8.1	-2.0 - 2.1	51	0.1	0.955	0.01
K Anx*	8.1	5.6	6.8	5.6	0.2 - 2.6	49	2.3	0.026	0.24
K Dep	6.7	5.6	5.4	5.6	-0.1 - 2.7	49	1.8	0.075	0.07
K Som	8.9	5.3	8.5	6.1	-0.9 - 1.7	49	0.6	0.545	0.23
K Hos	5.0	4.3	4.5	4.3	-0.9 - 1.9	49	0.8	0.460	0.12

Note. Author's table. PSS = Perceived Stress Scale; NA =negative affect scale of the Positive and Negative Affect Schedule or PANAS; PA = positive affect scale of the PANAS; QOLS = Quality of Life Satisfaction Scale; K = Kellner Symptom Questionnaire; Anx = anxiety scale; Dep = Depression scale; Som = Somatic symptoms scale; Hos = hostility scale.

* $p < .05$, two-tailed.

CHAPTER 5: DISCUSSION

The current study hypothesized that brief training in iRest meditation would decrease psychological stress and distress, and increase quality of life for sheltered homeless adults over a shelter-only comparison group. However, the between-group comparisons could not be reliably made due to unequal variance on Quality of Life Satisfaction scores showing significantly lower baseline levels of subjective well-being for the iRest treatment group. Although statistical comparisons between groups could not be made meaningfully, pre and post-treatment scores were used to examine the impact of iRest training on a distressed sample of homeless adults. Despite the absence of a control group, the overall trend in the within group data suggests that iRest training is a feasible and viable intervention for distressed homeless adults and may show improvement in as few as four to six sessions.

One of the research questions for this study asked: Does participation in iRest training lead to better outcomes in stress, emotional distress and quality of life compared with shelter and services only? When the sample was split into treatment and shelter-only groups for separate analyses, outcomes differed by group. For the iRest group there were statistically significant differences indicative of post-treatment improvements on three global scales: perceived stress, psychological distress, and quality of life satisfaction as well as statistically significant improvements on all SQ distress scales of anxiety, depression, somatic symptoms, and hostility. Several meditation studies have utilized paired-sample t-test scores with one and two-group designs, coupled with effect sizes, to examine

the effectiveness of meditation training programs (Carmody & Baer, 2008; Grabbe et al., 2011; Kumar, 2008; Rani et al., 2011). Having the results of this study be consistent with other research is encouraging as the outcome changes were measurable after four to six sessions of iRest training.

Reductions seen on perceived stress scores suggest that this group may have increased their ability to cope and manage stress. It may also indicate that participants viewed their circumstances as less overwhelming and uncontrollable. Statistically significant reductions in PSS scores were also reported in several yoga nidra and iRest studies (Banerjee et al., 2011; Birdsall et al., 2011; Eastman-Mueller et al., 2012; Pritchard et al., Elison-Bowers, & Birdsall, 2009; Satyapriya et al., 2009). When seen as an acquired skill, meditation training can expand a client's repertoire of coping, enhance positive emotions, optimism, locus of control and possibly alter one's appraisal of difficult life events as opportunities for growth and change (Overholser & Fisher, 2009). Results from those in the shelter-only group demonstrate statistically significant differences on two scales, perceived stress and anxiety with small effect sizes, suggesting that housing and services were likely to have some degree of influence on reduction in stress and anxiety levels.

The reductions in NA, or psychological distress, imply that participants may have developed a greater capacity for the regulation of affect and arousal. Distress reduction was corroborated by statistically significant reductions in measures of anxiety, depression, somatic symptoms and hostility. Results of this study support the findings of Grabbe et al. (2011), who found significant

reductions in emotional distress with homeless youth after eight weeks of a mindfulness-based meditation training program. For the shelter-only group in the current study, levels of psychological distress did not change significantly indicating that housing and services were unlikely to account for the reduction in psychological distress. Carmody, Vieten, and Astin (2007) highlight the potential for meditation training to increase an individual's tolerance of emotional distress and negative affective states and improve their ability to regulate behavior in situations where change may not be possible.

Another interesting result of the current study involves that of statistically significant improvement in quality of life satisfaction scores. As described earlier, the QOLS measures the construct of SWB, which evaluates how much people experience their lives in positive ways across domains of financial security, relationships, work, and independence. Although the material realities of this group were unlikely to change substantially in four weeks, the change in QOLS scores would imply that their outlook or experience of their lives may have improved. Therein lays an interesting line of questioning. Though the physical, material and social hardships of homelessness cannot be altered by a brief meditation training program, can it improve one's outlook on life and increase the experience of subjective well-being? Finding an answer to this question is far beyond the scope of the current study due to the limitations described here. However, hypothetically, meaningful improvements in coping and negative mood can positively impact one's overall appraisal of health and well-being. Similar findings were reported by Hick and Furlotte (2010) who found mean increases in

life satisfaction scores after meditation training with severely economically disadvantaged group of adults.

