

The Mindful Path to Valued Living: Understanding the Associations
Between Mindfulness and Valued Living

by

Jennifer L. Guadagno

Department of Psychology and Neuroscience
Duke University

Date: _____

Approved:

Laura Richman, Supervisor

Mark Leary

Lasana Harris

Jeff Greeson

Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor of Philosophy in the Department of
Psychology and Neuroscience in the Graduate School
of Duke University

2012

ABSTRACT

The Mindful Path to Valued Living: Understanding the Associations
Between Mindfulness and Valued Living

by

Jennifer L. Guadagno

Department of Psychology and Neuroscience
Duke University

Date: _____

Approved:

Laura Richman, Supervisor

Mark Leary

Lasana Harris

Jeff Greeson

An abstract of a dissertation submitted in partial
fulfillment of the requirements for the degree
of Doctor in Philosophy in the Department of
Psychology and Neuroscience in the Graduate School
of Duke University

2012

Copyright by
Jennifer L. Guadagno
2012

Abstract

When behavior is directed toward activities, people, and experiences that people find most important in their lives, they are engaged in valued living. Given that valued living is associated with well-being, quality of life, and happiness, understanding ways in which value-concordant behavior can be promoted, enhanced, and maintained is of utmost importance. Two studies sought to examine the associations between mindfulness—as a dispositional trait and as developed through training—and valued living. In Study 1 dispositional mindfulness was strongly related to three aspects of valued living: the general tendency for people to understand their values and act in value-consistent ways; directing behavior toward valued activities; and clarity of, action toward, and feelings of success and satisfaction with action toward specific important values. Study 2 compared valued living scores of people participating in a Mindfulness Based Stress Reduction (MBSR) program to a control group. Mindfulness training was related to increased general valuing processes and value-relevant behavior but was not related to increased clarity of, action, or success or satisfaction with action toward specific values.

The two studies also explored the mechanisms underlying the relationship between mindfulness and valued living. In Study 1, self-compassion, psychological flexibility, and self-clarity each partially mediated the relationship between dispositional mindfulness and valued living, but decentering did not. In Study 2, change in attention mediated the relationship between group (MBSR or control) and valued living, but

acceptance, self-compassion, psychological flexibility, self-clarity, and decentering did not. Lastly, both studies found that valued living mediated the relationship between mindfulness and well-being. Taken together, these findings add to the growing body of literature demonstrating the benefits of mindfulness and highlight the important influence that clearly identifying and behaving in accordance with important values has on well-being.

Contents

| | |
|--|-----|
| Abstract..... | iv |
| List of Tables | x |
| List of Figures | xi |
| Acknowledgements..... | xii |
| 1. Introduction..... | 1 |
| 1.1 Background..... | 2 |
| 1.1.1 Values Clarity | 3 |
| 1.1.2 Committed Action..... | 4 |
| 1.2 Values in Social and Personality Psychology..... | 5 |
| 1.2.1 Personality..... | 5 |
| 1.2.2 Identity | 6 |
| 1.2.3 Eudaimonia | 7 |
| 1.2.4 Attitudes..... | 7 |
| 1.2.5 Goals | 8 |
| 1.3 Importance of Valued Living..... | 10 |
| 1.4 Enhancing Valued Living | 11 |
| 1.5 Mindfulness..... | 13 |
| 1.5.1 Empirical Research on MBSR..... | 15 |
| 1.5.2 Mindfulness, Well-being, and Valued Living..... | 17 |
| 1.5.3 How Mindfulness Training May Influence Valued Living | 18 |
| 1.6. Hypothesized Associations Between Mindfulness and Valued Living | 21 |

| | |
|---|----|
| 1.7 Preliminary Evidence Suggesting Mindfulness Training Influences Valued Living | 22 |
| 2. Study 1 | 23 |
| 2.1 Methods..... | 24 |
| 2.1.1 Participants..... | 24 |
| 2.1.2 Procedure | 24 |
| 2.1.3 Materials | 25 |
| 2.1.4 Data Analysis Plan..... | 29 |
| 2.2 Results..... | 31 |
| 2.2.1 Personal Value Rankings | 31 |
| 2.2.2 Correlations Between Dispositional Mindfulness and Valued Living | 32 |
| 2.2.3 A Deeper Look Into Dispositional Mindfulness | 32 |
| 2.2.3.1 Personal values..... | 32 |
| 2.2.3.2 Self Concordance, valuing, and valued living | 34 |
| 2.2.3.3. Mediators | 35 |
| 2.2.4 Mediation Between Dispositional Mindfulness and Valued Living | 35 |
| 2.2.4.1. Self-compassion..... | 36 |
| 2.2.4.2. Decentering | 36 |
| 2.2.4.3. Psychological flexibility | 36 |
| 2.2.4.4. Self-clarity..... | 37 |
| 2.2.5 Mediation of Dispositional Mindfulness and Well-Being | 37 |
| 2.3 Discussion..... | 38 |
| 3. Study 2 | 43 |

| | |
|---|----|
| 3.1 Methods..... | 44 |
| 3.1.1 Participants..... | 44 |
| 3.1.2 Procedures | 46 |
| 3.1.2.1 MBSR group | 46 |
| 3.1.2.2 Control group | 48 |
| 3.1.3 Measures | 49 |
| 3.1.3.1 Pre-assessment measures | 49 |
| 3.1.3.2 Mid-assessment measures | 50 |
| 3.1.3.3 Post-assessment measures..... | 51 |
| 3.1.4 Data Analysis Plan | 53 |
| 3.2 Results..... | 57 |
| 3.2.1 Preliminary Analyses | 57 |
| 3.2.1.1 Pre-assessment interest in mindfulness..... | 57 |
| 3.2.1.2 Changes in mindfulness between groups..... | 60 |
| 3.2.2 Changes in Valued Living | 61 |
| 3.2.2.1 Valued living MANOVA..... | 61 |
| 3.2.2.2 Personal values..... | 63 |
| 3.2.2.3 Interest and perseverance in Living Lives of Value program..... | 68 |
| 3.2.3 Mediation of Group and Valued Living..... | 69 |
| 3.2.3.1 T2 mediators | 69 |
| 3.2.3.2 T2.1 mediators | 71 |
| 3.2.3.3 Cross-sectional mediation analyses | 72 |
| 3.2.4 Mediation of Group and Well-Being | 73 |

| | |
|---|-----|
| 3.3. Discussion | 74 |
| 4. General Discussion | 78 |
| 4.1 Overview of Findings | 78 |
| 4.1.1 Valued Living Findings | 78 |
| 4.1.2 Mediation Findings | 85 |
| 4.2 Limitations | 88 |
| 4.2.1 Study Design | 88 |
| 4.2.2 Differences Between Groups on Demographic Variables | 91 |
| 4.2.3 Valued Living Measures | 92 |
| 4.3 Future Directions | 95 |
| 5. Conclusion | 97 |
| Appendix A..... | 98 |
| Appendix B..... | 100 |
| References..... | 137 |
| Biography..... | 151 |

List of Tables

| | |
|---|----|
| Table 1: Correlations Between Mindfulness, Valued Living, Mediator, and Demographic Variables | 33 |
| Table 2: Demographic Information by Group | 45 |
| Table 3: Number of People Listing Each Reason for Interest in Learning About Mindfulness..... | 58 |
| Table 4: Mean Scores on Measures Across Time Points by Group | 59 |
| Table 5: Number of Participants who Changed at Least One of Their Top 3 Personal Values Across Time | 65 |
| Table 6: Number of Times Value Domains Were Removed or Added Across Time | 65 |
| Table 7: Correlations Between Personal Value Variables for MANOVA | 66 |
| Table 8: Means of Value Processes for Least Important Value Across Time by Group.. | 68 |
| Table 9: Living Lives of Value Variable Means by Group | 69 |
| Table 10: Mediation of Group and Valued Living Analyses..... | 70 |

List of Figures

| | |
|--|----|
| Figure 1: Personal Value Rankings for Study 1..... | 31 |
| Figure 2: Models of Mediation Between Dispositional Mindfulness and Valued Living | 35 |
| Figure 3: Mediation Between Dispositional Mindfulness and Satisfaction with Life..... | 38 |
| Figure 4: Steps of Mediation Testing..... | 56 |
| Figure 5: Changes in Mindfulness Across Time By Group..... | 60 |
| Figure 6: Multivariate Interaction for Valued Living Canonical Variate | 62 |
| Figure 7: Personal Value Rankings by Group Across Time..... | 64 |
| Figure 8: Model of Mediation Between Group and Valued Living..... | 69 |
| Figure 9: Model of Mediation Between Group and Valued Living using Mediator at Time 1 and Time 2..... | 72 |
| Figure 10: Mediation Between Group and Satisfaction with Life | 73 |

Acknowledgements

First and foremost, I would like to thank my committee—Drs. Laura Richman, Mark Leary, Jeff Greeson, and Lasana Harris—for their instrumental help throughout this process. Specifically, I would like to thank Lasana for his insightful questions and support, which have been essential to the development of this project. I especially thank Jeff for his guidance and encouragement along the way, which helped me stay connected to my passion for this work. I thank Mark for his endless support and guidance throughout the years—being part of the Leary lab and research has been an absolute honor. I warmly thank my advisor, Laura, for her time and commitment to mentoring me, which has been essential to my growth as a researcher, and for supporting me in research endeavors consistent with my interests and values. Furthermore, I would like to acknowledge the Duke Integrative Medicine Center and MBSR instructors for welcoming me into their classes and allowing me to conduct this research. Lastly, I would like to thank Duke Interdisciplinary Initiative in Social Psychology for providing funding to help make this work possible.

1. Introduction

Valued living plays a vital role in psychological well-being (Wilson, Sandoz, Kitchens, & Roberts, 2010), quality of life (Michelson, Lee, Orsillo, & Roemer, 2011), and overall happiness (Seligman, 2011). Given these beneficial effects, understanding ways in which valued living can be promoted and enhanced is of utmost importance. Understanding the immense potential of valued living to improve lives, Hayes, Strosahl, and Wilson (1999) developed Acceptance and Commitment Therapy (ACT), which focuses on generating and increasing behavior in valued domains. Although effective (Hayes, Luoma, Bond, Masuda, & Lillis, 2006), ACT is a treatment that may not be sought by or appropriate for people who are not currently in psychological distress. Other methods to promote valued living that are more widely available, cost-effective, and open to non-treatment seeking individuals need to be examined. Mindfulness training is one such popular and accessible method that may enhance clarity of and behavior in line with values.

Mindfulness-based interventions have been associated with a host of beneficial outcomes (see Greeson, 2009 for a review), but no studies to date have examined the influence of mindfulness training on valued living. This is a worthwhile avenue of inquiry as many of the skills that mindfulness enhances (e.g., attention, acceptance, self-compassion, decentering, psychological flexibility, and self-clarity) have been shown or are presumed to increase aspects of life that aid in valued living. Although previous research suggests that mindfulness may be related to valued living, a more comprehensive examination of the associations between mindfulness (as a naturally

occurring disposition and as induced through training) and valued living is needed. Also worth examining are the mechanisms underlying valued living changes following mindfulness training, as well as the extent to which these changes account for the beneficial outcomes often resulting from mindfulness training. The current studies aimed to assess these associations, mechanisms, and benefits.

1.1 Background

Values, as described by and examined through psychological research, have broad and far reaching effects. Values are thought to describe personality (Allport & Vernon, 1931); form the core of personal identity (Hitlin, 2003); generate attitudes (Kristiansen & Zanna, 1988; Rokeach, 1968); predict commitment (Lydon & Zanna, 1990) and success (Koestner, Lekes, Powers, & Chicoine, 2002); provide meaning and purpose (Hayes et al., 1999); guide action (Plumb, Stewart, Dahl, & Lundgren, 2009); and motivate behavior (Verplanken & Holland, 2002). Values have been studied and defined in various ways throughout the century (e.g., Allport & Vernon, 1931; Hayes et al., 1999; Morris, 1956; Rokeach, 1973; Schwartz, 1992; Shand, 1896). Schwartz (1994) identified and synthesized the features shared across these conceptualizations and defined values as “desirable transsituational goals, varying in importance, that serve as guiding principles in the life of a person” (p. 21). Similarly, Rohan (2000) conceptualized values as judgments of the capacity of things, people, actions, or activities to enable best possible living. Put simply, “values convey what is important to us in our lives” (Bardi & Schwartz, 2003, p. 1208).

Contemporary values researchers differ in the way they classify and distinguish between values. For example, Schwartz and Bilsky (1987) distinguish among values based on the motivational goal they represent (e.g., power, achievement, benevolence, security, etc.), whereas Rokeach (1973) classifies values according to the societal institutions that maintain, enhance, and transmit them (e.g., family values, religious values, political values). ACT classifies values according to the common domains of life they correspond to (e.g., intimate relationships, family, parenting, friendships, career, personal growth and development, recreation, spirituality, citizenship, and physical well-being; Hayes et al., 1999). For example, the value of “being a loving parent” is classified under the parenting domain. The ACT approach to values goes one step beyond other value theories by emphasizing—and supporting through meticulous behavioral research—a strong association between values and behavior (Plumb et al., 2009). The additional focus on behavior is important because assessing the values people choose *and* the consistency and success of behavior in relation to values is critical to understanding psychological health (Plumb et al., 2009). As such, “committed action” is the logical extension of values and describes behavior that is consistent with chosen values (Plumb et al., 2009). The goal of ACT is to increase valued living—that is, to enable people to clearly identify values and engage in “ongoing, dynamic, evolving patterns” of committed action (Hayes et al., 1999).

1.1.1 Values Clarity

Before engaging in committed action, values must first be constructed, clarified, and freely chosen (Hayes et al., 1999). Today’s society provides a slew of ideas of what

values people could and should hold. Sentiments of wanting to “be a supportive spouse” or “be a hardworking employee” are pervasive and readily adopted; but just because society, family, or religious institutions value something does not mean that an individual should or needs to value that same thing. When people clearly know which values they themselves find most important they are able to direct behavior toward areas of life that support these values.

1.1.2 Committed Action

Once values are clear, they can be organized into hierarchical structures based on relative levels of importance (Rokeach, 1968). The values perceived to be most important “occupy central positions in cognitive networks of attitudes and beliefs” (Rokeach, 1968) and, as such, guide action and motivate behavior (Hayes et al., 1999; Plumb et al., 2009; Verplanken & Holland, 2002).

It is also important to understand barriers that may interfere with committed action (Hayes et al., 1999). Barriers can be external, as in the case of an unsupportive spouse or financial constraints, or internal, such as having doubts, being unwilling, or feeling uncertain. People will inevitably face obstacles when living in accordance with their values, and because of this, persistence—continually choosing to behave in a valued direction despite encountering difficult emotions, thoughts, or physical barriers—becomes an important quality related to valued living (Dahl, Plumb, Stewart, & Lundgren, 2009).

1.2 Values in Social and Personality Psychology

1.2.1 Personality

Early value researchers Allport and Vernon (1931) equated personal values with personality and surmised that personality is best understood by analyzing the subjective values people hold. However, recent researchers believe that there is an important, though often overlooked, distinction between personality traits and values—traits are enduring dispositions, whereas values are enduring goals (Roccas, Sagive, & Knafo, 2002). As Epstein (1989) points out, a person may have a tendency to act aggressively (a trait) but may value harmony (have an enduring goal to be benevolent). When put in a confrontational situation, this person may override his or her aggressive tendency by aligning behavior with the value of getting along with others. According to Roccas and colleagues (2002), this is possible because people have more cognitive control over values-based behavior than trait-based behavior.

Personality traits are strongly associated with the types of values people find important. Using values from Schwartz's (1992) value dimensions scale, people high on extraversion are more likely to value hedonism and achievement values, openness is related to values of universalism and self-direction, conscientiousness is linked to achievement and conformity values, agreeableness is associated with values of benevolence and tradition, and neuroticism is linked to security values (Luk & Bond, 1993; Huslam, Whelan, & Bastian, 2009; Parks & Guay, 2009; Roccas et al., 2002). In addition to the type of values people find important, personality also predicts the extent to which people feel pressure to hold certain values and the degree to which they

successfully live in accordance with chosen values. More specifically, neuroticism was associated with more value pressure and less value success, extraversion was associated with more value success, and openness was related to low value pressure (Veage, Ciarrochi, & Heaven, 2011). These results suggest that personality influences the clarity of and action devoted toward important values.

1.2.2 Identity

Values are a central component to how researchers understand identity. Many self-theorists conceptualize values as being an important part of a person (Baumeister, 1986; Erickson, 1995; Smith, 1991). For example, Feather (1992) states that values are “intimately bound up with a person’s sense of self” (p. 112). Similarly, Verplanken and Holland (2002) believe that values are components of a person’s self-concept, which then contributes to a person’s sense of identity. In support of this claim, they found that priming self-focus elicited the same level of value-congruent behavior as priming an important value—a finding that would only be possible if values were part of the self-concept (Verplanken & Holland, 2002).

Hitlin (2003) takes this one step further by asserting that values form the core of personal identity. According to Hitlin (2003), values guide the development of personal identity (the sense of self that develops over time as people pursue personal-, rather than community- or society-, based activities and goals; Hewitt, 1997), which in turn leads to the formation of role- and group-identities. When values are central to both personal and social identity they influence what Markus (1977) and her colleagues (e.g., Fong &

Markus, 1982) have investigated as self-schemas (Rohan, 2000). As such, values may have a strong influence on how people perceive and evaluate themselves.

1.2.3 Eudaimonia

People want more out of life than to simply survive and avoid pain—people are “driven to live as pleasantly and productively as possible” (Rohan, 2000, p. 263). This is evidenced by the surge in popularity of positive psychology and such topics as happiness, flourishing, and eudaimonia (Deci & Ryan, 2008; Keyes, 2002; Seligman, 2002, 2011). Values are important in this regard because they serve as guides to best possible living (Rohan, 2000). A similar view has been espoused by eudaimonia researchers. Whereas hedonia focuses on specific outcomes, usually the presence of positive affect and the absence of pain, eudaimonia focuses on the process of living well (Ryan, Huta, & Deci, 2008). Importantly, eudaimonia involves “pursuing intrinsic goals and values for their own sake...rather than extrinsic goals and values” (Ryan et al., 2008, p. 139). In this way, living a eudaimonic lifestyle is akin to living in accordance with values.

1.2.4 Attitudes

Although value theorists are quick to point out that attitudes are distinct from values (values are viewed as more abstract, transsituational, and durable than attitudes; Rokeach, 1968), research has suggested that the two are intimately linked. For example, the value-justification hypothesis states that people use values to justify and account for their attitudes (Kristiansen & Zanna, 1988). This may be especially true when attitudes fulfill a value-expressive function, that is when people’s general values are expressed through their attitudes (Maio & Olsen, 2000). For example, Kristiansen & Zanna (1988)

found that, in addition to people with different attitudes having different sets of values in general, people also used different values to justify their attitudes. People who believed that nuclear weapons should be allowed in their country justified their attitude by selecting different issue-relevant values (e.g., national security) than those who believed nuclear weapons should not be allowed (e.g., wisdom).

Although values and attitudes are often related, they are distinct constructs that each uniquely predict behavior. For example, Verplanken and Holland (2002) found that both attitudes toward the environment (e.g., humans are harming the environment) and environmental values (e.g., protecting the environment, unity with nature) uniquely contributed to the prediction of voting behavior. Similarly, altruistic values and attitudes toward donating uniquely predicted the amount people were willing to donate to a charitable organization (Maio & Olsen, 1995). These results highlight the importance of differentiating between attitudes and values in order to understand their unique effects on behavior.

1.2.5 Goals

Values promote and enable ongoing patterns of activity by producing goals and coordinating actions over long periods of time (Plumb et al., 2009). Values are more than just goals, however. Goals are concrete and specific, whereas values are abstract and global. Additionally, goals can be accomplished and satisfied, whereas values can never be permanently achieved or realized; they are constantly worked towards day after day (Hayes et al., 1999). In this way, values are very similar to the concept of personal strivings—the purpose(s) that people are consistently aiming to accomplish through their

behavior (Emmons, 1986). Emmons (1992) makes a distinction between high-level strivings (e.g., “being closer to God”), which are akin to values, and low-level strivings (e.g., “go to church this weekend”), which represent goals. Values, like personal strivings, serve as “superordinate abstracting qualities that render a cluster of subordinate goals functionally equivalent for an individual” (Emmons, 1986). That is, the value of being a loving parent can be worked towards through a variety of different goals (e.g., attending your child’s baseball game, planning a birthday party, paying for a college education, etc.).

Expanding upon this distinction, research supports the notion that goals form a hierarchy (Carver & Scheier, 2011; Vallacher & Wegner, 1987), in which values reside at the top and are worked towards by selecting and attaining concrete subordinate goals (Carver & Scheier, 1982). Therefore, the types of goals people select, engage in, and complete indicate how successful people are in acting consistently with their values. Not all goals will enable and reflect valued living. Engagement in goals unrelated to values or goals motivated by external or introjected factors are unlikely to reflect value consistent behavior (Ciarrochi, Fischer, & Lane, 2011; Hayes et al., 1999). On the other hand, engagement in goals that are consistent with values and motivated by identified, vital, or intrinsic reasons may provide insight into how well people are living consistently with their values (Ciarrochi et al., 2011). Such goals are considered to be self-concordant in that they “reflect personal interests and values” instead of being driven by “something one feels compelled to do by external or internal pressures” (Koestner et al., 2002, p. 231).

The self-concordance model of goal striving is rooted in self-determination theory (SDT; Deci & Ryan, 1980), an empirical theory of motivation, development, and well-being. SDT emphasizes that the type and quality, rather than just the amount, of motivation is crucial to understanding well-being and psychological health. SDT distinguishes between autonomous and controlled motivation. Autonomous motivation involves pursuing goals for reasons that are identified (believing the goal reflects important values) or intrinsic (believing the goal will provide fun and enjoyment). Controlled motivation involves pursuing goals for reasons that are external (to appease others) or introjected (to avoid shame, guilt, or anxiety; Koestner et al., 2002; Ryan & Deci, 2000). Self-concordant goals are those that are autonomously motivated (Sheldon, 2002) and, as such, are strongly linked to people's enduring values (Sheldon & Kasser, 1995, 1998). Accordingly, if a large proportion of the goals selected, enacted, and attained are self-concordant, then it can be said that people are engaged in valued living. Conversely, when the goals that are central to people's lives are non-concordant, the likelihood of valued living is low.

1.3 Importance of Valued Living

Recent research highlights the beneficial outcomes associated with clarity of and action in line with values. For example, higher levels of self-clarity are related to high self-esteem (Baumgardner, 1990; Campbell, 1990; Campbell et al., 1996) and low anxiety (Stopa, Brown, Luke, & Hirsch, 2010), neuroticism, and rumination (Campbell et al., 1996).

High levels of committed action in important value domains were associated with quality of life (Michelson et al., 2011) and lower levels of psychological distress (Wilson et al., 2010), depression (Plumb et al., 2009), and anxiety (McCracken & Yang, 2006). Also, fulfillment of personal strivings was associated with higher levels of positive affect and life satisfaction (Emmons, 1986). Within a laboratory based-study, individuals who reflected on a highly valued life domain had lower neuroendocrine and psychological responses to stress, suggesting that affirming values provides a buffer against stress (Creswell et al., 2005) and the devastating physical diseases it may cause (Cohen, Janicki-Deverts, & Miller, 2007).

Additionally, research has demonstrated strong associations between self-concordant goal attainment and psychological well-being (Sheldon & Kasser, 1998). Completing self-concordant goals is also associated with increased levels of openness, empathy, positive mood, and vitality (Emmons & Diener, 1986; Sheldon & Kasser, 1995).

1.4 Enhancing Valued Living

Given the clear benefits of valued living, it is important to understand and examine methods in which values clarity and committed action can be enhanced.

Intensive values-based therapy, such as ACT, is one such option for increasing valued living. Clients receiving ACT have demonstrated remarkable improvements in their ability to identify values and behave consistently with them, thereby increasing well-being (Hayes et al., 2006). Although not everyone has access to intensive values-based treatments, recent studies show that even brief values-based interventions are

beneficial. For example, a one-day values-focused intervention was related to successful persistence in a values-guided direction, even in spite of many barriers that arose, and was associated with well-being and quality of life one year after the intervention (Lundgren, Dahl, & Hayes, 2008). A similar six hour values-focused intervention for weight management was associated with higher rates of weight loss, decreased negative thoughts about weight and body image, and increased engagement in meaningful activity (Lillis, Hayes, Bunting, & Masuda, 2009). Additionally, values-based interventions are currently being introduced within businesses, public education, and substance abuse centers to examine the effects on performance and overall quality of life within these environments. These studies provide promising evidence that values-based interventions not only increase quality of life and decrease suffering, but may also instill a sense of meaning and vitality that may persist long after the initial intervention (Plumb et al., 2009).

Although values-based therapies (e.g., ACT) and interventions are steadily rising in popularity, their presence and access are still limited. Many people who would benefit from exploring their values may not be aware of or seek out traditional values-based treatments; nor would such options, like intensive therapy, be appropriate for individuals who are not currently dealing with psychological disorders or major life stressors. Fortunately, mindfulness-based programs are now widely accessible, both through formal Mindfulness Based Stress Reduction (MBSR) classes and informal guided CDs and books, and show promise in promoting valued living.