Overall, it appears that the iRest training was a feasible and potentially beneficial intervention for homeless individuals. Moreover, the program was a viable adjunct to housing and service provision, offering a brief, well-tolerated, non-pharmaceutical, cost-effective, group-based approach to teaching positive coping and mind-body skills to shelter residents. In a large scale study of homeless individuals in Northern California, Wong (2002) found that housing was not a sufficient condition for ameliorating the heightened distress symptoms for homeless individuals with mental illness and advocated for a holistic approach that accounts for the physical, emotional, and psychosocial needs of this population. An approach like iRest may be a valuable adjunct to address the stress and distress symptoms and wider psychological needs of individuals seeking supportive housing and emergency shelter.

Limitations

In many regards the original study was ambitious in its evaluation of mind-body healing practices with homeless adults. Few studies exist examining meditation practices with economically marginalized populations and this was the first study to collect both treatment and no-treatment comparison data. Though the groups turned out to be non-equivalent, the findings presented here provide a basis for the acceptability and feasibility of brief shelter-based iRest meditation training with distressed homeless adults.

The current study was constrained by numerous limitations, in terms of design, administration and analysis. The first and most obvious limitation was using a quasi-experimental design and a non-randomized convenience sample. Though convenience sampling is more pragmatic and affordable, it limits the generalizability and repeatability of the study (Kazdin, 2003). Although the attempt was made to collect data from a treatment group and a treatment-as-usual group for comparison, the samples were non-equivalent, severely limiting the analysis of outcomes. Because equality of variance between groups could not be assumed between the treatment and comparison groups, between-group comparisons could not be effectively made. When the equality of variance assumption is violated, the reliability of the results is compromised (Kazdin, 2003). In particular, when unbalanced groups are compared, the resultant *p*-value from the significance test may be too low or too high, affecting the possibility of type I error or type II error (Kazdin, 2003). This is a major limitation of the current study. The group differences may also be a reflection of self-selection bias. Regrettably, the effect of housing and service provision on stress and distress reduction is speculative and could not be adequately measured limiting the scope of these findings. Undoubtedly, randomized controlled trials would provide a clearer picture of treatment effects. Other possible approaches such as matched groups (Kazdin, 2003) and active control group designs (Banerjee et al., 2011; Jain et al., 2007), or rigorous mixed-method approaches (Caspi & Burleson, 2005) may also be informative and useful alternatives for this particular population. Likewise, the ability to acquire longitudinal or follow up data would be an

important next step to understanding the lasting impact of iRest training for the participants.

In addition to the lack of a true control group, this study relied solely on self-report measures. The effect of self-report bias may affect reliability due to impression management or social approval (Kazdin, 2003). Future studies that rely on self-report data may benefit from collecting measures of social desirability to control for this confound. Objective measures such as physiological data (blood pressure, cortisol levels, or sleep quality) or days in shelter counts would help to corroborate subjective reports. In addition, variables such as social support, rapport with instructor, mindfulness, frequency of self-practice, dosage effects, and quality of meditation would be valuable components if assessed.

Another limitation of this study is the relatively short duration and limited number of training sessions. Four to six sessions of meditation training may be too few to see large effect sizes and observable clinical improvement. Most meditation training studies with low-income groups are based on eight-week models, requiring between 20-30 hours of training (Grabbe et al., 2011; Hick & Furlotte, 2010; Roth & Creaser, 1997; Roth & Robbins, 2004). Studies from India on Yoga Nidra were much longer involving 15 sessions or more (Bhushan & Sinha, 2001; Deuskar, 2011; Kumar, 2008; Kumar & Joshi, 2009; Rani et al., 2011; Satyapriya et al., 2009). The findings generated from the current study are promising because measurable differences were found after only four to six sessions with a distressed sample of homeless adults. It is likely that a fair number of participants did not attend all the sessions, suggesting that the distress levels

may have been responsive to the intervention. Other studies have also demonstrated improvement after just four to five sessions of meditation training with general and student (non-homeless) populations (Borchardt et al., 2012; Lane, Seskevich, & Pieper, 2007; Tang et al., 2009; Tang et al., 2007). Moreover, future studies on iRest with homeless adults may benefit from modifying this schedule to convene two or three sessions per week. This alternative, suggested by Grabbe et al. (2011), may increase dosage effects and continuity between classes and may potentially improve retention rates.

Participant dropout is another limiting issue, common to many studies with homeless populations. The overall completion rate was 60% with a 55% completion rate for the treatment group. This is comparable to other studies with homeless and low-income groups (Grabbe et al., 2011; Roth & Robbins, 2004). It is important to note that the study included only a small percentage of residents at the shelter and is in no way reflective of all the residents. The results are also limited because they only reflect the percentage of the total sample that completed the study and remained in the facility for the duration of the training session. It is arguable that those who chose to participate and were able to fulfill the four-week requirement may have been at a higher level of functioning than those who did not complete the study. This context is true for all the analyses reported here. Due to the high turnover of sheltered homeless groups, this may bear particular influence on the data reported here.

Finally, because the data used for this study were archival, there were matters beyond the author's control that limited this investigation. Two critical

pieces of information were missing, one is the lack of data on gender and the second was how many people participated in multiple mind-body classes. Because these questions were left out of the initial demographic survey, the statistical analysis is further compromised, as it could not control for these major confounds.

In summary, future studies on shelter-based iRest meditation training would benefit from (a) utilizing a randomized control group, with or without an active non-iRest intervention, (b) a larger sample or multi-site data, (c) collecting objective data (e.g., blood pressure, galvanic skin-response, etc.) or adding measures of social desirability responding to control for self-report bias, (d) changing the class schedule to offer groups two or three times a week and collecting data after six to eight sessions, (e) better record keeping on group attendance and group repeaters, and (f) longitudinally tracking treatment group participants to examine lasting effects of meditation training.

Though the findings of the current study are modest at best, they do cautiously support the claim that brief training in iRest may lead to improvement. Due to the lack of randomized controls, this study sheds little light on whether the observed changes were a direct result of iRest training nor can it verify treatment effectiveness. However, the statistical change toward improvement does speak to the need for further investigation and the collection of more rigorous data to substantiate or replicate these findings. Though some statistical differences can be seen, whether these values translate into real world contexts or if such

improvements can enhance rehabilitation or recovery, decrease conflict, or improve health certainly remains to be seen.

Future Directions

This study is a humble beginning into a much larger area of exploration. Meditation-based training programs have amassed a large evidence base, however, little is known about the use of meditation as an intervention for severely economically disadvantaged citizens (Hick & Furlotte, 2010). It is my hope that this study leads to a more critical examination of meditation-based interventions for high-risk groups with histories of traumatic stress and limited access to resources, as well as, a more conscious inclusion of under-served populations into the scientific dialogue on meditation.

Many recommendations have been made in terms of enhancing future iRest studies with homeless adults including using randomized or active control groups, controlling for self-report bias, collecting objective data, and assessing practice effects. A great deal of data was collected for the At Home Within study including extensive demographic information and qualitative data. Further investigation of these archival data is certainly worthwhile, such as the exploration of mediating, moderating, or predictive variables that could generate a more complex understanding of factors influencing outcomes.

Future analysis of qualitative interviews from the AHW study can provide a first-hand account to reinforce the quantitative findings and shed more light on the potency of iRest with this group. Qualitative data may address unanswered questions such as: Do those experiencing homelessness see meditation training as

beneficial and relevant? Did the program address the individual needs of those living in the shelter? Were any new skills learned? Were participants better equipped to manage stress or regulate difficult emotions? Were there any negative reactions to the program? Further analysis of treatment effects on well-being is also warranted. Investigating the reasons why the positive affect scale did not show significant change or examining outcomes from similar scales such as the SQ well-being scale may also provide useful information.

Another interesting branch of this research might involve looking at the impact of iRest on traumatic stress and trauma symptoms in those experiencing homelessness. In line with the argument for trauma-informed homeless services by Hopper, Bassuk, and Olivet (2010), the study of meditation programs for homeless individuals with histories of trauma is an exciting opportunity. Homeless individuals who have experienced chronic instability, abuse, and interpersonal violence may acquire substantial impairment with attention, concentration, and regulation of emotional and physiological reactions (Hopper et al., 2010). Extensive research exists on the potential benefit of meditation practice for these specific facets (Lutz, Slagter, Dunne, & Davidson, 2008; Rubia, 2009; Shapiro et. al., 2006; Tang et al., 2007), however it is unknown if such practices can be truly beneficial with homeless adults. Developing a more complex understanding of meditation with the aim to ameliorate traumatic stress reactions and improve rehabilitation outcomes for this population is an exciting off shoot of the current study.

Conclusion

The primary goal for this inquiry was to expand the base of scientific evidence on iRest Yoga Nidra and examine whether brief training could reduce stress and distress and improve quality of life in homeless adults compared to shelter and services only. Due to significant baseline differences in the treatment and comparison groups, the primary hypotheses for the current study could not be tested. However, an examination of within-group changes suggested that treatment group participants did experience statistically significant improvements after only four to six sessions of iRest training. Results from this study suggest that brief iRest training may be effective in reducing negative psychological states and enhancing quality of life for homeless adults experiencing significant distress. Nevertheless, these findings must be interpreted with caution due to the lack of sufficient control group data. Moreover, findings must be verified with more rigorous study designs and randomized control trials. The potential for practices such as iRest to contribute to improved emotional regulation, healthy coping behaviors and reduced psychological stress for this population has not been previously tested and is an important avenue for further exploration. The findings reported here support the viability of utilizing shelter-based iRest meditation training for high distress groups such as homeless adults and support other studies that found meditation training to be accessible, well-tolerated, and well-received by homeless shelter residents.