1.5 Mindfulness

Mindfulness is commonly described as “paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally” (Kabat-Zinn, 1990, p. 4). In this way, mindfulness can be considered a state, a trait, and a set of skills (Baer & Lykins, 2011). Although relatively new to Western society, mindfulness has been around for centuries and has its roots in Eastern contemplative traditions. In Buddhism, mindfulness is a central component of the noble eightfold path, which provides a guideline for achieving liberation and freedom from suffering (Kang & Whittingham, 2010). However, mindfulness from a Western psychological perspective is often implemented independent of Buddhist religious and cultural traditions (Dorjee, 2010; Kabat-Zinn, 1982). Instead of focusing on the spiritual, ethical, and wisdom components that are central to Buddhist teachings, mindfulness in psychology is viewed as an “approach for increasing awareness and responding skillfully to mental processes that contribute to emotional distress and maladaptive behavior” (Bishop et al., 2004, p. 230). Similarly, dispositional mindfulness includes the general tendency to notice and attend to events that are occurring in the present moment. Though mindfulness can be enhanced through training, people also differ in their propensity and willingness to be mindful throughout their day to day lives (Brown & Ryan, 2003).

Until the development of MBSR, mindfulness had been a relatively unfamiliar concept in much of psychology. Jon Kabat-Zinn integrated contemplative practices with Western science to create MBSR, a program originally designed to help people cope with chronic pain and other stress-related disorders. MBSR programs are now offered and

tailored to populations with a variety of psychological disorders and chronic illnesses, as well as healthy, nonclinical populations.

MBSR is an 8-week program where groups of up to 30 participants meet weekly for two and a half hours to learn about and practice mindfulness skills (Baer, 2003). Instructors, who have their own ongoing mindfulness practice, introduce several mindfulness meditation exercises over the course of the 8-week program. These practices include sitting meditation (focusing on the sensations of each inhalation and exhalation), body scan (directing attention sequentially to parts of the body), yoga (awareness of body sensations while gently moving and stretching), walking meditation (focusing on the sensations of slowly and purposively walking), and sometimes loving-kindness meditation (extending thoughts of goodwill and kindness to the self and others). Participants also complete a full day, intensive mindfulness “retreat” around the sixth week where six to eight hours are devoted to the practice of many of the mindfulness meditation exercises mentioned above. Additionally, participants are asked to practice formal mindfulness meditation exercises on their own for 45 minutes per day, six days per week and are also encouraged to practice informal mindfulness exercises each day (e.g., being aware of the sensations when taking a shower, brushing one’s teeth, eating, doing the dishes, etc.). During each of the mindfulness exercises, participants are instructed to bring awareness and attention to the target of observation (e.g., breathing, walking, stretching, etc.). When the mind wanders to other thoughts, sensations, or memories, they are observed nonjudgmentally, their content briefly noted, and attention is gently returned to the present moment. In this way, participants notice their thoughts

and feelings but do not become absorbed in their content (Baer, 2003). With practice, participants realize that the content of consciousness is transient and, over time, they may be less absorbed by and reactive to troubling thoughts, emotions, memories, or sensations.

1.5.1 Empirical Research on MBSR

Outcome studies on MBSR programs provide evidence that mindfulness training is an effective treatment for a variety of physical conditions and medical disorders. Improvements in medical symptomology and ability to cope with disease following MBSR have been reported for chronic pain (Kabat-Zinn, 1982; Kabat-Zinn, Lipworth, & Burney, 1985), fibromyalgia (Goldenberg et al., 1994; Kaplan, Goldenberg, & Galvin-Nadeau, 1993), psoriasis (Kabat-Zinn et al., 1998), coronary artery disease (Williams, Kolar, Reger, & Pearson, 2001), HIV (Creswell, Myers, Cole, & Irwin, 2009), organ transplant (Gross et al., 2004), and cancer (Carlson, Speca, Patel, & Goodey, 2004; Speca, Carlson, Goodey, & Angen, 2000). MBSR has been shown to boost immune function (Davidson et al., 2003) and provide a buffer against the physiological effects of stress (Matousek, Dobkin, & Pruessner, 2010). Some of these improvements were even maintained after two to 48 months following participation in the program (Kabat-Zinn, Lipworth, Burney, & Sellers, 1986).

In addition to improving symptoms and quality of life associated with physical conditions, MBSR has also successfully promoted improvements in psychological health and is associated with reductions in anxiety (Goldin & Gross, 2010; Kabat-Zinn, Massion, Kristeller, & Peterson, 1992; Miller, Fletcher, & Kabat-Zinn, 1995), depression

(Ramel, Goldin, Carmona, & McQuaid, 2004), repercussions of child sexual abuse (Kimbrough, Magyari, Langenberg, Chesney, & Berman, 2010), and various psychiatric disorders (Biegel, Brown, Shapiro, & Schubert, 2009). In addition to these published studies, there are many clinical trials currently in progress using MBSR to treat suicidality, personality disorders, eating disorders, substance abuse, delusional disorder, and schizophrenia (McCown & Reibel, 2010).

Nonclinical populations, comprised of healthy adults and children, also benefit from mindfulness training. MBSR implemented within the education system has been beneficial for both teachers and students. Primary school teachers participating in an MBSR program reported reduced job- and life-related stress, which suggests that mindfulness training may prevent burnout and increase teacher retention and recruitment (Gold et al., 2010). Children and adolescents participating in adapted versions of MBSR showed improvements in attention, social skills, and classroom behavior as rated by their teachers (Burke, 2010). MBSR has also been implemented with health care professionals (Shapiro, Astin, Bishop, & Cordova, 2005), medical students (Shapiro, Schwartz, & Bonner, 1998), and therapists in training (Shapiro, Brown, & Biegel, 2007) as a way to reduce job-related stress, improve empathy and quality of patient care, promote self-compassion and self-care, and prevent burnout. Improvements in general wellness among undergraduate students (Shapiro, Brown, Thoresen, & Plante, 2011; Shapiro, Oman, Thoresen, Plante, & Flinders, 2008) and community members (Williams et al., 2001) also provide support for the ameliorative and stress-reducing benefits of mindfulness training among nonclinical populations.

1.5.2 Mindfulness, Well-being, and Valued Living

Thirty years of research has documented the remarkable ability of mindfulness training to enhance psychological functioning and promote well-being. However, well-being, as it relates to MBSR-outcomes, has mainly been conceptualized as a reduction in stress, anxiety, and depression. Recently, studies have focused on the effects of mindfulness training on well-being as it relates to the “development, enhancement, growth, and cultivation of positive psychological qualities and experiences” (Shapiro, Schwartz, & Santerre, 2002, p. 632). For example, mindfulness (both induced through training and naturally occurring as a trait) has been associated with psychological well-being, satisfaction with life, positive affect, and quality of life (see Baer & Lykins, 2011 for a review). These studies support the notion that, with patience and practice, mindfulness can produce “an actual transformation in the way we relate to our lives, to our bodies, to our calling, to our loves, to our ambitions ... so that we can live lives of balance and of fundamental and profound satisfaction” (Kabat-Zinn, 2007).

Although the effects of mindfulness training or dispositional mindfulness on valued living have yet to be examined, studies of related outcomes suggest this is a worthwhile avenue of inquiry. For example, an empirical examination of the mechanisms of mindfulness found that values clarification (as measured by Ryff’s [1989] Purpose in Life Scale) increased from pre- to post-MBSR (Carmody, Baer, Lykins, & Olendzki, 2009). Although not technically a measure of valued living, the definition of values clarification—having “a sense of meaning, purpose, and goal-directedness” (Carmody et al., 2009, p. 617)—is similar enough to expect comparable results when

using specific values-based measures. Additionally, Carmody and colleagues (2009) found that values clarification partially mediated the relationship between mindfulness and psychological symptom reduction. This finding suggests that valued living (as conceptualized in the present studies) may also partially mediate the effects of mindfulness training on well-being. Effects of mindfulness on goal achievement and motivation have also been reported. Perceived attainment of personal goals increased from pre- to post-MBSR (Weiss, Nordlie, & Siegel, 2005) and higher trait mindfulness was associated with more autonomous value concordant day-to-day behavior (Brown & Ryan, 2003). Lastly, ACT, whose central aim is to increase valued living, contends that mindfulness processes are immensely important in clarifying values and increasing committed action (Hayes et al., 1999; Plumb et al., 2009).

1.5.3 How Mindfulness Training May Influence Valued Living

Given the associations found in the literature between mindfulness and constructs related to valued living, it is reasonable to expect that mindfulness-based interventions, such as MBSR, may allow for and influence values clarity and committed action. This may be accomplished by providing people with the opportunity and space to reflect on what is most important in their lives, choose what they want their lives to stand for, and work toward committing to actions that are consistent with their values. These values-processes can be instigated and promoted by inherent components of mindfulness meditation, such as attention regulation and acceptance, or by outcomes that result from the ongoing practice of mindfulness meditation, such as self-compassion, decentering, psychological flexibility, and self-concept clarity.

People who complete mindfulness training show an increased ability to sustain and flexibly direct attention (Jha, Krompinger, & Baime, 2007; Schmertz, Anderson, & Robins, 2009; Valentine & Sweet, 1999; van den Hurk, Gionmi, Gielen, Speckens, & Barendregt, 2010; though other studies [e.g., Anderson, Lau, Segal, & Bishop, 2007; Jha et al., 2007] did not find support for increased attention) and are more accepting of their thoughts and emotions (Lau et al., 2006; Lykins & Baer, 2009). They also have higher levels of self-compassion (Lykins & Baer, 2009; Neff, 2003; Shapiro et al., 2005, 2007) and an increased ability to disengage from the elaborative and evaluative processing of experiences and, instead, pay attention to thoughts, emotions, and sensations as they are (a process referred to as decentering, defusion, and re-perceiving; Lau et al., 2006). Additionally, mindfulness training increases psychological flexibility (Fledderus, Bohlmeijer, Smit, & Westerhof, 2010), which involves being sensitive to changes in one's environment and deciding whether to change behavior or goals when reinforcement diminishes or barriers arise (Kashdan & Rottenberg, 2010; Plumb et al., 2009). Lastly, higher levels of dispositional mindfulness are related to increased levels of self-concept clarity—the extent to which “the contents of the self are clearly and confidently defined, internally consistent, and temporally stable” (Campbell et al., 1996, p. 122).

Some of these processes may increase awareness of and encourage endorsement of values that are truly most important to people. For example, non-elaborative processing, which is enhanced by present moment attention, acceptance, and decentering, reduces the occurrence and believability of judgments, justifications, explanations, and reasons for chosen values (Hayes et al., 1999) and promotes “optimal conditions for

generative thinking and reflection” (Baer & Lykins, 2011, p. 338), all of which serve to enhance the ability to identify values and behavior that reflect what a person truly finds most important. Additionally, increasing self-concept clarity allows for contents of the self (e.g., values) to be easily articulated and remain stable across situations and brief time periods.

Additionally, self-compassion, decentering, and psychological flexibility may promote committed action. When a thought is viewed for what it is—just a thought—it is “easier to see the possibility that thoughts do not have to determine behavior” and that behavior can be guided by alternative options, such as values (Dahl et al., 2009, p. 135). Acting in accordance with values, while being flexible and open to reassess and change behavior when needed, is critical to maintaining patterns of valued behavior over long periods of time (Dahl et al., 2009). Additionally, self-compassion may be helpful in promoting valued action through the kind, accepting, and understanding stance one takes in relation to the self. When people commit to living in a valued direction they will undoubtedly struggle, make mistakes, and veer from behaving in ways that are consistent with values. If people treat themselves with compassion in light of failure or mistakes, they are more likely to reengage efforts to behave in value consistent ways. The realization that other people struggle and make mistakes may normalize setbacks and also make it easier to recommit to values. The act of reengaging in behavioral patterns that are consistent with values allows commitments to be kept (Hayes et al., 1999), which is necessary to sustain valued living.

1.6. Hypothesized Associations Between Mindfulness and Valued Living

Based on the literature reviewed above, specific associations between mindfulness and valued living are hypothesized:

Hypothesis 1: Dispositional mindfulness will be positively correlated with valued living.

Hypothesis 2: Decentering, self-compassion, psychological flexibility, and self-concept clarity will each partially mediate the relationship between dispositional mindfulness and valued living.

Hypothesis 3: Valued living will partially mediate the relationship between dispositional mindfulness and well-being.

Hypothesis 4: There will be a significant group (MBSR vs. control) by time (pre vs. post) interaction for valued living, such that valued living will not differ between groups at pre-assessment but will differ between groups at post-assessment. Valued living will significantly increase from pre- to post-assessment in the MBSR group but not change in the control group.

Hypothesis 5: Acceptance, attention, decentering, self-compassion, psychological flexibility, and self-concept clarity will each partially mediate the relationship between group (MBSR vs. control) and valued living.

Hypothesis 6: Changes in valued living from pre- to post-assessment will partially mediate the relationship between group (MBSR vs. control) and well-being.

1.7 Preliminary Evidence Suggesting Mindfulness Training Influences Valued Living

As part of an ongoing mindfulness intervention study, the Tranquil Mind Project (M. Terry, personal communication, February 2012), the relationship between mindfulness training and valued living was explored. The Tranquil Mind Project was an 8-week MBSR-based mindfulness training program that assessed pre-to-post changes on a variety of psychological outcome measures. Of particular relevance to the current study was how valued living changed over the course of mindfulness training. To assess possible changes, participants rated the importance of major life values (e.g., family, marriage, parenting, friendship, etc.) and how consistently they had been acting in service of each value. Fifty-four Durham community members participated in the mindfulness training program and completed questionnaires two-weeks following training. As predicted, important values received higher levels of action after the mindfulness training compared to before mindfulness training ($M_{pre} = 61.61$, $SD_{pre} = 18.40$; $M_{post} = 70.06$, $SD_{post} = 16.18$; $t(53) = -3.90$, $p < .001$, Cohen's $d = 0.54$). These results suggest that mindfulness training is associated with living in accordance with values.

This study provides preliminary support for the hypothesis that mindfulness training is associated with values-consistent behavior. Further research is needed to provide a more detailed description of the components of valued living that are actually changing, as well as explore possible mechanisms that may underlie these changes.

2. Study 1

The aim of the first study was to examine the relationship between dispositional mindfulness and valued living. To date, only one known study has examined the relationship between trait mindfulness and value-concordant behavior. Using autonomy ratings of actual activities engaged in over the course of the day, Brown and Ryan (2003) found that higher trait mindfulness predicted greater engagement in value-related activities. Examining value-consistent behavior, instead of solely relying on self-report questionnaires, is of central importance to the present studies, as well, because behaving in ways that are consistent with values (committed action) is a central component of valued living. To this end, the present study sought to expand upon the preliminary study and assess the associations between dispositional mindfulness and living in accordance with values by utilizing a more thorough assessment of valued living. This involved examining general thoughts about values and value-related processes along with assessing goals and behavior in line with values.

Additionally, reports of action and satisfaction with regard to specific top values were collected. Given that values are idiosyncratic and highly personal (Hayes et al., 1999), it is important to examine the specific values that people find important in their lives. Measuring general valued-related processes along with thoughts and actions toward specific, personal values provides layers of depth and allows for a deeper and more complex understanding of valued living.

The current study also examined possible mechanisms that may underlie valued living changes, including self-compassion, decentering, psychological flexibility, and

self-clarity. Lastly, the relationship between dispositional mindfulness and well-being was examined.

2.1 Methods

2.1.1 Participants

One hundred and forty nine undergraduate students (66.4% female) from Duke University's Psychology and Neuroscience Subject Pool were recruited to participate in the study. On average, participants were 18.9 years old ($SD = 1.1$, range = 17 to 23). The participants came from a variety of ethnic backgrounds: 52.3% were Caucasian, 8.10% were Black, 6.7% were Hispanic, 28.2% were Asian, and 4.1% were another race not listed. Participants reported a range of different religions: 54.4% were Christian, 12.8% Jewish, 0.7% Buddhist, 0.7% Muslim, 24% Atheist, and 22% reported belonging to a religion not listed. Participants reported coming from families with high average incomes: 47.7% of the sample reported their family's income was more than \$250,000, 48.3% reported family income between \$25,000 and \$250,000, and 3.4% reported family income that was less than \$25,000. Information on age, race, religion, and family income was missing for 0.7% of the sample. Participants had low prior experience with mindfulness ($M = 1.98$, $SD = 1.09$, scale range = 1 [*none*] to 5 [*a lot*]) and reported some interest in mindfulness ($M = 2.74$, $SD = 1.05$, scale range = 1 [*none*] to 5 [*a lot*]).

2.1.2 Procedure

The study was listed on an online experiment management database where members of the Psychology subject pool viewed a summary of the study. Subject pool members interested in participating in the study were instructed to follow a link to

complete the questionnaires online through Qualtrics. Participants received half of a research credit for 30 minutes of their time.

2.1.3 Materials

Personal Projects. Engagement in actual values-consistent behavior was assessed using a revised version the personal projects methodology developed by Little (1983). Participants were asked to list five personal projects—the goals that they think about, plan for, carry out, and sometimes complete or succeed at—that were salient over the past two weeks. In line with past SDT research (Ryan & Connell, 1989; Sheldon & Elliot, 1998; Sheldon & Kasser, 1998, 2001), the degree of self-concordance of each goal was assessed. Using a 7-point scale ranging from 1 (*not at all because of this reason*) to 7 (*completely because of this reason*), participants rated how much they pursued each goal for four different reasons: external (“Because somebody else wants me to”), introjected (“Because I would feel ashamed, guilty, or anxious if I didn’t”), identified (“Because I really believe that it is an important goal to have”), and intrinsic (“Because of the fun and enjoyment which the goal will provide”). External and introjected scores were averaged to obtain a controlled score and identified and intrinsic scores were averaged to obtain an autonomous score. A self-concordance score was computed for each personal project goal by subtracting controlled scores from autonomous scores. An aggregate self-concordance score was created for each participant by averaging the five self-concordance scores (Sheldon & Kasser, 1995). As described earlier, when a large proportion of behavior is directed toward self-concordant goals, people are engaged in valued living.

Personal Values. The Personal Values Assessment was adapted from the Valued Living Questionnaire (Wilson et al., 2010) and the Personal Values Questionnaire (Ciarrochi et al., 2011). Participants read through ten common value domains (family, parenting, romantic relationships, friendships, career, education/personal development, leisure, spirituality, citizenship, and physical well-being) and were asked to rank each value domain in order of importance, from 1 (*most important*) to 10 (*least important*). They then described the type of person they would like to be in regards to their top three valued domains (based on examples from Ciarrochi et al., 2011) and rated the clarity (“How difficult was it for you to bring this value to mind?”), amount of action in service of values (“How much have you acted in the service of this value during the past two weeks?”), level of success in living the values (“In the last two weeks, I have been successful in living this value”), and satisfaction with level of action (“How satisfied are you with your action in this area during the past two weeks?”) on a 5-point scale, from 1 (*not at all*) to 5 (*extremely*).

Aggregate clarity, action, satisfaction, and success scores were created for each participant by averaging the three clarity (reverse scored), action, satisfaction, and success scores, respectively, of their top three values.

Valuing Questionnaire. The Valuing Questionnaire (M. Smout & M. Davies, personal communication, May 24, 2011) was also used to assess valued living. The Valuing Questionnaire contains 24-items about behavior over the last week rated on a 7-point scale, from 0 (*not at all true*) to 6 (*completely true*). The scale is under development and its psychometric properties are currently being assessed. A preliminary

factor analysis revealed that the scale taps into four constructs related to valued living: clarity (e.g., “I knew the way I wanted to live my life”); value motives (e.g., “I didn’t feel the need to justify my actions to anyone”); persistence (e.g., “I found it hard to follow through on important activities because of unpleasant thoughts and feelings,” reverse scored); and valued action (e.g., “I made progress in the areas of my life I care most about”). When items are averaged higher values reflect greater valued living. In this sample, the scale demonstrated good internal consistency ($\alpha = .84$).

Mindfulness. Mindfulness was assessed using the Five-Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). The FFMQ contains 39-items rated on 5-point scale, from 1 (*never or very rarely true*) to 5 (*very often or always true*), and is based on an exploratory factor analysis of the combined items from five independently developed mindfulness questionnaires. The five factors of the FFMQ are: observing (e.g., “I pay attention to how my emotions affect my thoughts and behavior”); describing (e.g., “I’m good at finding words to describe my feelings”); acting with awareness (e.g., “I find myself doing things without paying attention,” reverse scored); nonjudging of inner experiences (e.g., “I tell myself I shouldn’t be feeling the way I’m feeling,” reverse scored); and nonreactivity to inner experiences (e.g., “When I have distressing thoughts or images, I am able to just notice them without reacting”). Similar to the internal consistency subscale scores reported by Baer et al. (2006), the subscale scores from the current sample also demonstrated good internal consistency: observing $\alpha = .79$, describing $\alpha = .87$, acting with awareness $\alpha = .86$, nonjudging $\alpha = .90$, and nonreacting $\alpha = .80$.

Mechanisms. Several questionnaires were used to examine potential mechanisms underlying changes in valued living. Self-compassion was measured using the Self-Compassion Scale – Short Form (Raes, Pommier, Neff, & Van Gucht, 2011), a 12-item scale that measures the three components of self-compassion: self-kindness (treating oneself with kindness and understanding), common humanity (feeling that one’s personal problems are part of the larger human experience), and mindfulness (awareness of one’s present situation without over-identifying with one’s emotions). Raes and colleagues (2011) reported that the short scale has a near perfect correlation with the long scale ($r = .97$) and is internally consistent ($\alpha = .86$). In the present sample, the short scale demonstrated good internal consistency ($\alpha = .87$).

Decentering was measured using the “decentering” subscale of the Toronto Mindfulness Scale Trait Version (Davis, Lau, & Cairns, 2009). The decentering subscale consists of 7-items measuring awareness of experiences without being carried away by them (e.g., “I experience myself as separate from my changing thoughts and feelings”) on a 5-point scale, from 0 (*not at all*) to 4 (*very much*). Davis and colleagues (2009) reported good internal consistency ($\alpha = .85$), however, the internal consistency of the decentering scale in the present sample was not as high ($\alpha = .65$).

Psychological flexibility was measured using the Acceptance and Action Questionnaire II (Bond et al., 2011). The Acceptance and Action Questionnaire uses 10-items rated on a 7-point scale, from 1 (*never true*) to 7 (*always true*), to measure the degree to which people can flexibility direct attention and behavior. Sample items include “My thoughts and feelings do not get in the way of how I want to live my life”

and “I worry about not being able to control my worries and feelings” (reverse scored). Bond and colleagues (2011) reported good internal consistency ($\alpha = .84$), and similarly high levels of internal consistency were found in the present sample ($\alpha = .88$).

The Self-Concept Clarity Scale (Campbell et al., 1996) was used to assess the degree to which self-beliefs (e.g., values, personal goals, traits) are clearly defined, internally consistent, and stable. The scale contains 12-items, such as “In general, I have a clear sense of who I am and what I am,” rated on a 5-point scale, from 1 (*strongly disagree*) to 5 (*strongly agree*). Campbell and colleagues (1996) reported good internal consistency ($\alpha = .86$), which was also found to be the case in the present study ($\alpha = .90$).

Well-Being. Well-being was assessed using the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), which measured global levels of satisfaction with life using five-items rated on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Items included “So far I have gotten the important things I want in life” and “In most ways my life is close to my ideal.” Diener and colleagues (1985) reported that the scale is internally consistent ($\alpha = .87$). Similarly, the scale demonstrated good internal consistency within the present sample ($\alpha = .91$).

Demographics. Background information was collected to assess gender, age, ethnicity, religion, family income, previous experience with mindfulness, and current interest in learning about mindfulness.

2.1.4 Data Analysis Plan

This study was designed to assess relationships between dispositional mindfulness and valued living and to explore possible mediators of this relationship. Bivariate

correlations were used to examine the associations between dispositional mindfulness and valued living. Various measures relating to valued living were assessed, including the Valued Living composite score, which was computed by standardizing the self-concordance and valuing variables and then averaging these standardized scores. As such, the valued living composite captures both behavioral and self-report ratings of value-related processes over the last two weeks.

The SOBEL macro developed by Preacher and Hayes (2004) was used to examine mediation¹. Following the suggestion of these researchers, indirect effects were calculated and assessed using the bootstrap procedure. This procedure involves repeatedly sampling (with replacement) a subset of the data to calculate the parameter of interest of each subsample. Repeating this thousands of times generates a sampling distribution for the parameters, from which a point estimate and confidence intervals of the parameter will be derived. This bootstrapping approach performs well when the sample is small and not normally distributed and, as such, is preferred over the Sobel test (Preacher & Hayes, 2004). Using this information, mediation was tested by determining whether the indirect effect confidence intervals (CI) did not contain zero (which would suggest at least partial mediation; Cole & Maxwell, 2003). If mediation was present, total and direct effects were examined to determine whether the mediator partially or

¹ Mediation examines causal processes and, as such, is best tested using longitudinal data where cause and effect relationships are clearly demonstrated (Maxwell & Cole, 2007). Mediation can be tested statistically using cross-sectional data (MacKinnon & Fairchild, 2009; Maxwell & Cole, 2007), but Maxwell and Cole (2007) argue that cross-sectional mediation models may generate biased parameter estimates. Throughout this paper cross-sectional mediation results are referred to as mediation to ease readability, though it should be kept in mind that, according to these theorists, mediation models examined this way may not meet all assumptions (e.g., causal-ordering) that are deemed necessary to demonstrate true mediation (for a review see Maxwell & Cole, 2007).

fully mediated the relationship. Direct effects that are smaller than total effects, but still significant, reveal at least partial mediation and direct effects that decrease to zero suggest full mediation (Preacher & Hayes, 2004). The valued living composite described above was used in all mediation models.