Given that meditation-based interventions are a relatively new clinical intervention for the homeless, the findings of this paper may offer useful insights

to the fields of community psychology, meditation research, complementary medicine, and health psychology. It is hoped that these results will further the understanding of the potential benefits of iRest for homeless adults and promote more holistic and positive approaches to service provision for homeless individuals.

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APPENDIX A: IONS PRELIMINARY REPORT

Report on Results of Yoga Nidra / iRest
to Reduce Stress in Homeless Shelter Residents
with a History of Trauma

prepared by Cassandra Vieten, PhD
At Home Within Program
Institute of Noetic Sciences and Committee on the Shelterless

Background

The Institute of Noetic Sciences (IONS), a non-profit organization in Northern California is collaborating with a leading provider of homeless services, the Committee on the Shelterless (COTS) in Petaluma, California, to develop, deliver, and test the effects of a mind-body wellness program for homeless adults. Mind-body practices have shown great promise in ameliorating symptoms of depression and anxiety, and for reducing stress and other symptoms of physical and mental illness. Funded by several private foundations, The “At Home Within” pilot program introduces mind-body practices for stress reduction and increasing self-regulation to the homeless adult population at COTS, most of whom have experienced significant trauma in their lives, and tests the results of participating in these programs. Since 2005 we have conducted eleven At Home Within-sponsored groups with over 200 participants, with very promising results. In 2007, we were pleased to incorporate a new mind-body program that is showing particular promise for helping resolve issues related to past trauma into our At Home Within program. Developed by long-time meditation teacher and psychologist Richard Miller, Yoga Nidra is based on non-dual yogic teachings, and involves a standard nine-step practice to increase mindful awareness, to inquire into the nature of one’s mind and body, and to teach several skills for self-regulation through awareness practices.

We have tested the Yoga Nidra program with two groups, 26 participants total. In comparison to our other programs, which have included such practices as Meditation, Qi Gong, and Hatha Yoga. Facilitators have reported that Yoga Nidra was the best tolerated of any of the At Home Within interventions, with the greatest retention/completion rate, and that it appeared in general more accessible to participants. Below we describe in more detail the preliminary results of the Yoga Nidra program.

Preliminary Results

We compared participants’ scores prior to taking the Yoga Nidra course to their scores just after taking the Yoga Nidra course, using paired-samples t-tests. The table below shows that statistically significant improvements were observed across most of the variables we measured, all in the expected direction.

Table 9

Summary of Results of iRest Yoga Nidra training to Reduce Stress in Homeless Shelter Residents

Variable	Average scores		<i>p</i> value ^a
	Prior to intervention	Following intervention	
Perceived Stress	23.8	17.8	.000
Anxiety (Kellner)	33.2	30.5	.008
Hostility (Kellner)	30.2	27.4	.012
Depression (Kellner)	31.3	28.7	.010
Somatic Symptoms (Kellner)	34.1	31.6	.014
Negative Affect (PANAS)	39.5	34.7	.001
Fear (PANAS)	23.2	21.7	.016
Hostility (PANAS)	24.9	22.0	.017
Guilt (PANAS)	24.3	21.1	.029
Sadness (PANAS)	18.9	16.2	.005
Positive Affect (PANAS)	24.3	26.2	.207 (ns)
Serenity (PANAS)	7.5	9.2	.003
Quality of Life	50.6	54.7	.095 (ns trend)

Note. Results not shown—no significant differences in shyness, surprise, joviality, or fatigue. Table reprinted with permission.

^a *p* value of < .05 is considered significant.

These results are particularly impressive because of the small sample size, which affords less statistical power and makes it more difficult to detect statistically significant differences. This implies that the changes observed between the pre- and post-measures were quite robust.

There are some limitations of this preliminary analysis. Because of this design, we were limited to only measuring people who had completed the post-measures, meaning that people who left the shelter or relapsed during the course are not included in the sample. Our results apply only to people who completed the four to six week course. This means that it is possible that the participants who completed the course did so because they were doing better in general than the people who did not complete the course.

In addition, we did not compare the changes in residents of the shelter who completed this course to the changes of residents of the shelter who did not complete the course. In other words, there was no control group in this study. It is

possible that the participants would have improved over time regardless of whether or not they had engaged in this course.

However, when an intervention is in the beginning stages of being tested for efficacy in a new population, it is quite typical to start with an uncontrolled trial to assess feasibility of the intervention with the population and initial promise. Our results show that this intervention is feasible, and shows strong initial promise.

The next steps in this work would be to conduct a randomized controlled trial using a more conservative intent-to-treat analysis (in other words, assuming that people who drop out or relapse did not benefit beyond their last known scores).

Reports from Participants

Validated forced-choice questionnaires (e.g., true/false, or on a scale from 1-5) are powerful because they have been developed to accurately measure specific states of mind or symptoms that have been shown to correlate highly with a gold standard, such as a clinician interview, and because the relationships of variables as measured with these instruments to other variables are well-known. However, these instruments can be limited in assessing the more subtle aspects of people's experiences, and often do not capture unique in-depth elements of changes people experience in response to interventions. In this project, we also ask open-ended qualitative questions to see if participating in the program changed, for example, participants' views of themselves or their lives, or the ways they deal with stressors. Qualitative analysis of these items are underway, but a few examples of responses to the question "What do you do when you get angry or upset?" before participating in Yoga Nidra and after participating in Yoga Nidra follow in Table 10.

We also asked people who participated to evaluate the program. Here are some of their responses with respect to what helped them in the program:

"It helped me learning of my inner self and know that I CAN."

"It helped me learn to listen to instruction, and with each week that went by I got more out of it."

"I learned to get my brain trained to go where I willed it."

"It relaxed me. Calmed me down. Both the classes and the tapes made me more joyful and peaceful.

"It helped me to relax my mind."

"I liked listening to the meditation sessions. Being open to a new experience."

"I appreciated the mediation sessions. the relaxing environment and the visualization."

Table 10

Examples of Qualitative Responses from Participants Before and After Participation in iRest Yoga Nidra Training

Respondent	Prior to the intervention	After the intervention
650	Slam doors Go for a walk Punch holes in walls Suffer in silence Leave	Go for a walk Get quiet Go inside my head
639	Dwell on my mistakes Blame myself Withdraw Give up Lose self-confidence Get sad	After I overcome my ego-tendencies toward passive/aggressiveness and dwelling on the hurt, I make myself stay present and recognize and observe my feelings and either stay and work with them and maybe talk it over with whoever is involved in this misunderstanding... or else I just sit and breathe slowly, letting myself open for anything to come to mind that will help resolve my difficulty.
637	Shut down Say nothing Go into myself Self destruct—take drugs—kill pain	Pray Take deep breaths Stay calm Answer quietly or stay quiet

Note. Table reprinted with permission.

“I got more focused in concentration and had an easier time feeling relaxed.”

“Everything worked, don’t change a thing!”

“Lying down and learning to quiet my mind was great.”

“I learned more about my inner self.”

“It helped me to feel better about myself.”

“I liked the meditation, stress reduction and moments of calmness.”

Negative evaluations of the program were almost exclusively with respect to location and surroundings – such as “It would have been nice if the room were quieter” or “The area outside the room was loud.”

In response to being asked what could be improved, participants responded:

“MORE!”

“Would like more people to come to feel the way we felt- Enjoying it very much.”

“Would like the program to last longer.”

“Four weeks was not long enough. Six weeks would be far better.”

“Please come back.”

APPENDIX B: PERMISSION TO USE DATA

Cassandra Vieten, Ph.D.
Director of Research
Institute of Noetic Sciences

Withheld for privacy

Withheld for privacy

Withheld for privacy

December 5, 2011

Dear Dr. Vieten:

I am completing a doctoral dissertation at the California Institute of Integral Studies in San Francisco entitled "Impacts of Brief Meditation Training on Homeless Adults." I would like your permission to use archival data collected by the Institute of Noetic Sciences for the At Home Within Project for the purposes of completing my doctoral dissertation.

The requested permission extends to any future revisions and editions of my dissertation including nonexclusive world rights in all languages, and to the prospective publication of my dissertation by UMI. These rights will in no way restrict republication of the material in any other form by you or by others authorized by you. Your signing of this letter will also confirm that you own the copyright to the above-described material.

If these arrangements meet with your approval, please sign this letter where indicated below and email a copy back to me at pbhogaonker@yahoo.com. Thank you very much.

Sincerely,

Priya Bhogaonker

PERMISSION GRANTED FOR THE
USE REQUESTED ABOVE:

Withheld for privacy
Cassandra Vieten, Ph.D.

Date: 12/10/2011

APPENDIX C: INFORMED CONSENT FORM

INSTITUTE OF NOETIC SCIENCES—CONSENT TO ACT AS A RESEARCH PARTICIPANT

You are being asked to take part in a study being conducted by Cassandra Vieten, PhD and her colleagues at the Institute of Noetic Sciences, in collaboration with The Committee on the Shelterless (COTS).

Because you are a member of the Mary Isaak Residential Center and interested in a program designed for personal growth, you are being asked to participate in this study.

WHAT IS THE PURPOSE OF THIS STUDY?

The purpose of this study is to find out whether participating in an nine-week class focused on body, mind, and spirit in which you will learn yoga and meditation practices will reduce stress, improve mood, and help you better deal with difficult emotions.

WHAT HAPPENS TO YOU AND OTHER STUDY PARTICIPANTS?