All variables were checked for outliers prior to running the analyses. Thirteen scores greater than or less than 3 standard deviations from the mean across all measures were detected. In order to reduce the amount of data lost, all outliers were reset to the next closest non-outlier score (Fidell & Tabachnick, 2003; Kline, 2011; VanSelst & Jolicoeur, 1994). All variables were normally distributed with skewness and kurtosis less than 2.0.

2.2 Results

2.2.1 Personal Value Rankings

Figure 1 displays the number of times each value was ranked 1st, 2nd, or 3rd among participants. As can be seen, family was ranked as an important value most frequently, followed by friendship, education, and marriage/relationship.

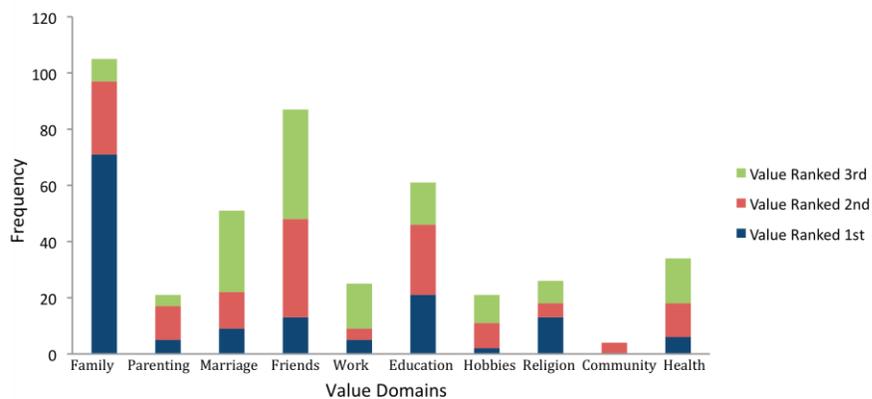


Figure 1: Personal Value Rankings for Study 1

2.2.2 Correlations Between Dispositional Mindfulness and Valued Living

Correlations between dispositional mindfulness and demographic, mediator, and valued living variables are displayed in Table 1. As can be seen, dispositional mindfulness is not related to any of the demographic variables but is positively correlated with the proposed mediator variables (self-compassion, decentering, psychological flexibility, and self-clarity). Dispositional mindfulness is also correlated to varying degrees with most of the variables related to valued living. Specifically, mindfulness was significantly correlated with feeling successful and satisfied with action devoted toward top values and was marginally related to clarity of and action toward top values. Additionally, the Valued Living composite demonstrated a strong relationship with mindfulness. Breaking this apart, mindfulness was strongly correlated with valuing but was only marginally correlated with self-concordance.

2.2.3 A Deeper Look Into Dispositional Mindfulness

The correlations between the five subscale scores of dispositional mindfulness (observing, describing, acting with awareness, nonjudging of inner experiences, and nonreactivity to inner experiences) and valued living measures were examined to provide a more thorough examination of the components of mindfulness that were related to valued living.

2.2.3.1 Personal values

As can be seen in Table 1, clarity of important values was positively correlated with the describing and acting with awareness subscales, and marginally positively correlated with nonjudging of inner experience. Devoting action toward important value

Table 1: Correlations Between Mindfulness, Valued Living, Mediator, and Demographic Variables

| Measures | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | |
|------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|-------|------|--------|------|-------|--------|--|
| 1. Mindfulness | — | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Mindfulness Subscales</i> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Observing | .24** | — | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. Describing | .73*** | .06 | — | | | | | | | | | | | | | | | | | | | | | | | |
| 4. Acting w/ Awareness | .69*** | -.19* | .42*** | — | | | | | | | | | | | | | | | | | | | | | | |
| 5. Nonjudging | .60*** | -.33** | .34*** | .50*** | — | | | | | | | | | | | | | | | | | | | | | |
| 6. Nonreacting | .55*** | .26** | .24** | .15† | .05 | — | | | | | | | | | | | | | | | | | | | | |
| <i>Personal Values</i> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7. Clarity | .15† | -.09 | .19* | .21* | .14† | -.05 | — | | | | | | | | | | | | | | | | | | | |
| 8. Action | .15† | -.17* | .08 | .26** | .27** | -.03 | .21* | — | | | | | | | | | | | | | | | | | | |
| 9. Success | .23** | -.06 | .09 | .28** | .26** | .07 | .18* | .81*** | — | | | | | | | | | | | | | | | | | |
| 10. Satisfaction | .33*** | -.01 | .15† | .36*** | .30*** | .10 | .09 | .55*** | .74*** | — | | | | | | | | | | | | | | | | |
| <i>Valued Living</i> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11. Controlled | -.04 | -.01 | -.06 | -.08 | .01 | .02 | -.09 | -.13 | -.20* | -.14† | — | | | | | | | | | | | | | | | |
| 12. Autonomous | .18* | .13 | .12 | .15† | .02 | .13 | -.09 | .07 | .08 | .14 | -.16* | — | | | | | | | | | | | | | | |
| 13. Self-Concordance | .15† | .08 | .11 | .15† | .01 | .06 | .01 | .13 | .19* | .18* | -.80*** | .72*** | — | | | | | | | | | | | | | |
| 14. Valuing | .54*** | -.12 | .27** | .68*** | .49*** | .16† | .17* | .35*** | .47*** | .45*** | -.12 | .19* | .19* | — | | | | | | | | | | | | |
| 15. Valued Living Comp. | .44*** | -.02 | .25** | .54*** | .33*** | .15† | .12 | .31*** | .43*** | .41** | -.59*** | .59*** | .77*** | .77*** | — | | | | | | | | | | | |
| <i>Mediators</i> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16. Self-Compassion | .47*** | -.19* | .20* | .46*** | .54*** | .29*** | .07 | .23** | .34*** | .37*** | -.11 | .10 | .14† | .51*** | .42*** | — | | | | | | | | | | |
| 17. Decentering | .15† | .05 | .06 | -.05 | .03 | .40*** | -.22** | .18* | .12 | .12 | .12 | .06 | -.05 | .02 | -.02 | .12 | — | | | | | | | | | |
| 18. Psych. Flexibility | .57*** | -.20* | .26** | .56*** | .63*** | .29*** | .19* | .33*** | .43*** | .35*** | .02 | -.01 | -.02 | .63*** | .39*** | .63*** | .04 | — | | | | | | | | |
| 19. Self-Clarity | .56*** | -.22** | .40*** | .60*** | .57*** | .15† | .15† | .21* | .32*** | .31*** | -.08 | .07 | .10 | .60*** | .45*** | .63*** | -.03 | .67*** | — | | | | | | | |
| 20. Satisfaction w/ Life | .25** | -.17* | .03 | .35*** | .29*** | .14† | .056 | .27** | .47*** | .47*** | -.03 | -.08 | -.02 | .41*** | .25** | .45*** | .06 | .55*** | .45*** | — | | | | | | |
| <i>Demographics</i> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21. Gender | -.05 | .04 | -.02 | .05 | .01 | -.25** | .14 | -.05 | -.03 | -.03 | -.04 | -.28** | -.14 | .00 | -.09 | -.07 | -.27** | -.03 | -.06 | .00 | — | | | | | |
| 22. Race | -.05 | .02 | -.07 | -.02 | -.14† | .09 | -.01 | -.12 | -.19* | -.24** | -.14† | .09 | .16† | -.07 | .06 | .00 | .12 | -.13 | -.09 | -.17* | -.11 | — | | | | |
| 23. Religion | .06 | .12 | .05 | -.01 | -.07 | .15† | -.06 | -.08 | -.09 | .01 | -.11 | .15 | .17* | -.06 | .07 | .01 | .10 | .00 | -.00 | -.06 | -.08 | .34*** | — | | | |
| 24. Income | -.07 | -.08 | .00 | -.03 | .00 | -.13 | -.18* | -.03 | .01 | .06 | .23** | -.05 | -.19* | -.11 | -.19* | .07 | -.01 | -.07 | -.01 | .04 | .03 | -.22** | .02 | — | | |
| 25. Prior Experience | .08 | .09 | .06 | .02 | -.04 | .12 | -.02 | .01 | .03 | .09 | -.01 | .05 | .03 | .02 | .04 | .13 | -.03 | -.01 | .19* | .02 | .16† | -.12 | -.09 | .17* | — | |
| 26. Interest | -.03 | .19* | -.04 | -.04 | -.16† | .03 | .05 | -.14† | -.10 | .00 | -.12 | .04 | .11 | -.10 | .01 | -.09 | -.10 | -.14 | -.14 | -.09 | .10 | .19* | .12 | -.16† | .34*** | |

Gender = female; Race = Other (non-white); Religion = Other (non-Christian); Income = > \$250,000/year

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

was positively correlated with acting with awareness and nonjudging of inner experiences and, unexpectedly, negatively correlated with observing. Feeling successful in living in accordance with important values was positively correlated with acting with awareness and nonjudging of inner experience. Lastly, feeling satisfied with action toward important values was positively correlated with acting with awareness and nonjudging of inner experiences and marginally positively correlated with describing.

2.2.3.2 Self Concordance, valuing, and valued living

Mindfulness component scores were not correlated with controlled ratings of behavior, but overall self-concordance and autonomous ratings of behavior were both marginally correlated with acting with awareness.

The degree to which people generally felt they were able to live in accordance with their values (Valuing) was positively correlated with describing, acting with awareness, nonjudging of inner experiences, and marginally positively correlated with nonreacting to inner experiences.

Given that the self-concordance and valuing measures were used to compute the composite measure of Valued Living, it was not surprising that a similar pattern of correlations were found between the Valued Living composite and the subscale scores of mindfulness. The Valued Living composite was positively correlated with describing, acting with awareness, and nonjudging of inner experiences, and was marginally positively correlated with nonreactivity to inner experiences.

2.2.3.3. Mediators

As can be seen in Table 1, self-compassion, psychological flexibility, and self-clarity were positively correlated with all five of the mindfulness subscales. Decentering, however, was only significantly associated with the nonreacting to inner experience subscale.

2.2.4 Mediation Between Dispositional Mindfulness and Valued Living

A series of mediation analyses were conducted to identify potential mechanisms through which dispositional mindfulness was related to valued living. Dispositional mindfulness was entered as the predictor, Valued Living composite as the outcome, and either self-compassion, decentering, psychological flexibility, or self-clarity as the mediator. The four mediation models (with direct, total, and indirect effects) are displayed in Figure 2.

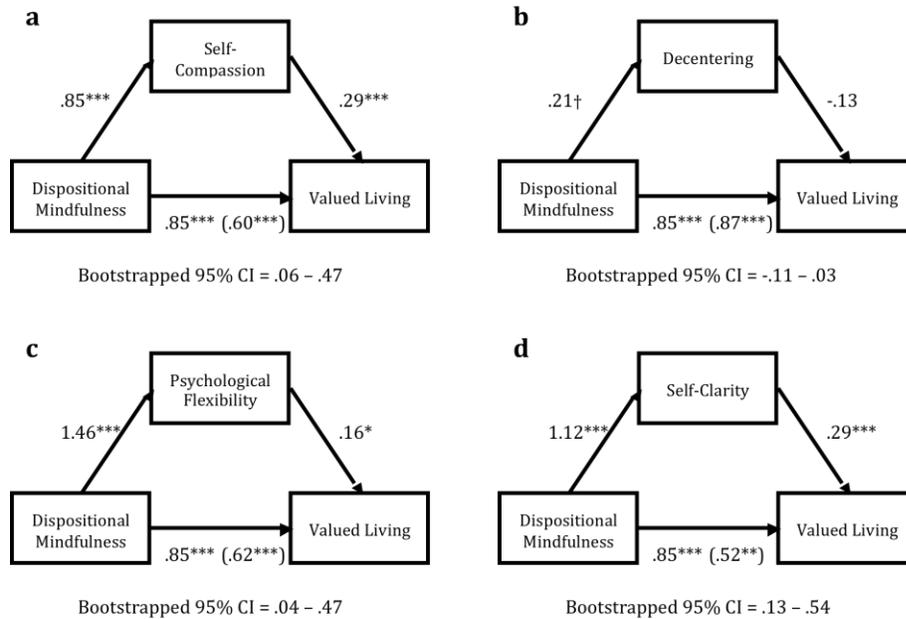


Figure 2: Models of Mediation Between Dispositional Mindfulness and Valued Living

2.2.4.1. Self-compassion

Analyses revealed that dispositional mindfulness was a strong predictor of Valued Living (c path = .85, $p < .001$) and self-compassion (a path = .85, $p < .001$), and self-compassion predicted Valued Living (b path = .29, $p = .001$). The indirect effect of self-compassion was significant (bootstrapped 95% CI = .06 - .47). The relationship between mindfulness and Valued Living was reduced but still significant when self-compassion was in the model (c' path = .60, $p < .001$), suggesting that self-compassion partially mediated the relationship between dispositional mindfulness and Valued Living.

2.2.4.2. Decentering

Using decentering as the mediator, analyses revealed that dispositional mindfulness was a strong predictor of Valued Living (c path = .85, $p < .001$) but was only marginally related to decentering (a path = .21, $p = .063$). Decentering had no effect on Valued Living (b path = -.13, $p = .248$). Given that decentering was only marginally related to mindfulness and not related to Valued Living, mediation was not supported.

2.2.4.3. Psychological flexibility

Dispositional mindfulness was found to be a strong predictor of Valued Living (c path = .85, $p < .001$) and psychological flexibility (a path = 1.46, $p < .001$). Psychological flexibility was a significant predictor of Valued Living (b path = .16, $p = .018$). The indirect effect of psychological flexibility was significant (bootstrapped 95% CI = .04 - .47). The relationship between mindfulness and Valued Living was reduced but still significant when psychological flexibility was in the model (c' path = .62, $p <$

.001), suggesting that psychological flexibility partially mediated the relationship between dispositional mindfulness and Valued Living.

2.2.4.4. Self-clarity

Analyses revealed that dispositional mindfulness was a strong predictor of Valued Living (c path = .85, $p < .001$) and self-clarity (a path = 1.12, $p < .001$). Self-clarity predicted Valued Living (b path = .29, $p < .001$). The indirect effect was significant (bootstrapped 95% CI = .13 - .54). The relationship between mindfulness and Valued Living was reduced but still significant when self-clarity was in the model (c' path = .52, $p = .002$), suggesting that self-clarity partially mediated the relationship between dispositional mindfulness and Valued Living.

2.2.5 Mediation of Dispositional Mindfulness and Well-Being

In order to examine the hypothesis that valued living mediates the relationship between dispositional mindfulness and well-being, a simple mediation model, similar to those above, was tested. The model (displayed in Figure 3) used dispositional mindfulness as the predictor, Valued Living composite as the mediator, and satisfaction with life as the outcome. Analyses revealed that dispositional mindfulness was a strong predictor of satisfaction with life (c path = .86, $p = .002$) and Valued Living (a path = .85, $p < .001$). The relationship between Valued Living and satisfaction with life was marginally significant (b path = .30, $p = .056$), which is interpreted as a significant relationship given the value is extremely close to reaching the conventional level of significance. The indirect effect was significant (bootstrapped 95% CI = .02 - .54), and the relationship between mindfulness and satisfaction with life was reduced but still

significant when Valued Living was in the model (c' path = .60, $p = .048$), suggesting that the relationship between dispositional mindfulness and well-being can partially be explained by living in accordance with one's values.

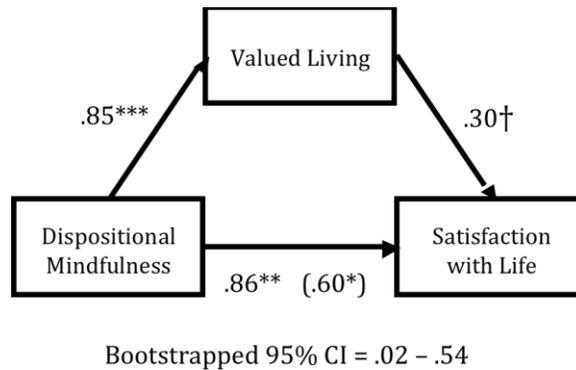


Figure 3: Mediation Between Dispositional Mindfulness and Satisfaction with Life

2.3 Discussion

This study examined the relationship between dispositional mindfulness and valued living. Three components of valued living were examined: clarity of, action toward, and satisfaction and success in regard to action toward specific important values; general value-related processes; and involvement in value-congruent activities. As expected, strong relationships were found between dispositional mindfulness and feeling successful and satisfied with action toward specific values and between dispositional mindfulness and general valuing processes. The relationships between dispositional mindfulness and clarity of and action toward top personal values were in the direction expected, but the correlations were only marginally significant. Similarly, the correlation between dispositional mindfulness and value-congruent behavior (self-concordance) was positive, but only marginally significant. The reason behind this lower than expected

correlation may be related to the differential correlations between the two components of self-concordance—the controlled and autonomous ratings of behavior. Mindfulness was correlated with autonomous ratings but not controlled ratings, which, when subtracted to form the self-concordance composite, may be diminishing the overall effect. It is not necessarily expected that mindfulness would correlate negatively with controlled ratings of behavior, as it is part of life to do things that you do not want to do, especially when you are a student and have many assignments and tests that occupy the majority of your time. It is, however, expected that mindfulness would be related to pursuing more activities that are related to top values and having the ability to find some enjoyment in tasks that are required, which was found to be the case as evidenced by a positive correlation between mindfulness and autonomous ratings of behavior.

When examining mindfulness subscale scores, acting with awareness and nonjudging of inner experiences were positively correlated with clarity, action, success, and satisfaction personal value scores. These results suggest that the degree to which people were able to clearly recognize, devote action toward, and feel success and satisfaction with their action toward important values was related to people's ability to attend to present moment activities and accept their thoughts and feelings. Additionally, the better people were at describing their internal experiences, the less difficulty they had bringing top values to mind, and to a lesser extent, the more they felt satisfied with their action toward top values.

The negative correlation between observing and action toward personal values was unexpected, but on closer examination may make sense. The observing subscale

measures the degree to which people notice internal and external experiences, such as thoughts, emotions, sensations, sites, sounds, and smells (Baer et al., 2006). Attending to such experiences certainly does not preclude behavior, but it does have a more inert-like, rather than action-oriented, quality. Interestingly, the observing subscale and nonjudging subscale were negatively correlated in the current sample (which was also found to be the case in Baer et al., 2006). A heightened ability to notice thoughts and sensations, without the corresponding ability to take a non-evaluative stance toward such experiences, may inhibit action. To this point, it is interesting to note that the observing subscale was positively correlated with experiential avoidance (the antithesis of valued action) in Baer and colleague's (2006) study. Though it should also be noted that in this same study, Baer found that other unexpected significant correlations with the observing subscale were nonsignificant when recalculated for a subsample of participants with meditation experience. Perhaps people with meditation experience have other skills (e.g., acceptance) that enhance or change the experience of observing thoughts and emotions.

The expected correlations between acting with awareness and both autonomous ratings of behavior and self-concordance suggest that greater involvement in value-related activities was related to an increased ability to stay present and focused on activities of the moment. Activities that are value-relevant may hold people's attention to a greater degree, or people who generally focus on the present moment may naturally engage in value concordant activities.

Overall, Valued Living was positively correlated with describing, acting with awareness, nonjudging, and nonreactivity, suggesting that the more people were able to

label, pay attention to, accept, and not get carried away by their thoughts, feelings, and experiences, the more they were able to identify and devote action toward values.

It was not surprising that self-compassion, psychological flexibility, and self-clarity were positively correlated with all five of the mindfulness subscales, but it was unexpected that decentering was only correlated with the nonreacting subscale. It is reassuring, though, that these two variables were related as they essentially evaluate the same thing—the ability to see a thought, feeling, or experience for what it is and not get carried away by it.

When examining possible mechanisms underlying the relationship between dispositional mindfulness and valued living, self-compassion, psychological flexibility, and self-clarity each partially mediated the relationship, decentering did not. These results suggest that people who are mindful are more likely to treat themselves with compassion, flexibly direct their behavior toward goals, and have a better understanding of themselves—which, in turn, enables them to live in ways that are concordant with their values. Although decentering is a strong predictor of valued living (Wilson et al., 2010), it is not necessarily an ability that people naturally have or develop. As Hayes and colleagues (1999) point out, we, as humans, “spend a great deal of time *in* or looking *from* our thoughts than we do simply observing our thoughts” (p. 149). As such, it may involve an intervention, such as ACT or mindfulness training, to introduce people to this new way of relating to thoughts and emotions before it is able to influence valued living.

Lastly, the finding that valued living partially mediated the relationship between dispositional mindfulness and well-being, highlights the very important role that acting in ways that are concordant with deeply held values plays in feeling satisfied with life.

3. Study 2

The second study was designed to extend the findings of Study 1 by examining the associations between mindfulness training and valued living. Whereas the first study assessed relationships between pre-existing levels of mindfulness and valued living, the present study aimed to examine whether participation in a mindfulness training program was related to changes in valued living. Results from the preliminary study suggest this to be the case, but a more comprehensive examination of valued living is needed.

To assess mindfulness training this study used participants enrolled in the MBSR program at Duke Integrative Medicine. Measures of valued living were assessed before the start of the MBSR program and again at the end of the eight-week program, allowing for the examination of changes in valued living over time. In order to control for passage of time, a sample of community members interested in but not receiving mindfulness training were also assessed at two time-points eight weeks apart. In this way, changes in valued living before and after mindfulness training could be compared against valued living changes among people not receiving mindfulness training.

Similar to Study 1, this study also employed a comprehensive examination of valued living by examining general thoughts about values and value-related processes; involvement in value-congruent activities; and clarity, action, success, and satisfaction with regard to specific top values. Additionally, the present study measured engagement and persistence in actual values-consistent behavior. Once again, the mechanisms underlying the relationship between mindfulness training and valued living were

examined. Lastly, the influence of valued living changes on the relationship between mindfulness training and well-being was explored.

3.1 Methods

3.1.1 Participants

Community members enrolled in the Fall 2011 MBSR program offered by Duke University Integrative Medicine were recruited to participate. Four MBSR sections comprised of an average of 26 people were offered during the fall, resulting in 104 possible participants to recruit. Out the 104 class participants, 60 people submitted their name and email address indicating they were interested in participating in the study. Of these 60 people who were contacted and given instructions to participate, 53 people enrolled in the study and completed the first assessment. Of the 53 people starting the study, 47 people completed the second assessment, and 46 people completed the third assessment. The MBSR sample was composed primarily of women (83.0%) with a mean age of 46.9 years ($SD = 13.4$, range = 20-72). The majority of MBSR participants were Caucasian, well-educated, high-income, and non-Christian (see Table 2 for details). This sample was similar to previous samples drawn from Duke's MBSR program (Greeson et al., 2011) and comparable to other MBSR samples from medical centers (Carmody & Baer, 2008; Reibel, Greeson, Brainard, & Rosenzweig, 2001).

People from the local community were eligible to participate in the study as control participants if they were interested in learning more about mindfulness but had never participated in the MBSR program. Seventy-four people indicated interest in participating, but 10 of these people were excluded due to previous involvement in

Table 2: Demographic Information by Group

| Variable | Total (<i>n</i> = 106) | MBSR (<i>n</i> =53) | Control (<i>n</i> =53) | Differences Between Groups | |
|-----------------------|----------------------------|-------------------------|----------------------------|----------------------------------|----------|
| | | | | <i>t</i> | <i>p</i> |
| Mean age (years) | 41.67 (13.1) | 46.9 (13.4) | 36.4 (10.6) | 4.5 | .00 |
| Gender (%) | | | | | |
| Female | 78.3 | 83.0 | 73.6 | 1.18 | .24 |
| Ethnicity (%) | | | | -2.16 | .03 |
| Caucasian | 84 | 94.3 | 73.6 | | |
| African American | 6.6 | 0 | 13.2 | | |
| Hispanic/Latino | 3.8 | 1.9 | 5.7 | | |
| Asian | 3.8 | 3.8 | 3.8 | | |
| Other | 1.9 | 0 | 3.8 | | |
| Religion (%) | | | | 1.41 | .16 |
| Christian | 50.5 | 39.6 | 60.4 | | |
| Jewish | 8.5 | 17 | 0 | | |
| Buddhist | 3.8 | 0 | 7.5 | | |
| Muslim | 0.9 | 0 | 1.9 | | |
| Atheist | 9.4 | 7.5 | 11.3 | | |
| Other | 26.4 | 34 | 18.9 | | |
| Missing | 0.9 | 1.9 | 0 | | |
| Income (%) | | | | 5.79 | .00 |
| Under \$20,000 | 14.2 | 9.4 | 18.9 | | |
| \$20,000 - \$49,999 | 22.6 | 5.7 | 39.6 | | |
| \$50,000 - \$99,999 | 28.3 | 26.4 | 30.2 | | |
| \$100,000 - \$149,999 | 16 | 24.5 | 7.5 | | |
| \$150,00 or above | 15.1 | 28.3 | 1.9 | | |
| Missing | 3.8 | 5.7 | 1.9 | | |
| Education (%) | | | | 2.75 | .01 |
| High school degree | 1.9 | 0 | 3.8 | | |
| Some College | 9.4 | 5.7 | 13.2 | | |
| Associate's Degree | 0.9 | 0 | 1.9 | | |
| Bachelor's Degree | 30.2 | 24.5 | 35.8 | | |
| Advanced Degree | 57.5 | 69.8 | 45.3 | | |

MBSR or lack of reported interest in mindfulness. Of the 64 people eligible and interested in participating in the study, 56 completed the first assessment. Of the 56 people who started the study, 53 people completed the second assessment, and 47 people completed the third assessment. The control sample was composed primarily of women (73.6%) with a mean age of 36.4 years ($SD = 10.6$, range = 20-61). The majority of control participants were Caucasian, had bachelor's or advanced degrees, were low-to-medium income, and Christian (see Table 2 for details).