If you agree to participate, the following will happen:

1. You will have a one-to-one interview with a member of our research team during which you will find out more about the project, and decide whether or not you would like to enroll. During this conversation, you will also be asked about your experience in groups and with mind-body practices, and talk about what you hope to get from this kind of training. There is a possibility that during this conversation you or the researcher will decide that this kind of group is not appropriate for you.
2. If you decide to enroll in the project, you will be asked to complete a packet of questionnaires before the classes begin. You will be asked to complete about six questionnaires. These questionnaires will ask about the kinds of thoughts and emotions you have and the ways you deal with them. They should take about 30-60 minutes to complete. An interviewer will also ask you a few questions about your feelings, thoughts, and goals.
3. You will attend nine weekly two hour classes on Thursday evenings from 6:30–8:30pm. The classes will include group exercises in mind-body-spirit practices such as meditation, yoga, and group sharing. You may participate in any or all of the exercises, and you may also choose to quietly sit and observe during them. The classes will be held at the

Mary Isaak Residential Center. Portions of the class sessions will be videotaped. Video recordings in which your face appears or voice is heard will not be used outside of the research team without your separate written permission.

4. After the last class, you will be asked to complete the same set of questionnaires again. These questionnaires will again take about 30-60 minutes to complete. With your permission, you may be asked to participate in a videotaped interview at this time. Again, these recordings will not be used outside of the research team without your separate written permission. We will also ask your case manager to rate your progress at COTS, your engagement in program activities at COTS, and your fulfillment of obligations at COTS.
5. Participation will take a total of about 17 hours over a period of nine weeks, including participating in groups and completing questionnaires
6. About 60 participants will take part in this project over the next year.

WHAT ARE THE RISKS OF THIS STUDY?

The risks to participating in this study are potential loss of privacy and expenditure of time. In addition, you may find the group activities or questionnaires boring, distressing, or otherwise uncomfortable.

If you are aware now that you do not wish to participate in any part of the groups or questionnaires, you should not enroll. However, once you have enrolled, you may withdraw from the study, and may refuse to answer any question or refuse to participate in any study activity at any time. If you become distressed by any training activity, questionnaire, or assessment in a way that is not resolved by speaking with the principal investigator (Dr. Vieten), or if you would rather speak with someone not involved with the study, a counselor will be made available for a consultation and will make a recommendation or referral if the issue is not resolved.

This is a new program, and its effectiveness has not been proven. It is possible that the educational program will have no effect, or will have a negative effect.

WHAT ARE THE POTENTIAL BENEFITS TO YOU AND OTHERS?

Though this program has not been tested, mind-body interventions and group support have proven beneficial in a variety of populations. It is possible, but not guaranteed, that you will derive benefit from this program.

WHAT HAPPENS IF YOU ARE INJURED OR HARMED IN SOME WAY BY THE STUDY?

There is **no special program to provide compensation if injury occurs during this research**. If you are injured or made ill as a result of participation in this study, treatment will be made available. Insurance companies may not pay for an injury resulting from your participation in this study. Any costs not paid by your insurance company will be your responsibility.

In the event of a research-related injury, you should contact Dr. Vieten at [withheld for privacy]. This is a 24-hour message line.

HOW CONFIDENTIAL ARE YOUR RECORDS?

Your records will be kept confidential. Any information that is obtained in connection with this study that can identify you will remain confidential and will be disclosed only with your permission or as required by law. All of the information you provide to us will be kept in a locked filing cabinet or password protected computer file, and will be coded with a study number rather than your name. Only study personnel and the Institute of Noetic Sciences Institutional Review Board (the committee established for the protection of rights of research participants) will have access to the files. Any papers or presentations resulting from this work will be presented in a way in which you cannot be identified. We will not use videotaped data in any presentations unless we obtain your written agreement first, and you may refuse. After the study has been completed and all data has been coded from the tapes, unless you have given permission in writing for your tape to be used in presentations, the tapes will be destroyed. You may revoke your permission at any time by writing a letter to the principal investigator (Dr. Vieten). Your information will be released only at your written request, or under appropriate legal circumstances. There are some legal circumstances under which your confidentiality may be broken. These include: reasonable suspicion that you intend to harm yourself or another person, or suspicion of child or elder abuse.

STATEMENT OF VOLUNTARY PARTICIPATION

Your participation in this study is voluntary. Without any prejudice to your future medical treatment, you are free to take part in, or withdraw from the study at any time.

COSTS TO THE SUBJECT

There will be no cost to you for participation in this study or the training program, except for the time you spend participating and potentially costs of transportation to attend the intervention or assessment sessions.

COMPENSATION

You will be compensated for participating in this project at the end of the final assessment with a \$25 gift certificate to a local merchant.

EXPERIMENTAL SUBJECT'S BILL OF RIGHTS

A copy of the Experimental Subject's Bill of Rights and a copy of this consent form will be given to you for your own use.

NEW FINDINGS AND STUDY RESULTS

You will be told of any significant new findings developed during the course of this study, which may relate to your willingness to continue your participation. You may request to be informed of the results of the study at its conclusion.

INVESTIGATOR'S NAME AND NUMBER

This information was discussed with you by Cassandra Vieten, PhD, or a member of the research team. S/he will answer any further questions you may have concerning this study or the procedures. You can reach Dr. Vieten at [withheld for privacy] (24 hour message line).

IRB HOURS AND NUMBER

Should you have any questions about your rights as a research participant, you may call Dr. Dean Radin, Chair of the Institutional Review Board which is concerned with protection of volunteers in research projects, between 9 a.m. and 4 p.m., Monday through Friday, at [withheld for privacy] or by writing: The Institute of Noetic Science Institutional Review Board Office, 101 San Antonio Road, Petaluma, Ca, 94945.

PARTICIPANT'S STATEMENT:

I voluntarily consent to participate in this study.

My signature below means that I have read the above information about the study and have had a chance to ask questions. I have been given a copy of this consent form and the Subject's Experimental Bill of Rights. I have been told that by signing this consent form I am not giving up any of my legal rights.

Printed Name of Participant

Participant's Signature Date

Signature of Person Obtaining Consent/ Printed Name Date

RESEARCH PARTICIPANT'S BILL OF RIGHTS

The rights below are the rights of every person who is asked to participate in research.

As a research participant, you have the following rights:

1. To be told the nature and purpose of the research.
2. To be told what will happen and whether any of the procedures, drugs or devices are different from what would be used in standard practice.
3. To be told about any significant risks, side effects or discomforts that can be reasonably expected from the research.
4. To be told of any expected benefits from participating in the research.
5. To be told the other available treatments that could be chosen instead, and how they may be better or worse than participating in the research.
6. To be allowed to ask any questions concerning the research both before agreeing to be involved and during the course of the study.
7. To be told what sort of medical treatment is available if any complications arise.
8. To refuse to participate at all or to withdraw consent to participate at any time, without jeopardizing the right to receive present or future care.
9. To receive a copy of the signed and dated consent form.
10. To be free of pressure when considering whether to agree to participate in the research.

APPENDIX D: DEMOGRAPHIC QUESTIONNAIRE

Today's Date: _____

1. Your Age: _____
2. What is your current relationship status? **(please circle one)**.
 - a. single
 - b. married/long-term partner
 - c. divorced
 - d. widowed/long-term partner died
3. What is your race/ethnicity? (please circle all that apply)
 - a. African-American/Black
 - b. Asian-American
 - c. Pacific Islander
 - d. European-American/Caucasian
 - e. Native-American
 - f. Hispanic/Latino
 - g. Other (Please specify: _____)
4. What is the highest level of formal education that you have achieved?
(please circle one)
 - a. 8th grade or less
 - b. some high school
 - c. high school diploma
 - d. technical school
 - e. some college or junior college degree
 - f. college degree (BA, BS, BBA, BSN)
 - g. graduate degree (MA, MS, PhD)
5. Do you regularly participate in religious/spiritual services?
 - a. no
 - b. yes

If yes, how often do you attend religious/spiritual services?

- a. less than once per month
- b. 1-3 times per month
- c. once per week
- d. more that once per week

6. Do you meditate?

- a. No
- b. yes

If yes, how often do you meditate?

- a. less than once per month
- b. 1-3 times per month
- c. 1-2 times per week
- d. 3-4 times per week
- e. daily

7. Do you pray?

- a. No
- b. yes

If yes, how often do you pray?

- a. less than once per week
- b. 1-4 times per month
- c. daily
- d. multiple times throughout the day

8. Do you engage in any other spiritual practice?

- a. No
- b. yes

If yes, what is it? _____

How often do you engage in this practice?

- a. less than once per week
- b. 1-4 times per month
- c. daily
- d. multiple times throughout the day

9. Are you currently involved in counseling of any kind?

- a. No
- b. yes

If yes, which kinds? (please check all that apply)

- a. couples/family/individual counselling
- b. spiritual pastoral counselling
- c. group therapy/support groups

d. other (please describe: _____)

10. Have you ever been told that you have a psychiatric illness?

- a. No
- b. Yes

If yes, what was the diagnosis?

How long ago?

11. Do you, or have you ever taken any psychiatric medications?

- a. No
- b. Yes

If yes, what type of medication?

How long ago?

For how long?

12. Do you exercise regularly?

- a. No
- b. Yes

If yes, how often do you exercise?

- a. once per week
- b. 2-3 times per week
- c. 4-5 times per week
- d. usually daily

If you do exercise, what kind of exercise do you engage in most frequently?

- a. Yoga
- b. Martial Arts
- c. Walking
- d. Intensive cardiovascular (e.g., aerobics, running, biking)
- e. Weight training

f. Other (please describe: _____)

13. How would you rate your present state of health?

- a. Poor
- b. Fair
- c. Good
- d. Very good
- e. Excellent

14. On a daily basis, do you usually drink coffee, tea or other caffeinated beverages?

- a. No
- b. Yes

If yes, how many cups per day on average? _____

15. Do you currently smoke tobacco products?

- a. No
- b. Yes
- c. I used to smoke but quit

If you currently smoke cigarettes, how many per day do you smoke on average? _____ cigarettes

If you currently smoke cigarettes, for how long have you been smoking? _____ years

If you used to smoke, but quit, approximately when did you quit?
_____ months ago _____ years ago

If you used to smoke, but quit, for how long did you smoke?
_____ years

If you used to smoke, but quit, how many cigarettes per day did you smoke before you quit? _____ cigarettes per day

16. Do you drink alcohol? This includes beer, wine or hard alcohol.

- a. No
- b. Yes

If yes, how often do you drink?