Though the MBSR and control samples were similar in their gender breakdown, they differed on many of the other demographic variables of interest: age, ethnicity, religion, income, and education (Table 2)¹.

3.1.2 Procedures

3.1.2.1 MBSR group

The study took place in three waves: the time 1 pre-assessment (T1) occurred before the MBSR program began (between the orientation and first day of class), the time 2 mid-assessment (T2) occurred between the 5th and 6th weeks of MBSR training, and the time 3 post-assessment (T3) took place within two weeks following the completion of the program. In order to participate in this study, participants in the MBSR group must have been enrolled in the MBSR program offered by Duke Integrative Medicine. The program was eight weeks long, starting in September 2011 and ending in November

¹ These demographic variables were not entered as covariates on any of the analyses performed. Though it is common for researchers to use demographic variables that differ between groups as covariates in order to statistically “control” for these differences, statisticians strongly argue against doing this (Evans & Anastasio, 1968; Miller & Chapman, 2001; Suckling, 2010). Using variables that are correlated with the independent variable as covariates is inappropriate and results in unpredictable and invalid conclusions (see Miller & Chapman, 2001 for a review).

2011. Three of the sections were held at the Duke Integrative Medicine Center and one section was held at a church in Cary. All sections consisted of one orientation session, eight weekly 2.5-hour sessions, and one full-day (seven hour) session of intensive mindfulness practice.

The MBSR program at Duke Integrative Medicine followed the standard MBSR training plan established by Kabat-Zinn (1982). Participants met each week to learn and practice several mindfulness exercises, including sitting meditation, body scan, yoga, walking meditation, and loving-kindness meditation. Along with the mindfulness practices, each weekly session had a theme (e.g., managing stress, recognizing the pleasure of present moment experiences, enhancing communication and interpersonal relationships, etc.) and a portion of the session included psycho-education and group discussion about the theme. Participants were also requested to practice both formal and informal mindfulness exercises on their own throughout the week.

The researcher attended the orientation sessions for each of the MBSR sections in order to invite people to participate in the study. Interested participants were given an information sheet about the study and were asked to give their contact information to the researcher. The researcher then sent out the study link to each interested participant. After filling out online consent forms, participants were able to access and complete the questionnaires online at their own homes through Qualtrics. The pre-assessment questionnaires took approximately 30 minutes to complete and participants received \$10. After the 5th MBSR session, participants were re-contacted and asked to complete the mid-assessment questionnaires online before their 6th MBSR session. Completion of the

mid-assessment questionnaires took approximately 15 minutes and no compensation was given. The day after the final MBSR course, participants were re-contacted and asked to complete the post-assessment questionnaires online. Completion of the post questionnaires took approximately 30 minutes and participants were given \$10.

3.1.2.2 Control group

People from the local community interested in learning more about mindfulness were recruited via an advertisement posted on the Duke Clinical Trials Healthy Volunteer website and via fliers posted in coffee shops, cafes, and yoga studios around Durham, Chapel Hill, and Carrboro.

Control participants were told they were participating in a study aimed to gather information about the beliefs and behavior of people interested in mindfulness. They were told the study did not offer mindfulness training but that they would receive information about mindfulness-related classes, retreats, and events after the post-assessment in the event they would like to learn more about mindfulness. Following the “life as usual” approach to control groups—the non-clinical analogue to “treatment as usual” (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008)—control participants were not restricted from participating in mindfulness-related activities over the course of the study but their involvement in such endeavors was measured post-assessment.

Control participants completed the same questionnaires as MBSR participants but did not receive mindfulness training. They were assessed following the same time frame as MBSR participants—they completed the pre-assessment questionnaires in early September, the mid-assessment questionnaires five to six weeks later in the middle of

October, and the post-assessment questionnaires eight to ten weeks from the pre-assessment date in November. Control participants completed all questionnaires online through Qualtrics. The pre-, mid-, and post-assessment questionnaires took approximately 30, 15, and 30 minutes, respectively, to complete and participants were given \$10 for each the pre- and post-assessments.

3.1.3 Measures

3.1.3.1 Pre-assessment measures

Personal Projects. Similar to Study 1, engagement in actual values-consistent behavior was assessed using the personal projects methodology described above. Comparing pre- to post-assessment self-concordant scores for MBSR and control participants provides insight into whether mindfulness training was associated with increased self-concordant behavior.

Personal Values. The Personal Values Assessment described in Study 1 was used to assess value rankings and ratings of importance, clarity, amount of action in service of values, level of success in living the values, and satisfaction with level of action for their top three values. Participants were also asked to identify their least important, but still applicable value, and rate it on the same five dimensions. Evaluations of the least important value were included to compare changes in important and unimportant values over time.

Valuing Questionnaire. The same Valuing Questionnaire used in Study 1 was administered in the present study. In this sample, the scale demonstrated good internal consistency (T1 $\alpha = .79$, T3 $\alpha = .86$).

Mindfulness. Mindfulness was assessed using the FFMQ described in Study 1. The subscale scores from the current sample demonstrated good internal consistency at T1, T2, and T3 (α ranged from .86 to .96).

Demographics. Background information was collected to assess gender, age, ethnicity, highest level of education completed, income, religion, occupation, previous experience with meditation and mindfulness, current interest in learning about mindfulness, and reasons for wanting to learn more about mindfulness.

3.1.3.2 Mid-assessment measures

Mindfulness. The same mindfulness questionnaire (FFMQ) administered pre-assessment was administered mid-assessment.

Mechanisms. Several questionnaires were used to examine potential mechanisms underlying changes in valued living. Attention was assessed using the 8-item “observing” subscale of the FFMQ described previously. Acceptance was measured by averaging the 8-item “nonjudging of inner experiences” and the 7-item “nonreactivity to inner experiences” subscales of the FFMQ.

Self-compassion was measured once again using the Self-Compassion Scale – Short Form. Shapiro and colleagues (2005, 2007) reported that MBSR completers had higher levels of self-compassion than controls. The scale was internally consistent within the present sample (T2 $\alpha = .91$, T3 $\alpha = .91$).

Decentering was once again measured using the “decentering” subscale of the Toronto Mindfulness Scale Trait Version. Davis and colleagues (2009) found that

decentering scores were higher among meditators compared to controls. Good internal consistency (T2 $\alpha = .83$, T3 $\alpha = .85$) was reported in the present sample.

Psychological flexibility was measured using the Acceptance and Action Questionnaire II described in Study 1. The scale demonstrated good internal consistency in the present sample (T2 $\alpha = .90$, T3 $\alpha = .93$).

Similar to Study 1, the Self-Concept Clarity Scale was used to assess the degree to which self-beliefs (e.g., values, personal goals, traits) are clearly defined, internally consistent, and stable. In the present sample, the scale demonstrated good internal consistency (T2 $\alpha = .88$, T3 $\alpha = .91$).

3.1.3.3 Post-assessment measures

Valued Living. Participants completed the same valued living questionnaires assessed at pre-assessment: Personal Projects, Personal Values Assessment, and Valuing Questionnaire. Additionally, participants read and answered questions about “Living Lives of Value,” a values-coaching service offered by Duke University healthcare professionals. Participants were told that the program (which is actually fictitious) helps people to evaluate, plan, and achieve success in areas of life that each person finds most personally meaningful and rewarding. Using a 7-point scale, from 1 (*not at all interested*) to 7 (*very interested*), participants were asked to rate their level of interest in participating along with the degree to which they were interested in an array of services (email newsletters, personal emails, support groups, and one-on-one consultations) aimed at increasing clarity and action in valued life domains. Participants were also asked to indicate how often they would be interested in each service (daily, weekly, bi-weekly,

monthly, bi-monthly, yearly, never) and in which area(s) of life (e.g., family, romantic relationships, parenting, friendships, career, etc.) they would be most interested in targeting. Participants' service scores were averaged to create a composite with higher scores reflecting interest in a larger number of services. Similarly, frequency scores were averaged to create a composite reflecting the general frequency of which people would like to receive services, with higher scores indicating interest in participating in services more often. This "Living Lives of Value" procedure was included to examine engagement in actual behavior related to valued living. High levels of interest in this fictitious program reflect a desire to learn more about and develop in domains that people find most meaningful in their lives, which exemplifies valued living.

Participants were then prompted to enter the characters from a CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart) image. Upon entering the CAPTCHA text and clicking the "Submit" button, participants were told the characters were entered incorrectly (a common mistake when deciphering and entering CAPTCHA characters) and were given the option to re-enter the CAPTCHA characters or to skip this step, and, thus, not be eligible to learn more or participate in the program. Each time participants submitted the CAPTCHA characters they received the same error message and were asked to re-enter this information until either they selected to skip this step or until they cycled through this process four times. This error prompt was designed to create frustration and present an obstacle that participants had to persist through in order to ostensibly learn more about and participate in the values-related program. The number of times each participant typed in the CAPTCHA characters and

selected the option to enroll in the program was counted. Participants were asked to enter the CAPTCHA and select the option to enroll or skip enrollment a maximum of four times, therefore persistence scores ranged from 0 (not entering the CAPTCHA or entering the CAPTCHA but selecting the option to skip enrollment the first time) to four (entering the CAPTCHA and selecting the option to enroll all four times), with higher scores indicating greater persistence. This task was designed to go beyond self-reported behavior and gauge actual persistence in values-guided behavior.

Mindfulness. The same mindfulness questionnaire (FFMQ) administered pre-assessment was administered post-assessment.

Mechanisms. The same mechanisms assessed mid-assessment were also assessed post-assessment: attention (“observing” subscale of the FFMQ), acceptance (“nonjudging of inner experiences” and “nonreactivity to inner experiences” subscales of the FFMQ), self-compassion, decentering, psychological flexibility, and self-concept clarity.

Well Being. Similar to Study 1, well-being was assessed using the Satisfaction with Life Scale. In the present sample the scale was internally consistent ($\alpha = .93$).

Mindfulness Reflections. Participants in the MBSR condition indicated how many MBSR sessions they attended and their satisfaction with the MBSR program. Participants in the control condition indicated any mindfulness-related activities they had been involved in since the start of the study.

3.1.4 Data Analysis Plan

This study was designed to assess the associations between mindfulness training and valued living and to explore potential mechanisms underlying this relationship. T-

tests were used to evaluate differences in prior experience with and interest in mindfulness between MBSR and control participants. Chi-square tests were used to compare reasons for interest in mindfulness between MBSR and control participants. Effect sizes (Cohen's d) for group differences were computed by dividing the difference between groups by the pooled standard deviation of the two groups, as suggested by Rosenthal (1984). Following the criteria he suggested, .20 represents a small effect, .50 a medium effect, and .80 a large effect. Effect sizes (η^2) for ANOVAs and MANOVAs were computed by dividing the sum of squares for the effect of interest by the total sum of squares (Cohen, 1988). Values of .01, .06, and .14 represent small, medium, and large effects, respectively. Lastly, effect sizes (ϕ) for chi-square tests were calculated using the following formula: $\sqrt{\chi^2 / N(k-1)}$, where .10, .30, and .50 represent small, medium, and large effects, respectively.

In order to examine the relationship between mindfulness training and valued living, two separate 2 x 2 repeated measures MANOVAs were conducted. For both MANOVAs, the first between factor was group (MBSR, control) and the second within factor was time (pre-, post-assessment).

Path analyses² were used to examine hypothesized mediation of the relationship between mindfulness training and valued living. Given the predictor, mediators, and criterion variable were measured at three separate time points, longitudinal methods of

² Normally, the use of structural equation modeling requires sample sizes that are much larger than the sample obtained in the present study ($N = 83$ participants who completed all three assessments), but if models are simple, have few parameters, and do not include a measurement component (as is the case in the present analysis), the analyses can be run with fewer participants (Kline, 2011). Following a suggested guideline of having ten participants for each parameter being estimated (Kline, 2011), the current model comprised of eight parameters (six path coefficients and two residuals) requires a minimum sample size of 80 participants, which was obtained.

mediation were used. Longitudinal methods of mediation, compared to cross-sectional methods, lead to more precise and unbiased parameter estimates and allow for the examination of causal processes that unfold over time (Maxwell & Cole, 2007). Specifically, the three waves of data collection allow for the examination of whether the predictor measured at T1 (X1) predicts subsequent levels of the mediator measured at T2 (M2) and whether this mediator predicts levels of the outcome at T3 while controlling for pre-existing levels of the outcome at T1 (Y3.1; Cole & Maxwell, 2003).

Using Mplus version 6.1 (Muthén and Muthén, Los Angeles, CA), a series of simple path analyses were conducted to determine whether acceptance, attention, decentering, self-compassion, psychological flexibility, and self-concept clarity would partially account for the associations between group and valued living. The mediation models tested used group (MBSR, control) as the predictor (X1) and either acceptance, attention, decentering, self-compassion, psychological flexibility, or self-concept clarity as the mediator (M2). Self-concordance and valuing were standardized and averaged to create a Valued Living composite for both T1 and T3. Valued Living at T1 and T3 were both entered into the model, which resulted in the use of the residualized change in Valued Living (Y3.1) as the outcome variable.

The following steps outlined by Cole and Maxwell (2003) were used to examine mediational path analyses with the current data (see Figure 4). First, the total effect of X1 on Y3.1 (*c* path) was obtained. Second, the effect of X1 on M2 (*a* path) and the effect of M2 on Y3.1 controlling for X1 (*b* path) were obtained. Third, the overall direct effect of X1 on Y3.1 (*c'* path) was obtained, which represented the part of the total effect that

was not mediated by M2. Lastly, the overall indirect effect of X1 on Y3.1 through M2 (path $a * \text{path } b$) was obtained, which provides an estimate of the degree to which M2 mediated the relationship between X1 and Y1.3 over time. All indirect effect estimates were obtained using the bootstrap procedure discussed previously.

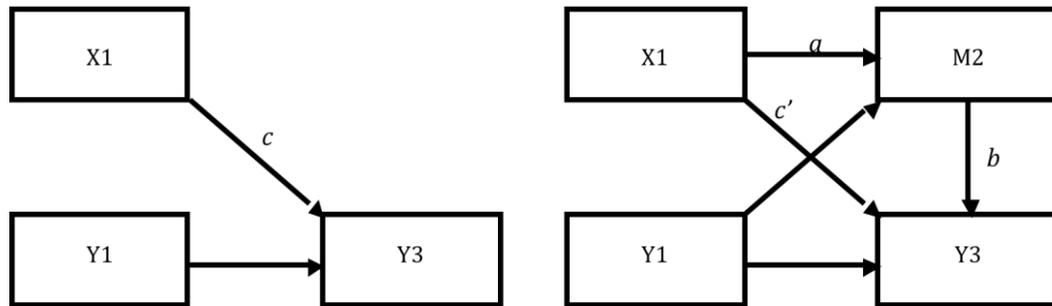


Figure 4: Steps of Mediation Testing

The SOBEL macro described above was used to examine whether the change in valued living from T1 to T3 mediated the relationship between group and satisfaction with life. A cross-sectional mediation approach was used to test this hypothesis because the variables of interest were not collected at three separate time points, rendering a full-longitudinal mediation analysis using path analysis unviable.

All variables were checked for outliers prior to running the analyses. Nineteen scores greater than or less than 3 standard deviations from the mean of their respective group were detected across all measures. In order to reduce the amount of data lost, all outliers were reset to the next closest non-outlier score. All variables were normally distributed with skewness and kurtosis less than 2.0.

Before performing the analyses, data were screened for quality and indications that participants followed instructions. Three control participants did not follow

instructions or pay attention³ and their data were removed from all future analyses. All MBSR participants seemed to follow instructions and have good quality data. However, four participants from the MBSR group attended less than six of the weekly MBSR classes. The MBSR program at Duke Integrative Medicine awards a certificate of completion to those who attended at least seven out of nine sessions (eight weekly classes plus one day of mindfulness). Not counting the day of mindfulness, this requires attendance at six (out of eight) weekly MBSR classes. Following this guideline, the four MBSR participants who attended less than six classes were, for the purpose of this study, not considered to be “MBSR completers” and were excluded from analyses⁴. Additionally, because the MANOVA and mediation analyses used variables measured at T3, only participants who completed both T1 and T3 assessments were included in these analyses⁵.

3.2 Results

3.2.1 Preliminary Analyses

3.2.1.1 Pre-assessment interest in mindfulness

Given that people enrolled in the MBSR program likely had a strong interest in learning about mindfulness an attempt was made to recruit control participants that had similarly high levels of interest. Although control participants did report an interest in

³ There was reason to believe that one participant participated twice using different names, and one participant selected the most extreme response for each question asked, suggesting he/she was not paying attention. Therefore, all three of these sets of data were not included in analyses.

⁴ Running the analyses including the three control and four MBSR participants who were originally excluded did not significantly change any results.

⁵ Participants who completed all assessment time points and participants who missed one or more assessments did not significantly differ on any demographic variables, prior experience, interest in mindfulness, or pre-assessment levels of self-concordance, valuing, or mindfulness.

mindfulness at pre-assessment ($M = 3.90$, $SD = 1.18$, scale range = 1 to 5), MBSR completers' interest in mindfulness was higher ($M = 4.51$, $SD = 0.55$), $t(97) = 3.29$, $p = .001$, Cohen's $d = .66$. Control participants had similar levels of prior experience with mindfulness as MBSR completers ($M_{\text{control}} = 2.28$, $SD_{\text{control}} = 1.20$ vs. $M_{\text{MBSR}} = 2.63$, $SD_{\text{MBSR}} = 0.97$, scale range = 1 to 5), $t(97) = 1.61$, $p = .111$, Cohen's $d = .32$. In general, control and MBSR completers gave similar reasons for their interest in mindfulness (see Table 3), but more MBSR completers rated improving mental health and managing stress as reasons for their interest. Consistent with this finding, MBSR completers had lower scores than control participants at T1 on almost all of the measures assessed, many of which are related to psychological well-being and health (see Table 4 for a summary of MBSR completers' and control participants' mean scores on measures across assessment time points).

Table 3: Number of People Listing Each Reason for Interest in Learning About Mindfulness

| Reasons | MBSR ($n = 49$) | Control ($n = 50$) | χ^2 | p | ϕ |
|---------------------------|----------------------|-------------------------|----------|------|--------|
| Pain Management | 11 | 9 | .30 | .581 | .06 |
| Improving Mental Health | 39 | 32 | 2.97 | .085 | .19 |
| Improving Physical Health | 19 | 15 | .85 | .358 | .10 |
| Managing Stress | 43 | 35 | 4.67 | .031 | .24 |
| Personal Growth | 38 | 35 | .73 | .393 | .09 |

Table 4: Mean Scores on Measures Across Time Points by Group

| Measures | MBSR | | | Control | | |
|------------------------------|------|------|-------|---------|------|------|
| | T1 | T2 | T3 | T1 | T2 | T3 |
| <i>Personal Values</i> | | | | | | |
| Clarity | 4.61 | — | 4.79 | 4.65 | — | 4.79 |
| Action | 3.55 | — | 3.74 | 3.57 | — | 3.64 |
| Success | 3.36 | — | 3.52 | 3.46 | — | 3.61 |
| Satisfaction | 3.18 | — | 3.44 | 3.17 | — | 3.38 |
| <i>Personal Projects</i> | | | | | | |
| Autonomous | 9.15 | — | 10.09 | 9.90 | — | 9.54 |
| Controlled | 4.43 | — | 3.96 | 5.09 | — | 4.99 |
| Self-Concordance | 4.66 | — | 6.13 | 4.81 | — | 4.46 |
| Valuing | 3.75 | — | 4.33 | 3.92 | — | 3.97 |
| Valued Living Composite | -.07 | — | .49 | .05 | — | .03 |
| <i>Living Lives of Value</i> | | | | | | |
| Interest | — | — | 4.88 | — | — | 5.07 |
| Services | — | — | 4.29 | — | — | 4.26 |
| Frequency | — | — | 4.13 | — | — | 3.93 |
| Persistence | — | — | 2.43 | — | — | 2.14 |
| <i>Mindfulness</i> | | | | | | |
| Observing | 3.21 | 3.49 | 3.66 | 3.54 | 3.52 | 3.48 |
| Describing | 3.73 | 3.77 | 3.96 | 3.55 | 3.62 | 3.66 |
| Acting w/ Awareness | 3.12 | 3.30 | 3.62 | 3.38 | 3.31 | 3.49 |
| Nonjudging | 3.20 | 3.64 | 4.02 | 3.35 | 3.55 | 3.68 |
| Nonreacting | 2.73 | 3.19 | 3.37 | 3.03 | 3.28 | 3.17 |
| Total | 3.19 | 3.47 | 3.73 | 3.37 | 3.45 | 3.50 |
| <i>Mediators</i> | | | | | | |
| Attention | 3.21 | 3.49 | 3.66 | 3.54 | 3.52 | 3.48 |
| Acceptance | 2.97 | 3.42 | 3.69 | 3.19 | 3.42 | 3.43 |
| Self-Compassion | — | 3.22 | 3.50 | — | 3.18 | 3.21 |
| Decentering | — | 1.83 | 2.13 | — | 1.90 | 1.75 |
| Psychological Flexibility | — | 4.97 | 5.10 | — | 5.12 | 5.05 |
| Self-Clarity | — | 3.78 | 3.96 | — | 3.54 | 3.62 |
| Satisfaction with Life | — | — | 4.87 | — | — | 4.42 |

3.2.1.2 Changes in mindfulness between groups

Given that the MBSR program teaches skills, activities, and practices aimed at increasing mindfulness, it was expected that MBSR completers' mindfulness scores would increase over the three assessment time points but there would be no change in control participants' mindfulness scores⁶. In order to examine this assumption, a 2 (group: MBSR completers, control) x 3 (time: T1, T2, T3) repeated measures ANOVA was used with mindfulness as the dependent variable. As predicted, there was a significant interaction between group and time, $F(2, 162) = 22.52, p < .001, \eta^2 = .151$, such that mindfulness increased over time for MBSR completers but remained relatively constant for control participants (Figure 5).

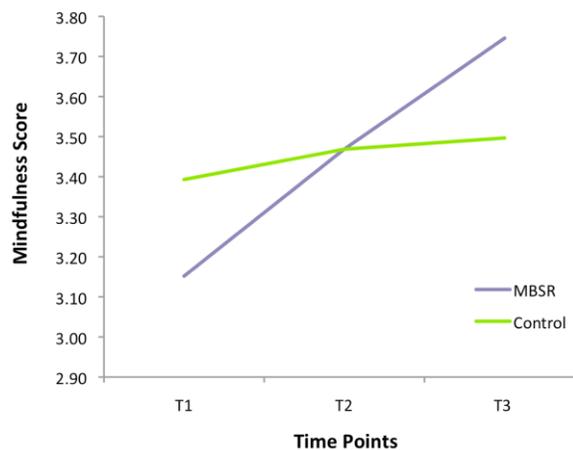


Figure 5: Changes in Mindfulness Across Time By Group

⁶ Control participants' mindfulness scores were not expected to change because it was unlikely that many people would participate in new activities that would affect their values. It is possible that simply taking part in this mindfulness-related study may have encouraged participants to seek out or further explore activities or topics related to mindfulness, but this was not found to be the case. At T3, 15 control participants reported participating in mindfulness-related activities over the past two months. Of these 15 people, 10 of them had moderate to extensive prior experience with mindfulness and the types of activities they were involved in at T3 matched the activities they reported experience with at T1. Five people who reported involvement in mindfulness-related activities at T3 had little to no experience with mindfulness at T1, suggesting that involvement in the study or other factors may have encouraged them to participate in new mindfulness-related activities. Given that only 5 out of the 43 control participants who completed the T3 assessment reported any new involvement in mindfulness, the majority of control participants likely did not participate in any new mindfulness-related activities that influenced their values.

3.2.2 Changes in Valued Living

Changes in valued living were examined using three sets of variables. First, general value-related processes and behavior were investigated using measures of self-concordance and valuing. Second, assessing action and processes related to specific values using the Personal Values variables provided a deeper analysis of how valued living changed over time. Lastly, engagement and persistence in actual value-relevant behavior was assessed using the Living Lives of Value manipulation.

3.2.2.1 Valued living MANOVA

The measures of self-concordance and valuing were used to assess changes in value-relevant behavior over time. Prior to conducting the MANOVA, the correlations between self-concordance and valuing at T1 and T3 were obtained. Bivariate correlations revealed that self-concordance and valuing were positively correlated at T1 ($r = .42, p < .001$) and T3 ($r = .67, p < .001$), indicating the variables are appropriate for use in a MANOVA. Given that self-concordance and valuing were related, a MANOVA (instead of two separate ANOVAs) was used so that these variable would be combined to form a canonical variate, presumed to represent a valued living factor, which would then be analyzed.

A 2 (group: MBSR, control) X 2 (time: pre-, post-assessment) repeated measures MANOVA was conducted on the two conceptually related continuous dependent variables (self-concordance and valuing) to test the hypothesis that there would be a significant group by time interaction for valued living. A statistically nonsignificant Box's M test ($p > .05$) indicated that the variance-covariance matrices of the dependent

variables were equal across levels of the independent variables. Using Pillai's trace, there was a multivariate main effect of time, Pillai's trace = .09, $F(2, 82) = 4.11$, $p = .020$, $\eta^2 = .027$, but not group, Pillai's trace = .01, $F(2, 82) = .35$, $p = .706$, $\eta^2 = .008$. The main effect was qualified by a significant group by time multivariate interaction, Pillai's trace = .14, $F(2, 82) = 6.71$, $p = .002$, $\eta^2 = .099$.

Given that the two dependent variables were conceptually related, the multivariate interaction was interpreted while staying at the multivariate level. To aid interpretation of the statistically significant interaction, the discriminant function coefficients were used to generate average canonical variate scores for the group by time interaction. Follow-up simple effects tests used to decompose the significant multivariate interaction revealed that valued living canonical variate scores significantly increased from T1 to T3 for MBSR completers, Pillai's trace = .20, $F(2, 82) = 10.05$, $p < .001$, but did not change for people in the control group, Pillai's trace = .02, $F(2, 82) = .66$, $p = .519$ (Figure 6).

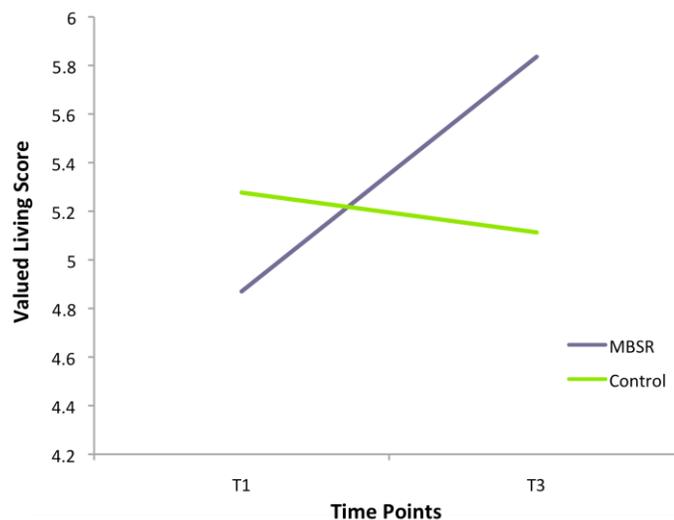


Figure 6: Multivariate Interaction for Valued Living Canonical Variate

Correlations between the canonical dependent variables and the predictor variables were used to interpret the canonical variate for the group by time interaction. The canonical variate for the interaction was made up of high levels of self-concordance ($r = .91$) and valuing ($r = .83$), which represents a valued living factor. Taken together, these results indicate that valued living changes over time but the amount and nature of the change depends on group. Specifically, valued living did not change for people in the control group whereas valued living increased substantially for MBSR completers.

3.2.2.2 Personal values

The analyses above reveal that MBSR is associated with increased general valuing behavior. Variables from the Personal Values Assessment were examined to provide greater insight into specific top values and how the values themselves, along with value-related processes, changed over time for both the MBSR and control groups.

3.2.2.2.1 Value rankings

Figure 7 displays the number of times each value was ranked 1st, 2nd, or 3rd among MBSR completers and controls at both T1 and T3. Among MBSR completers, marriage/relationships was ranked as an important value most frequently, followed by family, parenting, and health. For control participants, marriage/relationships was also most frequently ranked as an important value. Family, parenting, work, religion, and health were also frequently ranked as important values for control participants.

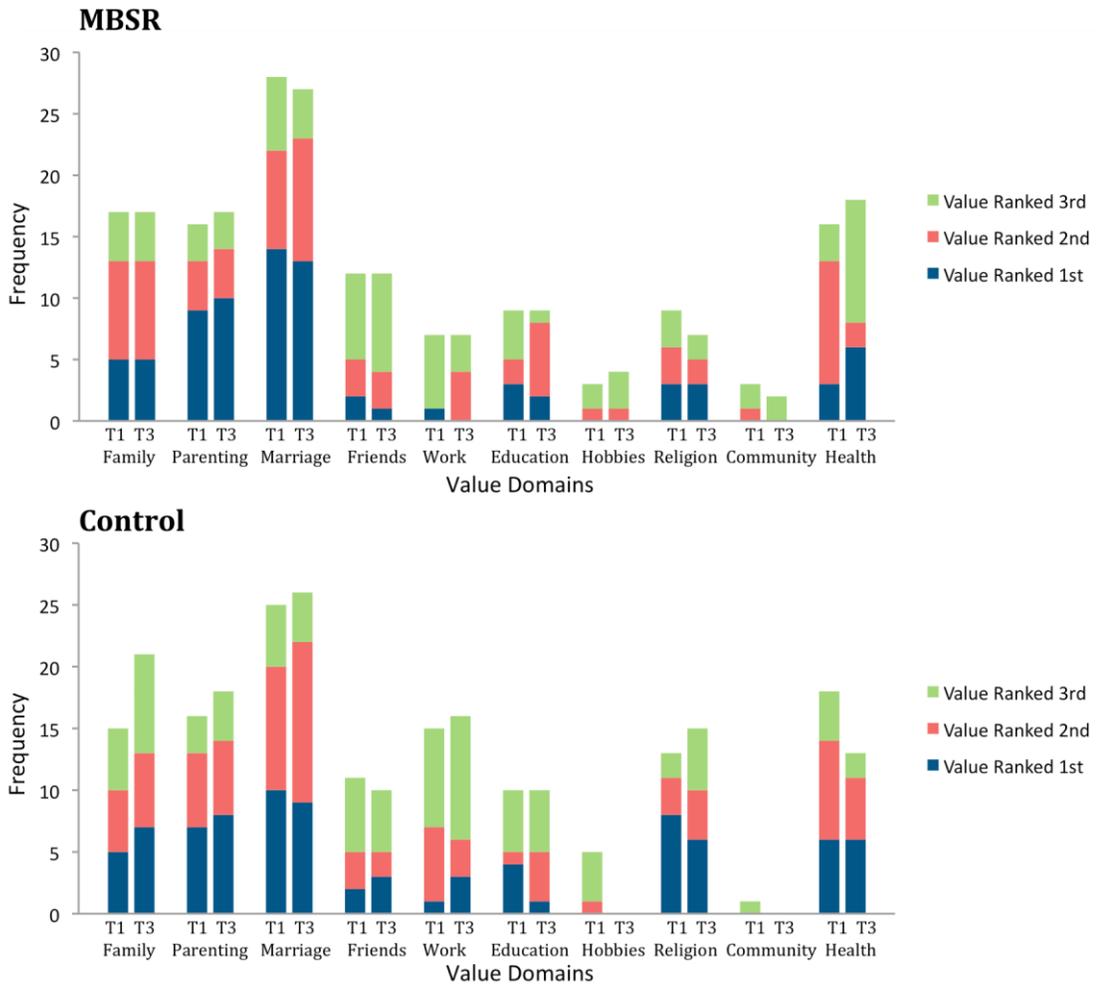


Figure 7: Personal Value Rankings by Group Across Time

3.2.2.2.2 Changes

Examination of values rankings revealed that the majority of participants changed and rearranged their top three values from T1 to T3 (Table 5). Out of the 42 MBSR completers who completed both T1 and T3 assessments, only 11 participants had the same values ranked at T1 and T3 (6 ranked their top three values in the same order at both time points and 5 ranked them in a different order), meaning that 31 MBSR completers (74%) changed their values in some way over time. Control participants also

Table 5: Number of Participants who Changed at Least One of Their Top 3 Personal Values Across Time

| Group | Same Top 3 Personal Values | | Different Top 3 Values |
|---------|----------------------------|----------------------|------------------------|
| | Same Rank Order | Different Rank Order | |
| MBSR | 6 | 5 | 31 |
| Control | 8 | 11 | 24 |

changed their value rankings over time: 19 out of 43 control participants ranked the same three values at T1 and T3 (8 people ranked their top three values in the same order at both time points and 11 people ranked them in a different order), and 24 control participants (59%) changed their values. The number of MBSR completers changing their values from T1 to T3 was marginally greater than the number of control participants who changed their values, $\chi^2 = 3.01$, $df = 1$, $p = .083$, $\phi = .188$. No clear patterns emerged for the values that were replaced or added from T1 to T3 (Table 6).

Table 6: Number of Times Value Domains Were Removed or Added Across Time

| Value | MBSR | | Control | |
|-----------|---------|-------|---------|-------|
| | Removed | Added | Removed | Added |
| Family | 6 | 6 | 2 | 8 |
| Parenting | 1 | 2 | 2 | 4 |
| Marriage | 4 | 3 | 2 | 3 |
| Friends | 3 | 3 | 6 | 5 |
| Work | 2 | 2 | 3 | 4 |
| Education | 4 | 4 | 2 | 2 |
| Hobbies | 2 | 3 | 5 | 0 |
| Religion | 3 | 1 | 2 | 4 |
| Community | 2 | 1 | 1 | 0 |
| Health | 6 | 8 | 9 | 4 |

3.2.2.2.3 Personal values MANOVA

In addition to examining how rankings of top values changed over time, ratings related to these top values were examined to assess changes over time for both MBSR completers and controls. It was hypothesized that clarity of, action toward, and feelings of success and satisfaction with action toward top values would increase over time for MBSR completers but remain the same for control participants.

Correlations between clarity, action, success, and satisfaction at T1 and T3 were obtained prior to conducting the MANOVA. As can be seen in Table 7, the correlations between these dependent variables within each time point revealed most were meaningfully related and, thus, appropriate for use in a MANOVA. Though the variables all represent facets of valued living, they assess substantially different processes that are best understood on their own. Instead of conducting four separate ANOVAs, a MANOVA was used to correct for type I error, with results interpreted at the univariate level.

Table 7: Correlations Between Personal Value Variables for MANOVA

| Measures | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--------------------|--------|--------|--------|--------|------|--------|--------|
| 1. Clarity T1 | — | | | | | | |
| 2. Action T1 | .17† | — | | | | | |
| 3. Success T1 | .23* | .79*** | — | | | | |
| 4. Satisfaction T1 | .17† | .70*** | .89*** | — | | | |
| 5. Clarity T3 | .55*** | .13 | .17 | .13 | — | | |
| 6. Action T3 | .09 | .51*** | .39*** | .34** | .24* | — | |
| 7. Success T3 | .01 | .49*** | .44*** | .42*** | .19† | .83*** | — |
| 8. Satisfaction T3 | .05 | .39*** | .29** | .32** | .15 | .81*** | .85*** |

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

A 2 (group: MBSR, control) X 2 (time: pre-, post-assessment) repeated measures MANOVA was conducted to test whether there was a significant group by time interaction for clarity, action, success, and satisfaction. A statistically nonsignificant Box's M test ($p > .05$) indicated that the variance-covariance matrices of the dependent variables were equal across levels of the independent variables. Using Pillai's trace, there was a multivariate main effect of time, Pillai's trace = .16, $F(4, 80) = 3.78$, $p = .007$, $\eta^2 = .034$, but not group, Pillai's trace = .08, $F(4, 80) = .164$, $p = .174$, $\eta^2 = .003$. The multivariate interaction of group by time was not significant, Pillai's trace = .02, $F(4, 80) = .44$, $p = .779$, $\eta^2 = .004$. However, the observed power to detect a significant group by time interaction was very low (power = .15), indicating the proposed interaction may exist but may have went undetected due to the small sample size.

The significant multivariate main effect of time was further investigated by examining univariate main effects. There was a significant main effect of time for clarity, $F(1, 83) = 10.13$, $p = .002$, such that clarity increased from T1 ($M = 4.64$, $SD = .06$) to T3 ($M = 4.79$, $SD = .04$). A marginally significant main effect of time for satisfaction was found, $F(1, 83) = 3.57$, $p = .062$, with satisfaction scores increasing from T1 ($M = 3.22$, $SD = .08$) to T3 ($M = 3.41$, $SD = .09$). The main effects of time for action and success were not significant, $F(1, 83) = 1.74$, $p = .191$ and $F(1, 83) = 1.09$, $p = .299$, respectively, though scores from T1 to T3 were trending in the expected direction.

3.2.2.2.4 Lowest personal value ratings

Ratings of clarity, action, success, and satisfaction in regard to people's least important, but still applicable, values were examined as a manipulation check (means are displayed in Table 8). Using paired sample t -tests, ratings of clarity, action, and success

for the least important value were significantly lower than ratings of clarity, action, and success for people's most important values at T1 and T3 for both MBSR completers and controls (t 's ranged from 4.10 to 13.13, all p 's < .001). Though ratings of satisfaction with action toward the lowest value were lower than ratings of satisfaction toward the most important values, this difference was not significant at T1 and T3 for MBSR completers or controls (t 's ranged from 1.03 to 1.96, all p 's > .05). As expected, paired sample t -tests revealed that scores on clarity, action, success, and satisfaction did not change over time for MBSR completers or controls (all t 's ranged from .00 to 1.79, all p 's > .05; means are displayed in Table 8).

Table 8: Means of Value Processes for Least Important Value Across Time by Group

| Variable | MBSR | | Control | |
|--------------|------|------|---------|------|
| | T1 | T3 | T1 | T3 |
| Clarity | 3.73 | 3.56 | 4.00 | 4.07 |
| Action | 1.95 | 1.95 | 1.76 | 2.02 |
| Success | 1.79 | 1.95 | 2.04 | 2.16 |
| Satisfaction | 2.90 | 3.17 | 2.90 | 3.12 |

3.2.2.3 Interest and perseverance in Living Lives of Value program

With regard to the Living Lives of Value program, levels of interest, services, frequency, and persistence did not differ significantly between MBSR completers and control participants (see Table 9). However, it was expected that levels of mindfulness (not necessarily group, per se) would be associated with interest and persistence in this values-based program. To explore this possibility, the change in mindfulness from pre- to post-assessment was correlated with interest, services, frequency, and persistence.

Table 9: Living Lives of Value Variable Means by Group

| Variable | MBSR | | Control | | <i>t</i> | <i>p</i> | <i>d</i> |
|-------------|----------|-----------|----------|-----------|----------|----------|----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | | |
| Interest | 4.88 | 2.34 | 5.07 | 2.08 | .39 | .69 | .09 |
| Services | 4.29 | 1.75 | 4.26 | 1.69 | -.08 | .93 | .02 |
| Frequency | 4.13 | 1.34 | 3.93 | 1.51 | -.64 | .52 | .14 |
| Persistence | 2.43 | 1.88 | 2.14 | 1.73 | -.74 | .46 | .16 |

Change in mindfulness was positively correlated with services ($r = .23, p = .038$) and persistence ($r = .27, p = .012$). Interest ($r = .18, p = .101$) and frequency ($r = .18, p = .101$) were also positively correlated with change in mindfulness, but the correlations were only marginally significant.

3.2.3 Mediation of Group and Valued Living

3.2.3.1 T2 mediators

A series of path analyses described above were conducted to identify potential causal mechanisms through which group (MBSR or control) is related to valued living (see Figure 8). The unstandardized path coefficients and indirect effect CIs are displayed in Table 10.

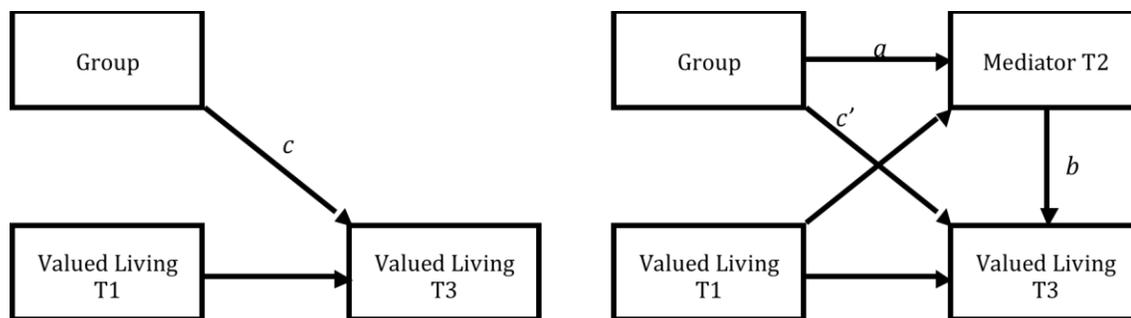


Figure 8: Model of Mediation Between Group and Valued Living

Table 10: Mediation of Group and Valued Living Analyses

| Mediators | X - M | M(X)- Y | X - Y | X (M) Y | Indirect Effect | 95% CI | |
|------------------------------|---------------|---------------|---------------|----------------|--------------------|-----------|-----------|
| | <i>a</i> path | <i>b</i> path | <i>c</i> path | <i>c'</i> path | <i>a*b</i> | <i>LL</i> | <i>UL</i> |
| Attention T2 | -.01 | .34** | .65*** | .65*** | .00 | -.09 | .08 |
| Acceptance T2 | .05 | .40* | .65*** | .63*** | .02 | -.07 | .11 |
| Self-Compassion T2 | .10 | .38* | .65*** | .62*** | .03 | -.06 | .14 |
| Decentering T2 | -.06 | .38** | .65*** | .67*** | -.02 | -.13 | .08 |
| Psychological Flexibility T2 | -.13 | .22† | .65*** | .68*** | -.03 | -.11 | .05 |
| Self-Clarity T2 | .29* | .32* | .65** | .56** | .09 | -.03 | .21 |
| Attention T2.1 | .25* | .34** | .74*** | .66*** | .08† | .01 | .16 |
| Acceptance T2.1 | .20* | .40* | .71*** | .63*** | .08 | -.01 | .17 |
| Self-Compassion T3 | 1.11*** | .54** | 1.12*** | .52* | .60** | .16 | 1.0 |
| Decentering T3 | .79*** | .30* | 1.12*** | .88*** | .24* | .02 | .47 |
| Psychological Flexibility T3 | 1.44*** | .27* | 1.12*** | .73** | .38* | .04 | .74 |
| Self-Clarity T3 | .89*** | .42** | 1.12*** | .75*** | .37** | .06 | .71 |

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Results indicated that the path models for each mediator fit the data well, RMSEA $< .001$ ⁷. However, the direct paths between group and the mediators measured at T2 (*a* paths) were not significant for any of the mediators except for self-clarity, indicating that the original mediation hypotheses pertaining to attention, acceptance, self-compassion, decentering, and psychological flexibility were not supported. The model including self-clarity as a mediator met all of the mediation requirements (path *a*, *b*, and *c* are all significant; Baron & Kenny, 1986), but the bootstrapped 95% CI for the indirect effect

⁷ RMSEA values less than .05 reflect a close model fit (Joreskog & Sorbom, 1993; Kline, 2011).

contained zero, indicating that self-clarity did not mediate the relationship between group and residualized change in valued living.

3.2.3.2 T2.1 mediators

Exploratory mediation analyses entering the mediator at T1 and T2 in the model were examined, thus assessing mediation by the residualized change in the mediator (rationale for this exploration is explained in the discussion section below). In an effort to reduce the burden placed on participants, not all questionnaires were administered at all time points; consequently T1 scores for self-compassion, decentering, psychological flexibility, and self-clarity are not available. However, T1 scores are available for attention and acceptance. Capitalizing on this extra data, two additional mediation analyses were conducted using the residualized change in attention and acceptance as mediators of the relationship between group and residualized change in valued living (mediation models tested are displayed Figure 9). These models fit the data well: RMSEA < .001 for both attention and acceptance (see Table 10 for unstandardized path coefficients and indirect effect CIs).

3.2.3.2.1 Attention

Analyses revealed that group was a strong predictor of valued living (c path = .74, $p < .001$) and attention (a path = .25, $p = .018$). Additionally, attention predicted valued living (b path = .34, $p = .008$). The bootstrapped 95% CI of the indirect effect was .01 to .16, suggesting that attention mediated the relationship between group and valued living.

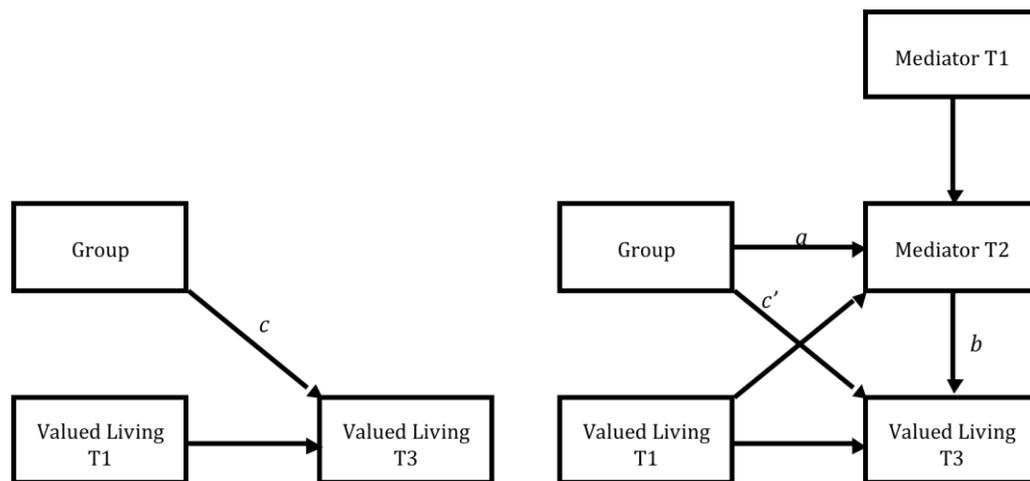


Figure 9: Model of Mediation Between Group and Valued Living using Mediator at Time 1 and Time 2

3.2.3.2.2 Acceptance

Analyses revealed that group was a strong predictor of valued living (c path = .71, $p < .001$) and acceptance (a path = .20, $p = .040$). Additionally, acceptance predicted valued living (b path = .40, $p = .020$). The bootstrapped 95% CI of the indirect effect was -.01 to .17, suggesting that acceptance did not mediate the relationship between group and valued living.

3.2.3.3 Cross-sectional mediation analyses

In order to compare the mechanisms of mediation between Study 1 and the current study, a series of exploratory cross-sectional mediation analyses were conducted using variables measured at T3. Mindfulness measured at T3 was used as the predictor (instead of group) in order to mirror the models from Study 1. Either self-compassion, decentering, psychological flexibility, or self-clarity measured at T3 were entered as the mediator (attention and acceptance are subscale scores of the mindfulness questionnaire and, therefore, were not appropriate to use as mediators when mindfulness was in the

model), and T3 Valued Living composite was entered as the outcome. Analyses using the SOBEL macro revealed that self-compassion, decentering, psychological flexibility, and self-clarity all partially mediated the relationship between mindfulness and Valued Living (see Table 10).

3.2.4 Mediation of Group and Well-Being

In order to examine the hypothesis that changes in valued living mediated the relationship between group and well-being, a simple mediation model was tested using the SOBEL SPSS macro. The model used group as the predictor, change in valued living from T1 to T3 as the mediator, and satisfaction with life score as the outcome (Figure 10).

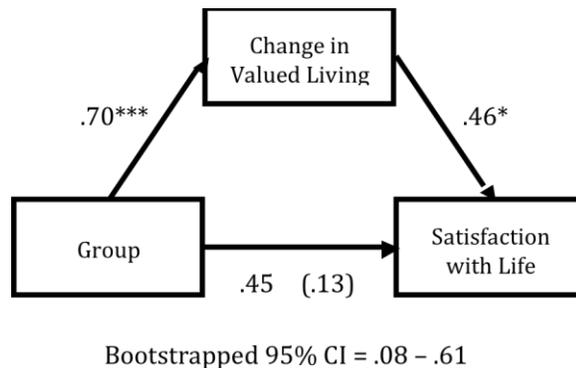


Figure 10: Mediation Between Group and Satisfaction with Life

The analysis revealed that group predicted changes in valued living (a path = .70, $p < .001$) and changes in valued living predicted satisfaction with life (b path = .46, $p = .011$). The bootstrapped indirect effect 95% CI was .08 - .61, indicating a significant mediation effect. However, the direct path from group to satisfaction with life (c path = .45, $p = .15$) was not significant. Although a significant direct path from the predictor to

outcome variable has historically been seen as a necessary component for mediation (Baron & Kenny, 1986), recent theorists have argued that a significant direct path from X to Y is not necessary to assess mediation (Collins, Graham, & Flaherty, 1998; Kenny, Kashy, & Bolger, 1998; MacKinnon & Fairchild, 2009; MacKinnon, Krull, & Lockwood, 2000). If one accepts these recent advances in mediation analysis, the results support the hypothesis that change in valued living partially mediated the relationship between group and well-being.

3.3. Discussion

The expected interaction between group and time was found for general valuing behavior but not for value processes related to specific personal values. As behavior and satisfaction with behavior toward specific values likely contributes to how people perceive and evaluate their valuing processes overall, it is surprising that the expected interaction was not found for personal values. This unexpected finding may, in part, be due to the degree to which personal values changed in importance over time. As reported, 74% of MBSR completers changed their personal value rankings in some way between T1 and T3, whereas 59% of control participants changed theirs. Values ranking are thought to be relatively stable over time when no intervention or major life change is present (Wilson et al., 2010), but given mindfulness training was hypothesized to influence both the clarity of and action toward values, it was expected that MBSR participants' values would shift somewhat over time as they became more in tune with the people, activities, roles, and experiences that were most important to them. However, assessing changes in value-related processes when personal values changed over time

presents a set of problems that are further discussed in the General Discussion section below.

Although group did not predict interest or persistence in the Living Lives of Value program, changes in mindfulness over time did. The correlations between changes in mindfulness and the Living Lives of Value variables suggest that greater increases in mindfulness from pre- to post-assessment were associated with greater interest in a variety of services and greater persistence to enroll in the program. To a lesser extent, these correlations showed that greater increases in mindfulness were related to greater interest in participating in the program and greater desired frequency of participation. The finding that changes in mindfulness were related to actual behavioral persistence is encouraging because the ability to persist through barriers and frustration is a crucial part of initiating and sustaining value-concordant action.