- a. 1-3 occasions per month
- b. 1-3 occasions per week

- c. 4-6 occasions per week
- d. I usually have at least on drink every day
- e. I used to drink, but have quit

If you used to drink, but quit, approximately when did you quit?

_____months ago _____years ago

17. Have you ever been addicted to heroin, cocaine, amphetamines, marijuana or any other non-prescriptive drugs?

- a. No
- b. Yes

If yes, how often did/do you use drugs?

- a. 1-3 occasions per month
- b. 1-3 occasions per week
- c. 4-6 occasions per week
- d. I usually use drugs almost every day
- e. I used to use drugs, but have quit

For how long have you used/did you use drugs? _____years
_____months

If you used to use drugs, but quit, approximately when how long ago did you quit?

_____months ago _____years ago

18. Are you presently employed?

- a. No
- b. Yes — If yes, circle one: Part-time Full-time

If no, when were you last employed? _____month _____year

If unemployed, why?

- a. Homemaker
- b. Financially Independent
- c. Poor Health
- d. Job Market – Can't find work in my field
- e. Retired
- f. Other _____

19. How long have you been without your own home (that you either owned or rented)? _____years _____months

APPENDIX E: QUALITATIVE INTERVIEW QUESTIONS

Participant #:

1. What do you usually do when you get upset or experience difficult emotions?
2. What are your long term goals?
3. What five adjectives describe you and what five adjectives best describe your life?

**APPENDIX F: BETWEEN-GROUPS COMPARISON OF BASELINE
SCORES FOR EQUIVALENCY**

Perceived Stress Scale

A univariate ANOVA on pretest Perceived Stress Scale (PSS) scores revealed no significant between-group differences among iRest and shelter-only groups, as illustrated in table below.

Table 11

Tests of Between-Subjects Effects for Pretest PSS-10 Scores

Source	Type III					
	Σ of squares	<i>df</i>	μ^2	<i>F</i>	<i>p</i>	(ηp^2)
Corrected model	.795 ^a	1	.795	1.352	.246	.007
Intercept	1605.805	1	1605.805	2729.630	.000	.934
Comparison/ Treatment	.795	1	.795	1.352	.246	.007
Error	114.128	194	.588			
Total	1797.876	196				
Corrected total	114.923	195				

Note. Author's table.

^a $R^2 = .007$ (Adjusted $R^2 = .002$).

Psychological Distress

A two-factor, univariate ANOVA on pretest Positive and Negative Affect Schedule, Negative Affect scores revealed no significant between-group differences among iRest and shelter-only groups, as illustrated in Table 12.

Table 12

Tests of Between-Subjects Effects for Pretest NA Scores: Univariate ANOVA

Source	Type III			F	p	(η^2)
	Σ of squares	df	μ^2			
Corrected model	196.987 ^a	1	196.987	2.691	.103	.014
Intercept	81492.905	1	81492.905	1113.105	.000	.852
Comparison/ treatment	196.987	1	196.987	2.691	.103	.014
Error	14129.966	193	73.212			
Total	100448.000	195				
Corrected total	14326.954	194				

Note. Author's table.

^a $R^2 = .014$ (Adjusted $R^2 = .009$).

Quality of Life Satisfaction

A two-factor, univariate ANOVA on pretest Quality of Life Satisfaction (QOLS) scores revealed significant between-group differences among iRest and shelter-only groups, as illustrated in the table below.

Table 13

Tests of Between-Subjects Effects for Pretest QOLS Scores: Univariate ANOVA

Source	Type III			F	p	(η^2)
	Σ of squares	df	μ^2			
Corrected model	1256.298 ^a	1	1256.298	4.057	.045	.021
Intercept	896729.045	1	896729.045	2896.182	.000	.938
Comparison/ treatment	1256.298	1	1256.298	4.057	.045	.021
Error	59138.282	191	309.625			
Total	978026.000	193				
Corrected total	60394.580	192				

Note. Author's table.

^a $R^2 = .021$ (Adjusted $R^2 = .016$)

APPENDIX G:HUMAN RESEARCH REVIEW COMMITTEE

APPROVAL LETTER

**California Institute of Integral Studies
Human Research Review Committee**

May 10, 2012

Dear Priya Bhogaonker,

Congratulations, the Human Research Review Committee (HRRC) has determined that your research proposal is exempt from HRRC review because you are only using archival data and Archival data are exempt from HRRC review.

We wish you success with your research.

Sincerely,

Withheld for privacy

Emi Kojima

HRRC Coordinator