It is possible that the mediation models only using mediators measured at T2 failed to reach significance due to the nature of the mediators measured at T2. Entering the mediators measured at T1 and T2 in the model allowed for the residualized change of the mediator (mediator at T2, controlling for the mediator at T1) to be tested. This residualized change of the mediator is more informative than knowing only the T2 score because it takes into account the baseline levels of the mediators. This is important because MBSR completers had lower scores than control participants on many of the variables measured at baseline (see Table 4), so it is possible that MBSR completers also had lower scores on the mediator variables at T1 (which was the case for attention and acceptance, the only mediators measured at T1 and T2). This is problematic because

even though the MBSR completers' scores on attention, for example, increased from T1 to T2 and control participants' scores remained the same, both groups had similar scores on attention at T2. With these scores being so similar, group did not differentially predict scores on attention measured at T2 (*a* path was not significant, Table 10), which meant mediation could not be tested. However, group did predict the residualized change in attention (attention at T2 controlling for attention at T1; *a* path was significant, Table 10). Now that group was able to predict the residualized change in attention, mediation could be examined. As expected, residualized attention partially mediated the relationship between group and residualized valuing living, but, unexpectedly, acceptance did not.

Not taking into account group membership and using variables measured at T3, the mediation models supported the hypothesized mediation of mindfulness and valued living by self-compassion, decentering, psychological flexibility, and self-clarity. Testing mediation this way mirrored the mediation models tested in Study 1, allowing comparisons of mediation effects across both studies (see General Discussion for a review).

When assessing the mediation of the relationship between group and well-being by changes in valued living, a strong initial relationship between group and well-being was not detected. The analysis would likely have been strengthened had satisfaction with life been measured at T1, as well, thereby enabling the use of the change in satisfaction with life as the outcome variable. As discussed previously, because MBSR completers started off lower than control participants on many variables of interest, it is reasonable to believe that MBSR completers' satisfaction with life increased more from T1 to T3 than

controls' (which is consistent previous studies; e.g., Carmody & Baer, 2008), which would have produced a significant direct effect between group and change in satisfaction with life, thereby meeting all requirements for mediation. However, the recent critiques of Baron and Kenny's original requirements for mediation make a strong case that this mediation model can still be tested, even when the direct path between group and satisfaction with life is not significant. When examined this way, the significant indirect effect supported the hypothesis that change in valued living partially mediated the relationship between group and well-being.

4. General Discussion

4.1 Overview of Findings

The aim of present investigation was to examine the associations between mindfulness and valued living. Valued living is possible when people clearly know what values are most important to them and act in ways that are concordant with those values. The numerous benefits of valued living (e.g., low levels of anxiety, depression, and stress as well as increased quality of life, satisfaction, and well-being) have been well documented. However, less is known about the ways in which valued living can be enhanced, promoted, and encouraged. Past research has found that mindfulness is related to values clarity, goal attainment, and involvement in value-relevant activities, suggesting that mindfulness may be one such method that increases valued valuing. In order to explore this possibility, the present investigation examined the associations between mindfulness, both as a trait (Study 1) and as developed through training (Study 2), and valued living. Additionally, both studies examined possible mechanisms underlying the relationship between mindfulness and valued living and also explored the possibility that valued living may underlie the relationship between mindfulness and well-being.

4.1.1 Valued Living Findings

In both studies, three sets of variables were measured to examine changes in valued living. First, self-concordance measured the degree to which behavior was directed toward valued activities. Second, valuing represented the general tendency for people to understand their values and behave in value-consistent ways. Third, the

Personal Values variables assessed clarity of, action toward, and feelings of success and satisfaction with action toward specific top values. Whereas self-concordance and valuing provided an overview of general value-relevant behavior over the past two weeks, the Personal Values variables focused on specific values of high importance thereby providing a deeper understanding of changes in value-relevant processes. Additionally, a fictitious value development program was introduced in Study 2 to examine engagement and persistence in actual value-relevant behavior.

Study 1 examined the hypothesis that dispositional mindfulness was related to valued living. In general, the data supported this hypothesis. Dispositional mindfulness was related to feeling successful and satisfied with action toward specific values and was marginally related to clarity of and action toward top personal values. Additionally, dispositional mindfulness was marginally related to self-concordance but strongly related to valuing and Valued Living (composite of self-concordance and valuing).

Examining the relationship between valued living and the subscale scores of dispositional mindfulness—observing, describing, acting with awareness, nonjudging, and nonreacting—provided insight into the components of mindfulness that were related to valued living. Acting with awareness was associated with all of the valued living measures (clarity, action, success, satisfaction, self-concordance, valuing, and Valued Living composite). Nonjudging of inner experiences was related to all but self-concordance. Describing and nonreacting to inner experiences were related to both valuing and Valued Living composite, and observing demonstrated the only unexpected finding by being negatively related to action. Therefore, acting with awareness and

nonjudging of inner experience appear to be the facets of dispositional mindfulness that are most important to living in accordance with values.

Study 2 extended the findings of the first study by shifting the focus from dispositional mindfulness to a mindfulness training program. The second study aimed to examine the relationship between mindfulness training and changes in valued living over time. The study compared the scores of people enrolled in the MBSR program to the scores of a group of community participants who were interested in mindfulness but had never been involved in a formal mindfulness training program. Analyses of valued living changes across groups provided mixed results. As expected, general valued living (as measured by self-concordance and valuing variables) increased over time for MBSR completers but did not change for control participants. However, value processes related to personal values did not demonstrate the expected interaction. Clarity increased across time for both groups, as did satisfaction with action toward values. Action toward and perceived success of action toward personal values slightly increased over time for groups, though this increase was not significant.

As briefly mentioned previously, failure to find the expected interaction with the Personal Value variables may have been due to the degree to which top values were changed and rearranged over time. Though it was expected that some reshuffling of values would occur over time, especially for the MBSR group as they were deeply engaged in reflective and transformative practices, the amount of change in rankings was surprising. Given that the vast majority of MBSR completers changed at least one of their values over time, the clarity, action, success, and satisfaction scores at T1 and T3

were based on different values for most of the participants. This may be problematic because the Personal Values variables were not measuring the change in *values* ranked as important, they were assessing the change in *value-related processes* for top personal values. Given these processes—clarity of, action toward, and feelings of success and satisfaction toward values—were tied to specific values, the scores on these processes changed from T1 to T3, in part, because they were based on different specific values. For example, a person may have had a strained relationship with her family and, subsequently, not ranked the family domain as one of her top three values at T1. However, after going through the MBSR program, she may have realized that although her family situation is difficult it is actually very important to her, thereby ranking it as a top value at T3. Given this recent realization, she may not have had time to reach out to her family or fully act in the ways that she wishes, which would result in low scores on the action, success, and satisfaction variables. These scores may have been similar to or lower than initial scores on the value that was replaced by family, resulting in no change or decreases in valued living processes over time.

Using this rationale, it would be expected that even though action, success, or satisfaction values may not change, scores on clarity would increase over time. This expectation was supported, as there was a significant main effect of time for clarity, such that clarity increased from T1 to T3 for both groups. However, it was expected that MBSR completers would have had more clarity of their top values over time than control participants, but the nonsignificant group by time interaction for clarity did not support this hypothesis. Given that the clarity of values was assessed by asking participants “how

difficult was it to bring this value to mind,” it is possible that simply thinking about and ranking the same set of values twice would make it less difficult to bring values to mind (thus, increasing clarity) the second time around for all participants. As such, a different way of assessing clarity that removes the confound of previous exposure or carry over effects may produce the hypothesized interaction.

Additionally, it was encouraging that neither of the groups’ ratings of their least important value changed over time. It is always a concern with intervention research that the people devoting time and effort toward an activity (in this case, mindfulness) would be more motivated to see and report positive changes in desirable outcomes. The finding that MBSR participants did not report improvements toward an unimportant, though still generally desirable, value suggests that MBSR completers were not unduly motivated to report improvements, lessening the concern that desirability demands influenced results.

The findings from the Living Lives of Value analysis were also different than originally predicted. It was expected that MBSR completers, compared to control participants, would be more interested in participating in the program, would be interested in more services, would like to participate in the services more frequently, and would persist through a barrier in order enrolling in the program, but these predictions were not supported. Although MBSR completers had higher scores on the services, frequency, and persistence variables than controls, the differences did not reach significance. The control participants actually reported more interest in the program than MBSR completers, though, again, this difference was not significant. It is not clear why this is the case. Speculatively, MBSR participants held more professional occupations so

they may be busier than controls and possibly less willing to devote their time to this program. Or MBSR participants may have been burnt out from just having participated in a time and resource intensive mindfulness training program and were not interested in devoting more time and mental energy to another program. Conversely, MBSR participants may have felt that, through their participation in the MBSR program, they had already acquired the skills and tools that the Living Lives of Values program proposed to develop. If this manipulation were to be used again in future studies, participants should be asked to explain why they are or are not interested in participating in the Living Lives of Value program in order to assess the accuracy of these speculations.

When group membership did not reveal any meaningful differences on the Living Lives of Value variables, post-hoc analyses of the relationships between these variables and the change in mindfulness from T1 to T3 were explored. As it turned out, greater increases in mindfulness were associated with interest in more services and higher persistence, and marginally associated with higher interest in participating in the program and receiving services more frequently. Among these correlations, the relationship between mindfulness and persistence is of greatest interest given the strong role persistence plays in valued living. It is unclear, however, whether increases in mindfulness predict greater persistence or whether persistence predicts greater increases in mindfulness. It could be the case that people who are more persistent, in general, put more effort into learning about and practicing mindfulness, which would then lead to greater increases in mindfulness over time. It also should be noted that all of the

correlations between the variables were relatively small, demonstrating that mindfulness change only accounted for a small proportion for the variance in the Living Lives of Value variables. This suggests that other factors (e.g., time availability, previous experience with related topics, perceptions of usefulness or importance) influenced interest and persistence in the program. Measuring and controlling for a wider range of other factors may have provided a more robust assessment of the relationship between group, mindfulness, and interest in the Living Lives of Value program.

The finding that mindfulness training was associated with self-concordance but not related to interest or persistence in the Living Lives of Value program provides somewhat conflicting evidence of the effect that mindfulness training has on actual behavior. Self-concordance and the Living Lives of Value program were both included as a way to measure behavior in line with values. The self-concordance measure provided a retrospective account of engagement in value-related activities over the past two weeks, whereas the Living Lives of Value program provided a “real-time” assessment of value-relevant behavior. The differences found between these two measures could be due to the degree to which they directly assessed valued living. The Living Lives of Value program provided an opportunity for people to develop and enhance valued living, in general, and was not a direct measure of behavior in line with a specific important value. Developing skills and abilities that will enhance valued living is one step removed from actually acting toward a specific value. Conversely, self-concordance measured concrete action with regard to values—not just thinking about or planning action in line with values. Had the Living Lives of Value program measured

engagement in or persistence toward an actual important value or valued activity, rather than valued living development generally, a stronger effect may have been found. In summary, mindfulness training was not related to general interest in developing value-congruent behavior, but was related to behavioral engagement in specific value-relevant activities.

4.1.2 Mediation Findings

Both Study 1 and Study 2 examined the mechanisms underlying the relationship between mindfulness and valued living. Study 1 proposed that self-compassion, decentering, psychological flexibility, and self-clarity would mediate the relationship between dispositional mindfulness and valued living. Similarly, Study 2 predicted that attention and acceptance, in addition to self-compassion, decentering, psychological flexibility, and self-clarity would partially mediate the relationship between mindfulness training and valued living.

The mediation results from Study 1 demonstrated that self-compassion, psychological flexibility, and self-clarity each partially mediated the relationship between dispositional mindfulness and valued living, but decentering did not.

The mediation results from Study 2 were a bit more complicated, as mediation was tested in multiple ways. Longitudinal analyses of mediation using just the mediators measured at T2 found no support for the mediating role of attention, acceptance, self-compassion, psychological flexibility, decentering, or self-clarity. The mediating role of the residualized change in attention (i.e., attention at T2 controlling for attention at T1) was supported, whereas residualized acceptance did not mediate the relationship between

mindfulness training and valued living. As discussed previously, both attention and acceptance promote non-elaborative processing, which is thought to enhance the ability to identify and act in accordance with values (Baer & Lykins, 2011, Wilson et al., 2010), so it was unusual that attention was a significant mediator but acceptance was not. Perhaps attention is important not just because it enables non-elaborative processing, but also because it allows people to focus on what is important and allows them to redirect their focus after being distracted, which certainly would aid in achieving goals and working toward values. Though acceptance is strengthened through mindfulness training, non-evaluation of inner experiences may not be a crucial component of valued living if people are able to stay focused and direct attention toward values. It was unfortunate that T1 scores were not available for self-compassion, decentering, psychological flexibility, or self-clarity, as residualized changes in these variables may have mediated the relationship between mindfulness training and valued living, whereas simply using T2 scores for these mediators did not support mediation.

To allow for a comparison of mediation effects between Study 1 and Study 2, exploratory cross-sectional mediation models were analyzed in Study 2. These models included T3 mindfulness as the predictor, T3 Valued Living as the outcome, and either self-compassion, decentering, psychological flexibility, or self-clarity measured at T3 as the mediator. Similar to Study 1, Study 2 found mediating effects for self-compassion, psychological flexibility, and self-clarity. Decentering also mediated the relationship in Study 2, whereas it did not in Study 1. These results suggest that treating oneself kindly, being able to flexibly direct behavior toward important goals, and having a clear

understanding of oneself are all ways in which dispositional mindfulness and mindfulness developed through training influenced valued living. Additionally, decentering is another way that mindfulness developed through training influenced valued living. As mentioned previously, the reason why decentering mediated the previous relationship but did not mediate the relationship between dispositional mindfulness and valued living, may be due to the fact that decentering is not a skill or ability people naturally have—even those people who are naturally more mindful. But actively learning about, developing, and practicing mindfulness may have introduced people to this new way of relating to their inner experiences. Now that people are able to experience themselves as separate from their thoughts and emotions, they may realize that inner experiences do not necessarily reflect reality and therefore do not have to guide action. Instead, behavior can be directed toward the things that are most important, thereby enhancing valued living.

The mediators examined in this study are only a handful of factors that influence the relationship between mindfulness and valued living, as evidenced by the partial-at-best mediation effects of the models tested. Other variables that researchers have examined as influences of the relationship between mindfulness and psychological health include self-regulation and exposure (Carmody et al., 2009), spirituality (Greeson et al., 2011), and attachment, rumination, and emotion regulation (Coffey & Hartman, 2008). Additionally, there may be factors that mediate the relationship between group and valued living that are influenced by group (i.e., MBSR) but are not related to mindfulness. For example, MBSR includes a psycho-education component where people learn about topics and skills that may be related to valued living. Similarly, the group

nature of the MBSR classes enable people to discuss the material, ask questions, and share their experiences with others, which may directly influence valued living.

Lastly, both studies examined the extent to which valued living influenced the relationship between mindfulness and well-being. Research has shown that dispositional mindfulness is related to well-being (Brown & Kasser, 2005; Brown & Ryan, 2003) and that mindfulness training increases well-being (Shapiro et al., 2005; 2007), but less is known about the mechanisms that underlie this relationship. The hypothesis that living in accordance with values is a factor responsible for this relationship was supported in both studies. Study 1 found that valued living partially mediated the relationship between dispositional mindfulness and well-being. Similarly, Study 2 found that changes in valued living from T1 to T3 partially mediated the relationship between group and well-being. Taken together, these results demonstrate the important role of value-concordant behavior in psychological health and well-being.

4.2 Limitations

4.2.1 Study Design

As described previously, Study 2 examined the associations between mindfulness training and valued living through pre-post questionnaire assessments using a nonrandomized, cohort controlled design. Studies using pre-post self-report questionnaires to examine intervention-related changes are extensively used in mindfulness research (e.g., Carmody et al., 2009; Greeson et al., 2011; Shapiro et al., 2008, 2011). It is also becoming more common for researchers to administer their study

questionnaires online (e.g., Greeson et al., 2011; Shapiro et al., 2008, 2011), as was done in the present investigation.

Though it is common for mindfulness intervention studies to randomly assign participants to a mindfulness group or a waitlist group (e.g., Davidson et al., 2003; Shapiro et al., 2008; Teasdale et al., 2000), a comparison control group is sometimes, though less commonly, used instead of or in addition to the waitlist group (Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007; Shapiro et al., 2008). A few studies have used less resource- and time-intensive nonrandomized cohort control designs similar to Study 2 (e.g., Beddoe & Murphy, 2004; Rosenzweig, Reibel, Greeson, Brainard, & Hojat, 2003). Without randomly assigning participants to conditions, the study did not allow causal attributions to be made but did allow for the associations between mindfulness training and valued living to be examined. Additionally, the use of a cohort control did not allow for precise control over interest or demographics (discussed more fully below), but did control for the passage of time.

The design of Study 2 also leaves open the possibility that desirability demands and positive expectations of improvement among MBSR participants (in addition to nonspecific effects related to the intervention format) unduly influenced results. These concerns are still present when using randomized waitlist control designs and are only adequately controlled by utilizing comparison conditions that are structurally comparable to the mindfulness condition (Davidson, 2010), which is difficult to accomplish and has rarely been done. Given that a randomized comparison controlled design was not feasible, desirability concerns were minimized by carefully selecting the content and

order of measures. For example, the personal projects measure asked participants to describe their behavior relevant to specific goals and tasks over the past two weeks. This measure was partially open-ended and administered first, which kept participants blind to the values-based focus of the study; thereby preventing participants from knowing what type of activities may be viewed as more desirable (Wilson, Aronson, & Carlsmith, 2010). The Living Lives of Value survey measured engagement in actual values-relevant behavior and, as such, may be less prone to desirability demands (Furr & Funder, 2007).

In a similar study, Fredrickson and colleagues (2008) specifically addressed the possibility that desirability and positive expectations might be disproportionately influencing the positive outcomes resulting from a loving kindness intervention. The authors provided empirical evidence to suggest that these concerns were largely unjustified. For example, changes were reported in many constructs, not just the ones explicitly discussed in the intervention, improvements did not occur until the third assessment time-point, and participants did not skip responding on days when they felt low positive emotions. Given the similarity between the loving kindness intervention and the mindfulness training assessed in Study 2, the researchers' failure to find evidence for desirability demands is encouraging as it suggests that desirability may not be a strong influence in the current investigation either.

To indirectly assess the influence of desirability demands, the Personal Values Assessment asked participants to identify and rate the importance of their least important, but still applicable, value. Ratings of clarity, action, success, and satisfaction for the least important value did not change over time for participants in either group. The lack of

improvements or changes for these value processes suggests that the influence of desirability demands is very low, as people motivated to see and report improvement would likely report increases in these positive, though not very important, domains.

Additionally, the finding that dispositional mindfulness in Study 1 (as measured by participants who were not involved in training or activities that would have influenced them to see and report positive changes) was strongly related to many of the measures of valued living assessed further reduces the possibility that desirability demands were responsible for the relationship between mindfulness and valued living in Study 2.

4.2.2 Differences Between Groups on Demographic Variables

Another consequence of the nonrandomization of participants to groups was that MBSR and control participants differed on demographic variables. Although a concerted effort was made to match the groups on level of interest in mindfulness and past experience with mindfulness, interest among MBSR participants was higher than interest among control participants. A more careful screening of interest, or only recruiting participants from locations where interest in mindfulness is likely to be very high (e.g., yoga studios, integrative medicine centers, etc.), may have enabled a better matched sample to be obtained.

Of the demographic variables assessed, groups differed on age, ethnicity, income, and education, but not gender or religion. MBSR participants were older, more likely to be Caucasian, in higher income brackets, and more likely to have an advanced degree than control participants. The people utilizing the services at Duke's Integrative Medicine Center and enrolling in the MBSR program are a unique subset of the Durham

population. Though there are many people in the community that are well educated and have a high income, they are likely not the people that are going to sign up for a study that pays \$20. If this large discrepancy in demographic variables could have been foreseen, greater efforts could have been put forth to recruit control participants who matched the characteristics of the MBSR participants.

Unfortunately, the group differences on demographic variables are a threat to validity and all results from Study 2 must be interpreted with caution. When groups differ on important aspects not related to the intervention, it is unclear whether post-intervention effects are attributable to the intervention or whether they result from an interaction between the intervention and the pre-assessment differences or from the shared variance between the intervention and pre-assessment variables (Miller & Chapan, 2001). More specifically, it is unclear whether the valued living differences found between groups are truly associated with mindfulness training, as presumed, or if these differences in valued living are attributable to age, ethnicity, income, or education. Future studies can overcome this problem by randomly assigning participants to groups or, at the very least, carefully matching participants in each group on important study variables.

4.2.3 Valued Living Measures

Though the topic of values is gaining interest, the tools and scales currently available to measure valued living are limited. Because of this, the current investigation relied on measures that were methodically combined, modified, and created to assess relevant components of valued living.

As previously discussed, three important aspects of valued living were assessed: general valuing processes, valuing processes related to specific values, and behavior in line with values. General valuing processes was the only component that already had a dedicated scale to measure it—the Valuing Questionnaire. The reliability and validity of the Valuing Questionnaire is currently being assessed, but the authors allowed the final version of the scale to be used in the present study to assess the general degree to which people clearly know and devote action toward their values. To measure valuing processes (i.e., clarity, action, satisfaction, success) related to specific personal values, the Personal Values Assessment was modified from the Valued Living Questionnaire (Wilson et al., 2010) and the Personal Values Questionnaire (Ciarrochi et al., 2011). The Valued Living Questionnaire is the most well-known valued living scale, but according to the authors, the scale was derived from clinical experience and was developed for clinical, rather than research, use. The Personal Values Questionnaire asks participants to describe their values across nine domains and then rate the degree to which they pursue each value for controlled and autonomous reasons. In this way, the scale focuses on the social pliance of values rather than action in line with values. The Personal Values Assessment used in the present investigation borrowed the action assessment piece from the Valued Living Questionnaire and the specific personal values emphasis of the Personal Values Questionnaire in order to measure valued living with regards to specific important values.

Some people may not find it easy to think about or evaluate their progress on value-related measures, therefore indirectly measuring behavior in line with values is a

promising addition to the assessment of valued living (Rohan, 2000). Measuring actual behavior also circumvents possible influences of social desirability demands (Furr & Funder, 2007). Additionally, simply assessing intentions to act in a value consistent manner may be problematic because these intentions may not translate into actual behavior, as values are one of many factors that influence behavior in real life situations (Bardi & Schwartz, 2003). As such, valued behavior was measured retrospectively using the Personal Projects methodology (Little, 1983) and in real time by creating the Living Lives of Value survey.

As described in further detail above, the success of these measures in assessing valued living varied. To summarize, the Valuing Questionnaire demonstrated strong relationships with the predicted variables across the two studies. The Personal Values Assessment functioned well in Study 1 but was problematic when comparing scores across time. The Personal Projects (self-concordance) scale generally functioned well within the two studies, although stronger associations were found for the autonomous component compared to the controlled component in Study 1. Lastly, the Living Lives of Values survey did not function as well as expected. The fact that it measured valued living in a way that was one-step removed from actual value-consistent behavior likely weakened its ability to function as hoped.

Knowing which valued living measures functioned well and which did not across the two studies provides valuable information for the future assessment of valued living. The Valuing Questionnaire proved to be a robust measure, as did the self-concordance component of the Personal Projects methodology. Improvements to the Personal Values

Assessment need to be considered if researchers are planning to use it to measure changes across time. Lastly, implementing a measure that can assess actual, real-time behavior toward a personally relevant value would be a beneficial addition to future research on valued living.

4.3 Future Directions

In addition to the improvements suggested throughout the sections above, many other components of the relationship between mindfulness and valued living can be fruitfully explored. For example, the current investigation's focus was on ways in which valued living can be promoted and enhanced through mindfulness. Once valued living has been instigated it is important to know how such behavior can be maintained. Studies have found that the benefits gained from mindfulness training were still present months after the initial intervention (e.g., Kabat-Zinn et al., 1986; Shapiro et al., 2011), suggesting that people either continue to practice mindfulness exercises or continue to apply mindfulness skills to their everyday lives. Additionally, given that mindfulness enables people to relate to their thoughts, emotions, and experiences in a different way (Kabat-Zinn, 1990), it is possible that even without continuing to practice formal mindfulness activities this shift in perspective will persist, allowing behavior to be guided in value consistent ways. Follow up studies assessing engagement in valued living 6- and 12-months after mindfulness training would enable a better understanding of the degree to which valued living is maintained over time.

Future studies should also seek to examine how mindfulness training affects valued living for different groups of people. Dahl and colleagues (2004) reported that

distressed healthcare workers had a small repertoire of valued activities, suggesting that people under stress may narrow their behavior and be less able or willing to engage in valued living. Examining how different subsamples (e.g., people with a physical or psychological illness, healthy volunteers, college students, etc.) respond to mindfulness training would enhance the generalizability of the effects it has on valued living.

Additionally, other methods of learning about, practicing, and increasing mindfulness should be explored. Though MBSR is offered at many hospitals and research centers throughout the world, it is still not accessible to everyone. Efforts have been made to offer “home study” MBSR courses where people participate in phone conferences from their own homes but, even still, the cost of MBSR may be a barrier to some people who are interested in learning more about mindfulness. It would be interesting to examine whether people who listen to meditation CDs, read mindfulness workbooks, participate in meditation groups, or attend yoga classes experience similar enhancement of valued living.

Lastly, future studies examining the connection between mindfulness training and valued living should aim to include a qualitative analysis of outcomes related to valued living. Given that values are highly personal, dynamic, and subjective, standard questionnaires may not ask about certain values that are of high importance or allow people the opportunity to fully express their experiences with valued living. Having participants write a brief paragraph about how they view and relate to their values or conducting brief in-person interviews asking participants about their experiences would provide a greater depth of analysis.

5. Conclusion

Given the nascent stage of mindfulness and values research, the information gleaned from the current investigation provides insightful preliminary evidence for the relationship between mindfulness and valued living. Study 1 demonstrated a strong association between dispositional mindfulness and valued living. Study 2 found that mindfulness training was related to increases in general valuing processes and behavior but was not strongly related to increased action toward specific values. The mechanisms underlying the relationship between mindfulness and valued living were explored but met with mixed results. Future studies providing a more comprehensive assessment of mediators are warranted. Lastly, both studies provided strong support for the role that valued living plays in the relationship between mindfulness and life satisfaction. Taken together, these findings add to the growing body of literature demonstrating the benefits of mindfulness and highlight the important influence that clearly identifying and behaving in accordance with important values has on well-being.

Appendix A

Measures With Number of Items Included in Study 1

| Scale | Number of Items |
|--|-------------------------|
| Personal Projects | |
| List 5 projects | 5 |
| Four ratings of each project | 20 |
| Values Assessment | |
| Rank 10 values | 10 |
| Five ratings of each of the top 3 & last values | 20 |
| Valuing Questionnaire | 24 |
| Five Facet Mindfulness Questionnaire | 39 |
| Self-Compassion Scale-Short Form | 12 |
| Toronto Mindfulness Questionnaire – Trait: Decentering | 7 |
| Acceptance and Action Questionnaire II | 10 |
| Self-Concept Clarity Scale | 12 |
| Satisfaction with Life Scale | 5 |
| Demographics | 8 |
| | <i>172 Total</i> |

Measures With Number of Items Included in Study 2

| Assessment | Scale | Number of Items |
|------------------------------|--|------------------|
| T1 | Personal Projects | |
| | List 5 projects | 5 |
| | Four ratings of each project | 20 |
| | Values Assessment | |
| | Rank 10 values | 10 |
| | Five ratings of each of the top 3 & last values | 20 |
| | Valuing Questionnaire | 24 |
| | Five Facet Mindfulness Questionnaire | 39 |
| Demographics | 11 | |
| | | 129 Total |
| T2 | Five Facet Mindfulness Questionnaire | 39 |
| | Self-Compassion Scale-Short Form | 12 |
| | Toronto Mindfulness Questionnaire – Trait: Decentering | 7 |
| | Acceptance and Action Questionnaire II | 10 |
| | Self-Concept Clarity Scale | 12 |
| | | 80 Total |
| T3 | Personal Projects | |
| | List 5 projects | 5 |
| | Four ratings of each project | 20 |
| | Values Assessment | |
| | Rank 10 values | 10 |
| | Five ratings of each of the top 3 & last values | 20 |
| | Valuing Questionnaire | 24 |
| | Living Lives of Value | 14 |
| | Five Facet Mindfulness Questionnaire | 39 |
| | Self-Compassion Scale-Short Form | 12 |
| | Toronto Mindfulness Questionnaire – Trait: Decentering | 7 |
| | Acceptance and Action Questionnaire II | 10 |
| | Self-Concept Clarity Scale | 12 |
| Satisfaction with Life Scale | 5 | |
| Mindfulness Reflections | 3 | |
| | | 181 Total |

Appendix B

Recruitment Flier

Are you interested in mindfulness?

Researchers at Duke are interested in learning more about the beliefs and behavior of people interested in mindfulness.

If you are interested in mindfulness you are invited to take part in a research study and earn money for your participation.

Participation involves answering questions about yourself at 3 different time points over a 2 month period (Assessment 1 & 3 will take 30 minutes to complete and Assessment 2 will take 15 minutes to complete).

You will be paid \$10 for completing the first assessment and \$10 for completing the second & third assessment.

You can complete the assessment questions online or schedule a time to come into the DIISP lab located at 2024 W. Main Street in Durham. If you are interested in participating or have any questions, please email **DukeMindfulness@gmail.com**

Recruitment Information

Mindfulness Research Study

Researchers at Duke’s Psychology program are interested in learning more about the beliefs and behavior of people completing the MBSR program. We are looking for people currently enrolled in the MBSR program to complete questionnaires at 3 different time points over the course of the MBSR program.

Assessment 1: complete before the first MBSR class

Assessment 2: complete between the 5th and 6th MBSR class

Assessment 3: complete within 2 weeks following the last MBSR class

Each assessment involves answering questions about your beliefs, attitudes, and behavior. Assessment 1 & 3 will take 30 minutes to complete. Assessment 2 will take 15 minutes to complete. You will be paid \$10 for completing the first assessment and \$10 for completing the second & third assessment.

You can complete the assessment questions online or schedule a time to come into the DIISP lab located at 2024 W. Main Street in Durham. If you are interested in participating please fill out your name, email address, and phone number on the attached sheet and leave it at your seat. A research coordinator will contact you within 24 hours to give you instructions and answer any questions you may have. You can also email Jennifer at DukeMBSRstudy@gmail.com if you have questions about participating in this study.

.....

If you are interested in participating in this study, please enter your contact information in the space below. Please leave this sheet at your seat. A research coordinator will contact you within 24 hours to give you instructions or answer any questions.

Name: _____

Phone number: _____

Email: _____

Preferred method of contact (check one): phone email

Informed Consent (MBSR Group)

Informed Consent Agreement Research Project: Mindfulness

Please read this consent agreement carefully before you decide to participate in the study.

Purpose and procedures of the research study

This study examines the behavior, beliefs, and attitudes of people interested in mindfulness. The study includes three different assessment time points:

1. The **Pre-assessment** will take place between the orientation session and the first MBSR session. You will answer different questions about your behavior, beliefs, and attitudes. This assessment will take approximately 30 minutes to complete and you will be mailed a check for \$10.
2. The **Mid-point assessment** will take place between the 5th and 6th MBSR session. You will be re-contacted during this time and given a link to the study. You will also have the option to complete the questionnaires on a computer at the DIISP lab (located at 2024 W. Main Street in Durham). You will once again answer questions about yourself on the computer. This assessment will take approximately 15 minutes.
3. The **Post-assessment** will take place within two weeks following the last MBSR session. You will be re-contacted during this time and given a link to the study. You will also have the option to complete the questionnaires on a computer at the DIISP lab (located at 2024 W. Main Street in Durham). You will answer questions about yourself on the computer. This assessment will take approximately 30 minutes to complete and you will be mailed a check for \$10.

Confidentiality

Your responses will be kept in strict confidence. Your name will not be attached to your data; only a code number will identify your responses. We do need to collect your name on the lines below to indicate consent. We also need to collect your name and address so we can mail you payment. However, your name and address will be kept in a separate document and not with your study data. Only the researchers will have access to the document.

Voluntary Participation

Your participation in this study is fully voluntary. You are free to skip questions or withdraw from the study at any time.

Whom to contact if you have questions about the experiment

Please ask the experimenter any questions you have now. You may also contact the investigator or her advisor, Dr. Laura Richman, at any time:

Jennifer Guadagno
Dept of Psychology & Neuroscience
324 Soc/Psych Building, Duke University
Durham, NC 27708
Email: JLG40@duke.edu

Dr. Laura Richman
Dept. of Psychology & Neuroscience
324 Soc/Psych Building, Duke University
Durham, NC 27708
Email: lrichman@duke.edu

If you have questions about your rights as a research participant, you may contact the Chair of the Human Subjects Committee at 919-684-3030.

CONSENT AGREEMENT

I have read the above statement and I agree to participate in the study.

Name: _____ Date: _____

Informed Consent (Control Group)

Informed Consent Agreement Research Project: Mindfulness

Please read this consent agreement carefully before you decide to participate in the study.

Purpose and procedures of the research study

This study examines the behavior, beliefs, and attitudes of people interested in mindfulness. The study includes three different assessment time points:

1. The **Pre-assessment** will take place now. You will answer different questions about your behavior, beliefs, and attitudes. This assessment will take approximately 30 minutes to complete and you will be mailed a check for \$10.
2. The **Mid-point assessment** will take place 5 to 6 weeks after the pre-assessment. You will be re-contacted during this time and given a link to the study. You will also have the option to complete the questionnaires on a computer at the DIISP lab (located at 2024 W. Main Street in Durham). You will once again answer questions about yourself on the computer. This assessment will take approximately 15 minutes.
3. The **Post-assessment** will take place 8 to 10 weeks following the pre-assessment. You will be re-contacted during this time and given a link to the study. You will also have the option to complete the questionnaires on a computer at the DIISP lab (located at 2024 W. Main Street in Durham). You will answer questions about yourself on the computer. This assessment will take approximately 30 minutes to complete and you will be mailed a check for \$10.

Confidentiality

Your responses will be kept in strict confidence.

Your name will not be attached to your data; only a code number will identify your responses. We do need to collect your name on the lines below to indicate consent. We also need to collect your name and address so we can mail you payment. However, your name and address will be kept in a separate document and not with your study data. Only the researchers will have access to the document.

Voluntary Participation

Your participation in this study is fully voluntary. You are free to skip questions or withdraw from the study at any time.

Whom to contact if you have questions about the experiment

Please ask the experimenter any questions you have now. You may also contact the investigator or her advisor, Dr. Laura Richman, at any time:

Jennifer Guadagno
Dept of Psychology & Neuroscience
324 Soc/Psych Building, Duke University
Durham, NC 27708
Email: JLG40@duke.edu

Dr. Laura Richman
Dept. of Psychology & Neuroscience
324 Soc/Psych Building, Duke University
Durham, NC 27708
Email: lrichman@duke.edu

If you have questions about your rights as a research participant, you may contact the Chair of the Human Subjects Committee at 919-684-3030.

CONSENT AGREEMENT

I have read the above statement and I agree to participate in the study.

Name: _____ Date: _____

Debriefing (MBSR Group)

More Information about the Study

First, thank you for your participation in this study. We really appreciate the time and effort that you put into it.

Past research has demonstrated that mindfulness and other forms of meditation help to reduce stress, depression, anxiety, and many other physiological and psychological difficulties. However, little research has examined precisely how mindfulness promotes well-being. This study was designed to examine the associations between mindfulness and the degree to which people's behavior reflects their values.

To examine the effects of mindfulness training on people's values, we had you complete questionnaires before, during, and after your 8-week mindfulness class. The questions you answered measured the extent to which the clarity or nature of your values changed as you learned to practice mindfulness.

As part of the study, you read about and indicated your interest in the "Living Lives of Value" program. Now that the study is over, we want you to understand that this program does not actually exist. We created this fictitious program in order to assess the degree to which people are interested in developing and working towards their values. We asked participants to indicate which aspects of this fictitious program would interest them as a way of assessing the relationship between mindfulness and people's interest in values. We are sorry to have misled you about this program, but it was necessary to obtain a realistic measure of how interested participants are in values.

Furthermore, at one point in the study, you were also asked to input characters from an image displaying morphed text so you could be contacted by a study coordinator, but then the computer informed you that this information was entered incorrectly. You were then given the option to re-enter this information or to skip this step. This was another measure that was designed to assess the strength of people's interest in learning about values. Presumably, people who tried to enter the information more than once are particularly interested in values. We know this step was frustrating, but we hope that it will provide a better measure of people's interest in and motivation to learn about values.

Within the next few days, you will receive an email that includes more information about clarifying values and more fully engaging in the areas of life that are most important to you.

Thank you, again, for your participation in this research. If you have any questions about your participation in this research, please contact Jennifer Guadagno at DukeMBSRstudy@gmail.com. We request that you please don't discuss these research hypotheses with your friends, colleagues, or anyone else who may possibly participate.

Debriefing (Control Group)

More Information about the Study

First, thank you for your participation in this study. We really appreciate the time and effort that you put into it.

Past research has demonstrated that mindfulness and other forms of meditation help to reduce stress, depression, anxiety, and many other physiological and psychological difficulties. However, little research has examined precisely how mindfulness promotes well-being. This study was designed to examine the associations between mindfulness and the degree to which people's behavior reflects their values.

Because people who are interested in mindfulness probably differ from the general population in various ways, we were interested in how people who are interested in mindfulness (such as yourself) approach life even without going through mindfulness training. So, we had you answer questions about your values (desired life outcomes that serve as guiding principles in one's life). These questions measured the extent to which people's values are clearly defined and the extent to which behavior is in line with important values.

As part of the study, you read about and indicated your interest in the "Living Lives of Value" program. Now that the study is over, we want you to understand that this program does not actually exist. We created this fictitious program in order to assess the degree to which people are interested in developing and working towards their values. We asked participants to indicate which aspects of this fictitious program would interest them as a way of assessing the relationship between mindfulness and people's interest in values. We are sorry to have misled you about this program, but it was necessary to obtain a realistic measure of how interested participants are in values.

Furthermore, at one point in the study, you were also asked to input characters from an image displaying morphed text so you could be contacted by a study coordinator, but then the computer informed you that this information was entered incorrectly. You were then given the option to re-enter this information or to skip this step. This was another measure that was designed to assess the strength of people's interest in learning about values. Presumably, people who tried to enter the information more than once are particularly interested in values. We know this step was frustrating, but we hope that it will provide a better measure of people's interest in and motivation to learn about values.

Within the next few days, you will receive an email that includes more information about clarifying values and more fully engaging in the areas of life that are most important to you.

Thank you, again, for your participation in this research. If you have any questions about your participation in this research, please contact Jennifer at DukeMindfulness@gmail.com. We request that you please don't discuss these research hypotheses with your friends, colleagues, or anyone else who may possibly participate.

Resource Email (MBSR Group)

Dear (name),

Thank you for participating in the Duke MBSR Research study. We wanted to make you aware of various resources that are available if you are interested in further clarifying your values or learning about ways in which you can more fully engage in the areas of life that are most important to you.

We recommend the following workbooks:

- Get Out of your Mind and Into Your Life by Steven Hayes and Spencer Smith (http://www.amazon.com/Get-Your-Mind-Into-Life/dp/1572244259/ref=sr_1_1?ie=UTF8&qid=1315602291&sr=8-1)
- Your Life on Purpose: How to Find What Matters & Create the Life You Want by Matthew McKay, John Forsyth, and Georg Eifert (http://www.amazon.com/Your-Life-Purpose-Matters-Create/dp/1572249056/ref=sr_1_1?s=books&ie=UTF8&qid=1315602312&sr=1-1)

Additionally, <http://www.lifevaluesinventory.org/> is a great website that offers a free values clarification and personal development assessment and program.

Thank you, again, for your participation in this research. Please feel free to contact Jennifer at DukeMBSRstudy@gmail.com if you have any questions about values or the resources suggested above.

Resource Email (Control Group)

Dear (name),

Thank you for participating in the Duke Mindfulness Research study. We wanted to make you aware of various resources that are available if you are interested in further clarifying your values or learning about ways in which you can more fully engage in the areas of life that are most important to you.

We recommend the following workbooks:

- Get Out of your Mind and Into Your Life by Steven Hayes and Spencer Smith (http://www.amazon.com/Get-Your-Mind-Into-Life/dp/1572244259/ref=sr_1_1?ie=UTF8&qid=1315602291&sr=8-1)
- Your Life on Purpose: How to Find What Matters & Create the Life You Want by Matthew McKay, John Forsyth, and Georg Eifert (http://www.amazon.com/Your-Life-Purpose-Matters-Create/dp/1572249056/ref=sr_1_1?s=books&ie=UTF8&qid=1315602312&sr=1-1)

Additionally, <http://www.lifevaluesinventory.org/> is a great website that offers a free values clarification and personal development assessment and program.

If you are interested in learning more about mindfulness there are several resources available to you including:

- Reading over the attached “Mindfulness Instructions” PDF
- Participating in the MBSR program at Duke Integrative Medicine Center or participating in mediation groups or retreats (please refer to the “Local Resources” PDF)
- Finding books at your local bookstore or library:
 - A Mindfulness-Based Stress Reduction Workbook by Bob Stahl and Elisha Goldstein (http://www.amazon.com/Mindfulness-Based-Stress-Reduction-Workbook/dp/1572247088/ref=sr_1_1?ie=UTF8&qid=1315603113&sr=8-1)
 - Full Catastrophe Living by Jon Kabat-Zinn (http://www.amazon.com/Full-Catastrophe-Living-Wisdom-Illness/dp/0385303122/ref=sr_1_1?s=books&ie=UTF8&qid=1315603134&sr=1-1)
- Listening to CDs or Podcasts with guided mindfulness exercises:
 - Mindfulness for Beginners by Jon Kabat-Zinn (http://www.amazon.com/Mindfulness-Beginners-Jon-Kabat-Zinn/dp/1591794641/ref=sr_1_1?s=books&ie=UTF8&qid=1315603185&sr=1-1)
 - Free mindfulness podcasts from UCLA’s Mindful Awareness Research Center (<http://marc.ucla.edu/body.cfm?id=22>)

Thank you, again, for your participation in this research. Please feel free to contact Jennifer at DukeMBSRstudy@gmail.com if you have any questions about values or the resources suggested above.

Resource Email (Control Group)

Both Duke and UNC Chapel Hill offer Mindfulness Based Stress Reduction (MBSR) classes. MBSR is a structured 8-week program aimed at introducing people to the ideas and practice of mindfulness. During the course, you are exposed to different forms of mindfulness including sitting meditation, walking meditation, yoga, and others. MBSR has been shown to promote physical and psychological health and has been effective in reducing stress, depression, and anxiety.

Duke Integrative Medicine Center offers MBSR sessions three to four times per year. The next session will begin in January 2012. For more information, please visit <http://www.dukeintegrativemedicine.org/>

UNC Chapel Hill School of Medicine also offers MBSR sessions. More information can be found at <http://www.med.unc.edu/phyrehab/pim/mindfulness-program>

Local Mindfulness & Meditation Groups

Instead of or in addition to participating in formal mindfulness training, such as MBSR, you can also explore local meditation and mindfulness groups. Sometimes these are casual meetings where people gather to practice mindfulness exercises (e.g., meditation) or sometimes there are formal training opportunities or retreats.

Eno River Buddhist Community
4907 Garrett Road, Durham, NC 27707
Web site: <http://www.pgacon.com/erbc>

Durham Shambhala Center
733 Rutherford Street, Durham, NC 27705
Tel: (919) 286-1487
Web site: <http://durham.shambhala.org/>

Dharma Drum Mountain Buddhist Association
Chapel Hill, North Carolina
Web site: <http://www.ddmba.org/>

Chapel Hill Zen Group
P.O. Box 16302, Chapel Hill, NC 27516
Tel: (919) 967-0861
Web site: <http://www.intrex.net/chzg>

Brooks Branch Zendo of North Carolina Zen Center
387 Ironwood Road, Pittsboro, NC 27312
Tel: (919) 742-7411
Web site: <http://www.nczencenter.org>

Piedmont Karma Thegsum Choling
103 W. Weaver Street, Room 202 Carrboro, NC 27510
Tel: (919) 563-6911
Web site: <http://www.piedmontktc.org>

Community of Mindful Living-UUFR
3313 Wade Avenue, Raleigh, NC 27607
Web site:
<http://www.uufr.org/community/fellowship/community-of-mindful-living>

Kadampa Center - Raleigh
5412 Etta Burke Court, Raleigh, NC 27606
Tel: (919) 859-3433
Website: <http://www.kadampa-center.org/>

Personal Projects

We are interested in studying the kinds of activities and concerns that people have at different stages of their life. We call these *personal projects*. All of us have a number of personal projects at any given time that we think about, plan for, carry out, and sometimes (though not always) complete.

Here are some examples of projects:

- Completing my English essay.
- Trying to help Gary get along better with others.
- Overcoming my fear of meeting new people.
- Getting more outdoor exercise.
- Trying to finish the book Allan gave me.
- Taking a trip to Ottawa.
- Cutting the grass.
- Finding a part-time job.
- Redecorating my bedroom.
- Trying to clarify my religious beliefs.
- Losing ten pounds.
- Making a birthday present for my friend.

Please list 5 personal projects that you have been engaged in or thought about within the past 2 weeks. Remember, these are not necessarily formal or important activities—we would prefer you to write down more of the everyday kinds of activities or concerns that have characterized your life within the past 2 weeks. If you can think of *more* than 5, select the 5 that you engaged in most within the past 2 weeks. If you can think of fewer than 5, see if you can think of several more, or break down some of those you listed into several projects. It is important for everyone to try to fill in 5 projects.

1. _____
2. _____
3. _____
4. _____
5. _____

Please rate each one of your personal projects using any number from 1 to 7 on the following dimensions.

1. How much did you pursue each project for the following reasons within the past 2 weeks?

a. I pursued it because somebody else wanted me to or thought I ought to, or because I'll get something from somebody if I do—I probably wouldn't do this project if I didn't get some kind of reward, praise, or approval for it.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------|---|---|---|---------------------------------------|---|---|---|
| | Not at all because of this reason | | | Somewhat because of this reason | | | Completely because of this reason |
| Project 1 | | | | | | | |
| Project 2 | | | | | | | |
| Project 3 | | | | | | | |
| Project 4 | | | | | | | |
| Project 5 | | | | | | | |

b. I pursued it because I would feel ashamed, guilty, or anxious if I didn't—I feel that I 'ought' to strive for this.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------|---|---|---|---------------------------------------|---|---|---|
| | Not at all because of this reason | | | Somewhat because of this reason | | | Completely because of this reason |
| Project 1 | | | | | | | |
| Project 2 | | | | | | | |
| Project 3 | | | | | | | |
| Project 4 | | | | | | | |
| Project 5 | | | | | | | |

c. I pursued it because I really believe that it's an important goal to have—I endorse it freely and value it wholeheartedly.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------|-----------------------------------|---|---|---------------------------------|---|-----------------------------------|---|
| | Not at all because of this reason | | | Somewhat because of this reason | | Completely because of this reason | |
| Project 1 | | | | | | | |
| Project 2 | | | | | | | |
| Project 3 | | | | | | | |
| Project 4 | | | | | | | |
| Project 5 | | | | | | | |

d. I pursued it because of the fun and enjoyment which the project provides me—the primary 'reason' is simply my interest in the experience itself.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------|-----------------------------------|---|---|---------------------------------|---|-----------------------------------|---|
| | Not at all because of this reason | | | Somewhat because of this reason | | Completely because of this reason | |
| Project 1 | | | | | | | |
| Project 2 | | | | | | | |
| Project 3 | | | | | | | |
| Project 4 | | | | | | | |
| Project 5 | | | | | | | |

Valued Living Assessment

Below are domains of life that are valued by some people. We are interested in the importance people put on the different domains of living. Rank each area in order of importance from 1 (most important to you) to 10 (least important to you). The value domain you rank first is the value that is most important to you, the value you rate second is the second most important value to you, etc. Please use each number (1-10) only once.

___ **Family Relationships** (other than marriage/romantic relationships or parenting)

___ **Parenting**

___ **Marriage/Romantic Relationships**

___ **Friendships/Social Life**

___ **Work/Career**

___ **Education/Personal Growth & Development**

___ **Leisure/Hobbies/Sport/Fun**

___ **Spirituality/Religion**

___ **Community/Citizenship**

___ **Health/Physical Well-Being**

Following these instructions, you will be asked questions about several different Value Domains (areas of your life you may find important). Please read carefully through the values domain description and write YOUR values (ways of living and doing things related to that Values Domain that are very important to you). Below each of the values that you write, you will see a series of questions asking different things about those individual values. Please answer each of these questions by selecting the answer that is true for you.

Personal Value #1: ::value domain ranked first::

In the space below, describe the person you would most like to be in relation to this value. For example, ::text inputted based on value domain chosen::

| | | | | | |
|--|----------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|
| 1. How important is this value to you? | 1 Not at all important | 2 A little bit important | 3 Moderately important | 4 Quite important | 5 Extremely important |
| 2. How difficult was it for you to bring this value to mind? | 1 Not at all difficult | 2 Slightly difficult | 3 Moderately difficult | 4 Quite difficult | 5 Extremely difficult |
| 3. How much have you acted in the service of this value during the past 2 weeks? | 1 Not at all | 2 A little bit | 3 Moderately | 4 Quite a bit | 5 Extremely |
| 4. In the last 2 weeks, I have been this successful in living this value: | 1 Not at all successful | 2 A little bit successful | 3 Moderately successful | 4 Quite a bit successful | 5 Extremely successful |
| 5. How satisfied are you with your level of action in this area during the past 2 weeks? | 1 Not at all satisfied | 2 Slightly satisfied | 3 Moderately satisfied | 4 Quite satisfied | 5 Extremely satisfied |

Personal Value #2: :::value domain ranked second:::

In the space below, describe the person you would most like to be in relation to this value. For example, :::text inputted based on value domain chosen:::

| | | | | | |
|--|----------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|
| 1. How important is this value to you? | 1 Not at all important | 2 A little bit important | 3 Moderately important | 4 Quite important | 5 Extremely important |
| 2. How difficult was it for you to bring this value to mind? | 1 Not at all difficult | 2 Slightly difficult | 3 Moderately difficult | 4 Quite difficult | 5 Extremely difficult |
| 3. How much have you acted in the service of this value during the past 2 weeks? | 1 Not at all | 2 A little bit | 3 Moderately | 4 Quite a bit | 5 Extremely |
| 4. In the last 2 weeks, I have been this successful in living this value: | 1 Not at all successful | 2 A little bit successful | 3 Moderately successful | 4 Quite a bit successful | 5 Extremely successful |
| 5. How satisfied are you with your level of action in this area during the past 2 weeks? | 1 Not at all satisfied | 2 Slightly satisfied | 3 Moderately satisfied | 4 Quite satisfied | 5 Extremely satisfied |

Personal Value #3: value domain ranked third:

In the space below, describe the person you would most like to be in relation to this value. For example, text inputted based on value domain chosen.

| | | | | | |
|--|----------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|
| 1. How important is this value to you? | 1 Not at all important | 2 A little bit important | 3 Moderately important | 4 Quite important | 5 Extremely important |
| 2. How difficult was it for you to bring this value to mind? | 1 Not at all difficult | 2 Slightly difficult | 3 Moderately difficult | 4 Quite difficult | 5 Extremely difficult |
| 3. How much have you acted in the service of this value during the past 2 weeks? | 1 Not at all | 2 A little bit | 3 Moderately | 4 Quite a bit | 5 Extremely |
| 4. In the last 2 weeks, I have been this successful in living this value: | 1 Not at all successful | 2 A little bit successful | 3 Moderately successful | 4 Quite a bit successful | 5 Extremely successful |
| 5. How satisfied are you with your level of action in this area during the past 2 weeks? | 1 Not at all satisfied | 2 Slightly satisfied | 3 Moderately satisfied | 4 Quite satisfied | 5 Extremely satisfied |

Listed below are the 4 values that you ranked as the least important. Some people rank values low because they do not apply to them. Please think about which of the values below DO APPLY to you.

Of the values below that apply to you, please select the one that is the least important.

___ :::value domain ranked seventh:::

___ :::value domain ranked eighth:::

___ :::value domain ranked ninth:::

___ :::value domain ranked tenth:::

Please answer the following questions about your least important (but still applicable) value: :::value domain selected above:::

| | | | | | |
|--|----------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|
| 1. How important is this value to you? | 1 Not at all important | 2 A little bit important | 3 Moderately important | 4 Quite important | 5 Extremely important |
| 2. How difficult was it for you to bring this value to mind? | 1 Not at all difficult | 2 Slightly difficult | 3 Moderately difficult | 4 Quite difficult | 5 Extremely difficult |
| 3. How much have you acted in the service of this value during the past 2 weeks? | 1 Not at all | 2 A little bit | 3 Moderately | 4 Quite a bit | 5 Extremely |
| 4. In the last 2 weeks, I have been this successful in living this value: | 1 Not at all successful | 2 A little bit successful | 3 Moderately successful | 4 Quite a bit successful | 5 Extremely successful |
| 5. How satisfied are you with your level of action in this area during the past 2 weeks? | 1 Not at all satisfied | 2 Slightly satisfied | 3 Moderately satisfied | 4 Quite satisfied | 5 Extremely satisfied |

Possible descriptions of valued domains that will be inserted into the location above saying :::text inputted based on value domain chosen:::

Family

For example, some people who want close relationships with these family members value being caring, supportive, open, honest, kind, and attentive—but you should decide for yourself what kind of person you value being in your family relationships.

Parenting

For example, some people who want close relationships with their children value being caring, supportive, open, honest, kind, and attentive—but you should decide for yourself what kind of person you value being with your children.

Marriage/Romantic Relationships

For example, some people who want close romantic relationships value being caring, supportive, open, honest, kind, and attentive—but you should decide for yourself what kind of person you value being in a romantic relationship.

Friendships/Social Relationships

For example, some people who want close relationships with friends value being caring, supportive, open, honest, kind, and attentive—but you should decide for yourself what kind of person you value being in your friendships.

Work/Career

For example, some people value doing work that allows them to bring their unique talents to bear, work that allows them to express themselves, or work that “makes a difference” in other people’s lives—but you should decide for yourself what kind of person you value being in your line of work.

Education/Personal Growth & Development

For example, some people value qualities like being open and receptive to new ideas and perspectives, or making serious and careful considerations of important issues—but you should decide for yourself what kind of person you value being with respect to your education and personal growth.

Leisure/Hobbies/Sport

For example, some people value discovering or learning new things during leisure/hobby times, or being active, competitive, and playing together as part of a sports team—but you should decide for yourself what kind of person you value being with respect to leisure, hobbies, and sport.

Personal Value #8: Spirituality/Religion

For example, some people value connecting with nature and/or the people around them, connecting with God, being part of a church, and/or living out a variety of specific religious ideals-- but you should decide for yourself what kind of person you value being with respect to spirituality or religion.

Personal Value #9: Community/Citizenship

For example, some people value helping others in their community, advancing their political or humanitarian views at a local (or higher) political level, or helping to preserve local places of value-- but you should decide for yourself what kind of person you value being with respect to your community or role as a citizen.

Personal Value #10: Health/Physical Well-Being

For example, some people value being active, eating healthy foods, or exercising regularly-- but you should decide for yourself what kind of person you value being with respect to your personal health and physical well-being.

Valuing Questionnaire

Please read each statement carefully and then rate how much the statement was true for you DURING THE PAST TWO WEEKS, INCLUDING TODAY using the following scale:

| 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------------|---|---|------------------------|---|---|-----------------|
| Not at all true | | | Neither true or untrue | | | Completely true |

1. I was sure what my priorities were
2. I didn't get moving and engage in what I wanted to do
3. I didn't feel the need to justify my actions to anyone
4. My behavior was aimless
5. I found it hard to follow through on important activities because of unpleasant thoughts and feelings
6. I did things that brought me closer to what really matters to me in my life
7. I spent a lot of time thinking about the past or future, rather than being engaged in activities that mattered to me
8. I regularly did activities that were "socially correct" even though my heart was not in them
9. I tried to work toward important goals, but something always got in the way
10. I continued to get better at being the kind of person I want to be
11. I knew clearly what I wanted to be doing
12. I was basically on "auto-pilot" most of the time
13. I had unpleasant thoughts and emotions that stopped me from achieving my goals
14. I wasn't clear about what I wanted to be doing
15. I spent a lot of time doing things I care about
16. Difficult thoughts, feelings or memories got in the way of what I really wanted to do
17. If I encountered a difficult choice or decision, I took the "easy way out" rather than risk criticism or confrontation from others
18. I did what was expected of me, not what I would have chosen to do
19. I didn't really think about what I was doing
20. I found it hard to stay focused and engaged with what I was doing
21. I was in touch with what was important to me
22. I made progress in the areas of my life I care most about
23. I did what I thought others wanted me to rather than what I thought was most important
24. I knew the way I wanted to live my life
25. I only did what others wanted if it was also important to me
26. I felt like I had a purpose in life

27. I regularly started to engage in important activities but quickly became distracted
28. I let my values rather than others' reactions guide my behavior
29. I did things that had personal meaning
30. I was proud about how I lived my life
31. When things didn't go according to plan, I gave up easily
32. I lived my life in a manner I would be happy to be remembered for
33. I felt "alive"
34. My behavior was a good example of what I stand for in life
35. It seemed like I was just 'going through the motions', rather than focusing on what was important to me
36. I spent most of my time doing things that mattered to me in some way
37. Most of the things I did were very important to me
38. I've been able to stay focused on the things that are most important to me in life
39. I was satisfied with the effort I put into important activities
40. All things considered, I prioritized my time according to what is most important to me
41. I was active and focused on the goals I set for myself

Living Lives of Value

“Living Lives of Value” is a comprehensive outreach program developed and administered by Duke University healthcare professionals focused on increasing health, vitality, and well-being. This innovative program helps people to **evaluate, plan, and achieve success in areas of life that each person finds most personally meaningful and rewarding** (including parenting, relationships, friendships, work/life balance, physical health, and spiritual wellness). Each set of services is specifically tailored to you and is designed around whatever area(s) you find most important.

The program includes several different components:

- General emails with tips and tricks related to managing time and engaging more fully in your life
- Personal emails from healthcare professionals with information, advice, and support related to the top value(s) you would like to work towards
- In person support groups to meet and talk with others who are working towards similar values
- Online support groups to meet and talk with others who are working towards similar values
- One-on-one consultations with a certified healthcare professional to discuss your values and help establish goals and direct behavior in line with the things you believe are most important in your life

In an effort to test the “Living Lives of Value” program before it is open to the general public, the program coordinators are looking to recruit 25 people to go through the program free of charge. Your participation is voluntary and you can withdraw at any time. No minimum time commitment is required – the program will base consultations and services around what you are interested in and how much time you are available. You will not be charged for participation.

1. Which area(s) of life would you be interested in developing if you participated in the “Living Lives of Value” program?

- | | |
|---|---|
| <input type="checkbox"/> Family Relationships | <input type="checkbox"/> Education/Personal Development |
| <input type="checkbox"/> Parenting | <input type="checkbox"/> Leisure/Hobbies/Sports |
| <input type="checkbox"/> Romantic Relationships | <input type="checkbox"/> Spirituality/Religion |
| <input type="checkbox"/> Friendships | <input type="checkbox"/> Community/Citizenship |
| <input type="checkbox"/> Work/Career | <input type="checkbox"/> Health/Physical Well-Being |

2. How interested are you in participating in the “Living Lives of Value” program without incurring any cost?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-------------------|---|---|-----------------------|---|---|-----------------|
| Not at interested | | | Moderately interested | | | Very interested |

3. Rate your degree of interest in receiving or participating in each of the following services:

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--------------------------|-------------------|---|---|-----------------------|---|---|-----------------|
| | Not at interested | | | Moderately interested | | | Very interested |
| General emails | | | | | | | |
| Personal emails | | | | | | | |
| In person support groups | | | | | | | |
| Online support groups | | | | | | | |
| One on one consultations | | | | | | | |

4. How often would you like to:

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--------------------------------------|-------|--------|------------------|---------|-------------------|--------|-------|
| | Daily | Weekly | Every Other Week | Monthly | Every Other Month | Yearly | Never |
| Receive general emails | | | | | | | |
| Receive personal emails | | | | | | | |
| Attend in person support groups | | | | | | | |
| Participate in Online support groups | | | | | | | |
| Attend one on one consultations | | | | | | | |

5. Please provide an e-mail address or a phone number at which a “Living Lives of Value” coordinator may contact you to further discuss the program:

6. In order to validate your request, please type the characters you see below.

Five Facet Mindfulness Questionnaire

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

| 1 | 2 | 3 | 4 | 5 |
|---------------------------------|-------------|-------------------|------------|---------------------------------|
| Never of very rarely true | Rarely true | Sometimes true | Often true | Very often or always true |

1. When I'm walking, I deliberately notice the sensations of my body moving.
2. I'm good at finding words to describe my feelings.
3. I criticize myself for having irrational or inappropriate emotions.
4. I perceive my feelings and emotions without having to react to them.
5. When I do things, my mind wanders off and I'm easily distracted.
6. When I take a shower or bath, I stay alert to the sensations of water on my body.
7. I can easily put my beliefs, opinions, and expectations into words.
8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
9. I watch my feelings without getting lost in them.
10. I tell myself I shouldn't be feeling the way I'm feeling.
11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
12. It's hard for me to find the words to describe what I'm thinking.
13. I am easily distracted.
14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
15. I pay attention to sensations, such as the wind in my hair or sun on my face.
16. I have trouble thinking of the right words to express how I feel about things.
17. I make judgments about whether my thoughts are good or bad.
18. I find it difficult to stay focused on what's happening in the present.
19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.
20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
21. In difficult situations, I can pause without immediately reacting.
22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.
23. It seems I am "running on automatic" without much awareness of what I'm doing.
24. When I have distressing thoughts or images, I feel calm soon after.
25. I tell myself that I shouldn't be thinking the way I'm thinking.
26. I notice the smells and aromas of things.
27. Even when I'm feeling terribly upset, I can find a way to put it into words.
28. I rush through activities without being really attentive to them.
29. When I have distressing thoughts or images I am able just to notice them without reacting.

30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.
31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
32. My natural tendency is to put my experiences into words.
33. When I have distressing thoughts or images, I just notice them and let them go.
34. I do jobs or tasks automatically without being aware of what I'm doing.
35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.
36. I pay attention to how my emotions affect my thoughts and behavior.
37. I can usually describe how I feel at the moment in considerable detail.
38. I find myself doing things without paying attention.
39. I disapprove of myself when I have irrational ideas.

Self-Compassion Scale – Short Form

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. Indicate how often you behave in the stated manner, using the following scale:

| 1 | 2 | 3 | 4 | 5 |
|--------------|----------|------------|-------------|---------------|
| Almost Never | A little | Moderately | Quite a bit | Almost Always |

1. When I fail at something important to me I become consumed by feelings of inadequacy.
2. I try to be understanding and patient towards those aspects of my personality I don't like.
3. When something painful happens I try to take a balanced view of the situation.
4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.
5. I try to see my failings as part of the human condition.
6. When I'm going through a very hard time, I give myself the caring and tenderness I need.
7. When something upsets me I try to keep my emotions in balance.
8. When I fail at something that's important to me, I tend to feel alone in my failure.
9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.
10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.
11. I'm disapproving and judgmental about my own flaws and inadequacies.
12. I'm intolerant and impatient towards those aspects of my personality I don't like.

Toronto Mindfulness Scale – Trait Version (Decentering Subscale)

Instructions: We are interested in your day-to-day experiences. Below is a list of things that people sometimes experience. Please read each statement. Please indicate the extent to which you agree with each statement: “not at all,” “a little,” “moderately,” “quite a bit,” and “very much.” In other words, how well does the statement describe your experience. There are no “right” or “wrong” answers, so please answer in a way that reflects your own experiences.

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

1. I experience myself as separate from my changing thoughts and feelings.
2. I am more concerned with being open to my experiences than controlling or changing them.
3. I experience my thoughts more as events in my mind than as a necessarily accurate reflection of the way things ‘really’ are.
4. I am receptive to observing unpleasant thoughts and feelings without interfering with them.
5. I am more invested in just watching my experiences as they arose, than in figuring out what they could mean.
6. I approach each experience by trying to accept it, no matter whether it was pleasant or unpleasant.
7. I am aware of my thoughts and feelings without overidentifying with them.

Acceptance and Action Questionnaire II

Below you will find a list of statements. Please rate how true each statement is for you. Use the scale below to make your choice.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------------|------------------|-------------|----------------|-----------------|--------------------|-------------|
| Never true | Very seldom true | Seldom true | Sometimes true | Frequently true | Almost always true | Always true |

1. It's OK if I remember something unpleasant.
2. My painful experiences and memories make it difficult for me to live a life that I would value.
3. I'm afraid of my feelings.
4. I worry about not being able to control my worries and feelings.
5. My painful memories prevent me from having a fulfilling life.
6. I am in control of my life.
7. Emotions cause problems in my life.
8. It seems like most people are handling their lives better than I am.
9. Worries get in the way of my success.
10. My thoughts and feelings do not get in the way of how I want to live my life.

Self-Concept Clarity

| 1 | 2 | 3 | 4 | 5 |
|-------------------|---|---|---|----------------|
| Strongly disagree | | | | Strongly agree |

1. My beliefs about myself often conflict with one another.
2. On one day I might have one opinion of myself and on another day I might have a different opinion.
3. I spend a lot of time wondering about what kind of person I really am.
4. Sometimes I feel that I am not really the person that I appear to be.
5. When I think about the kind of person I have been in the past, I'm not sure what I was really like.
6. I seldom experience conflict between the different aspects of my personality.
7. Sometimes I think I know other people better than I know myself.
8. My beliefs about myself seem to change very frequently.
9. If I were asked to describe my personality, my description might end up being different from one day to another day.
10. Even if I wanted to, I don't think I could tell someone what I'm really like.
11. In general, I have a clear sense of who I am and what I am.
12. It is often hard for me to make up my mind about things because I don't really know what I want.

Satisfaction with Life Scale

Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by selecting the appropriate number.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-------------------|----------|-------------------|----------------------------|----------------|-------|----------------|
| Strongly disagree | Disagree | Somewhat disagree | Neither agree nor disagree | Somewhat agree | Agree | Strongly agree |

1. In most ways my life is close to my ideal.
2. The conditions of my life are excellent.
3. I am satisfied with life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.

Demographics (Study 1)

Gender: Male Female

Age: _____

Which race or ethnicity do you consider yourself to be?

- White/Caucasian
- Black/African-American
- Hispanic/Latino
- Asian/Asian American
- American Indian or Alaskan Native
- Pacific Islander or Native Hawaiian
- Other (Please specify)

Please indicate your religion.

- Christian
- Jewish
- Buddhist
- Muslim
- Atheist
- Other (please specify)

My family's (e.g., parent's) current income is:

- More than approximately \$250,000/year
- Between \$25,000 and \$250,000/year
- Less than approximately \$25,000/year

How much prior experience do you have with mindfulness activities (formal meditation, yoga, etc.)?

| | | | | |
|------|----------|------|-------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| None | A little | Some | Quite a bit | A lot |

Which activities do you have experience with? (Check all that apply)

- Formal meditation
- Previously participated in MBSR
- Other meditation (please describe)
- Yoga
- Other (please describe)
- None

Please describe your past experience(s) with mindfulness activities. Describe the activity, when you participated, length of participation, and frequency of participation. If you have no prior experience with meditation related exercises, type 'None.'

How much interest do you currently have in learning about mindfulness?

| | | | | |
|------|----------|------|-------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| None | A little | Some | Quite a bit | A lot |

Demographics (Study 2)

Gender: Male Female

Age: _____

Which race or ethnicity do you consider yourself to be?

- White/Caucasian
- Black/African-American
- Hispanic/Latino
- Asian/Asian American
- American Indian or Alaskan Native
- Pacific Islander or Native Hawaiian
- Other (Please specify)

Please indicate your marital status.

- Single
- In a committed relationship
- Married
- Partnered/Living as married
- Separated
- Divorced
- Widowed
- Other (please specify)

Please indicate your religion.

- Christian
- Jewish
- Buddhist
- Muslim
- Atheist
- Other (please specify)

Please indicate your highest level of education completed.

- Some high school
- High school degree (or GED)
- Some college
- Vocational Certification or Associate's Degree
- Bachelor's Degree
- Graduate or professional degree (please specify degree and/or concentration)

What is your combined annual household income?

Under \$20,000

20,000 – 49,999

50,000 – 99,999

100,000 – 149,999

150,000+

What is your occupation? _____

Previous Mindfulness Experience (pre-assessment)

How much prior experience do you have with mindfulness activities (formal meditation, yoga, etc.)?

| | | | | |
|------|----------|------|-------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| None | A little | Some | Quite a bit | A lot |

Which activities do you have experience with? (Check all that apply)

- Formal meditation
- Previously participated in MBSR
- Other meditation (please describe)
- Yoga
- Other (please describe)
- None

Please describe your past experience(s) with mindfulness activities. Describe the activity, when you participated, length of participation, and frequency of participation. If you have no prior experience with meditation related exercises, type 'None.'

How much interest do you currently have in learning about mindfulness?

| | | | | |
|------|----------|------|-------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| None | A little | Some | Quite a bit | A lot |

Why are you interested in learning about mindfulness? (Check all that apply)

- Pain management
- Psychological (anger, depression, anxiety, etc.)
- Health concern (high blood pressure, heart, cancer, etc.)
- Stress management
- Personal/spiritual growth
- Other (please specify)
- I am not interested

Mindfulness Reflections for MBSR Condition (post-assessment)

How many of the eight weekly MBSR sessions did you attend?

- 8
- 7
- 6
- 5
- 4
- 3
- 2
- 1
- 0

Did you attend the full day of mindfulness?

Yes No Other (please explain)

How satisfied were you with the MBSR program?

| 1 | 2 | 3 | 4 | 5 |
|----------------------|--------------------|----------------------|-----------------|---------------------|
| Not at all satisfied | Slightly Satisfied | Moderately satisfied | Quite satisfied | Extremely satisfied |

Mindfulness Reflections for Control Condition (post-assessment)

Have you participated in any mindfulness-related activities over the last two months?

Yes No Not Sure

If yes or not sure, which activities did you participate in? (Check all that apply)

- Read mindfulness related book
- Implemented/practiced exercises or topics from mindfulness-related book
- Formal mediation – attended a class or group (please describe)
- Formal meditation – attended a retreat (please describe)
- Formal meditation – on my own (e.g., sitting meditation by myself, listened to a guided meditation, etc.; please describe)
- Informal mindfulness exercises (e.g., mindful eating, paid special attention to a feeling or sensation, etc.; please describe)
- Thought about, reflected on, or discussed with others a mindfulness topic
- Attended a mindfulness-related seminar, workshop, or course
- Yoga
- Martial Arts/Tai Chi/Qi Gong
- Other mindfulness-related exercises (please describe)
- Mindfulness based therapy
- Taught or led a group about a mindfulness-related topic (please describe)
- Prayer
- Other (please describe)

How much interest do you currently have in learning about mindfulness?

| | | | | |
|------|----------|------|-------------|-------|
| 1 | 2 | 3 | 4 | 5 |
| None | A little | Some | Quite a bit | A lot |

References

- Allport, G. W., & Vernon, P. E. (1931). A test for personal values. *The Journal of Abnormal and Social Psychology*, 26(3), 231-248.
- Anderson, N. D., Lau, M. A., Segal, Z. V., & Bishop, S. R. (2007). Mindfulness-based stress reduction and attentional control. *Clinical Psychology & Psychotherapy*, 14(6), 449-463. doi: 10.1002/cpp.544
- Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*, 10(2), 125-143. doi: 10.1093/clipsy/bpg015
- Baer, R.A., & Lykins, E.B. (2011). Mindfulness and positive psychological functioning. In K. M. Sheldon, T. B. Kashdan, M. F. Steger, K. M. Sheldon, T. B. Kashdan, M. F. Steger (Eds.), *Designing positive psychology: Taking stock and moving forward* (pp. 335-348). New York, NY: Oxford University Press. doi:10.1093/acprof:oso/9780195373585.003.0022
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using Self-Report Assessment Methods to Explore Facets of Mindfulness. *Assessment*, 13(1), 27-45. doi: 10.1177/1073191105283504
- Bardi A., & Schwartz, S.H. (2003). Values and behavior: Strength and structure of relations. *Personality and Social Psychology Bulletin*, 29(10), 1207-1220.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182. doi:10.1037/0022-3514.51.6.1173
- Baumeister, R.F. (1986). *Identity, cultural change, and the struggle for self*. New York: Oxford University Press.
- Baumgardner, A. H. (1990). To know oneself is to like oneself: Self-certainty and self-affect. *Journal of Personality and Social Psychology*, 58(6), 1062-1072. doi: 10.1037/0022-3514.58.6.1062
- Beddoe, A. E., & Murphy, S. O. (2004). Does mindfulness decrease stress and foster empathy among nursing students? *Journal of Nursing Education*, 43(7), 305-312.

- Biegel, G. M., Brown, K. W., Shapiro, S. L., & Schubert, C. M. (2009). Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 77*(5), 855-866. doi: 10.1037/a0016241
- Bishop, S. R., Lau, M. A., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., . . . Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice, 11*(3), 230-241. doi: 10.1093/clipsy/bph077
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., . . . Zettle, R. D. (2011). Preliminary psychometric properties of the Acceptance and Action Questionnaire - II: A revised measure of psychological flexibility and experiential avoidance. *Behavior Therapy, 42*(4), 676-688.
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*(4), 822-848. doi: 10.1037/0022-3514.84.4.822
- Brown, K.W., & Kasser, T. (2005). Are psychological and ecological well-being compatible? The role of values, mindfulness, and lifestyle. *Social Indicators Research, 74*(2), 349-368.
- Burke, C. A. (2010). Mindfulness-based approaches with children and adolescents: A preliminary review of current research in an emergent field. *Journal of Child and Family Studies, 19*(2), 133-144. doi: 10.1007/s10826-009-9282-x
- Campbell, J. D. (1990). Self-esteem and clarity of the self-concept. *Journal of Personality and Social Psychology, 59*(3), 538-549. doi: 10.1037/0022-3514.59.3.538
- Campbell, J. D., Trapnell, P. D., Heine, S. J., Katz, I. M., Lavallee, L. F., & Lehman, D. R. (1996). Self-concept clarity: Measurement, personality correlates, and cultural boundaries. *Journal of Personality and Social Psychology, 70*(1), 141-156. doi: 10.1037/0022-3514.70.1.141
- Carlson, L. E., Speca, M., Patel, K. D., & Goodey, E. (2004). Mindfulness-based stress reduction in relation to quality of life, mood, symptoms of stress and levels of cortisol, dehydroepiandrosterone sulfate (DHEAS) and melatonin in breast and prostate cancer outpatients. *Psychoneuroendocrinology, 29*(4), 448-474. doi: 10.1016/s0306-4530(03)00054-4
- Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a

- mindfulness-based stress reduction program. *Journal of Behavioral Medicine*, 31(1), 23-33. doi: 10.1007/s10865-007-9130-7
- Carmody, J., Baer, R.A., Lykins, E., & Olendzki, N. (2009). An empirical study of the mechanisms of mindfulness in a mindfulness-based stress reduction program. *Journal of Clinical Psychology*, 65(6), 613-626. doi: 10.1002/jclp.20579
- Carver, C. S., & Scheier, M. F. (1982). Control theory: A useful conceptual framework for personality–social, clinical, and health psychology. *Psychological Bulletin*, 92(1), 111-135. doi: 10.1037/0033-2909.92.1.111
- Carver, C. S., & Scheier, M. F. (2011). Self-regulation of action and affect. In K. D. Vohs & R. F. Baumeister (Eds.), *Handbook of self-regulation: Research, theory, and applications (2nd ed.)*. (pp. 3-21). New York, NY US: Guilford Press.
- Ciarrochi, J., Fischer, D., & Lane, L. (2011). The link between value motives and distress amongst people diagnosed with cancer. *Psycho-oncology*, 20, 1184-1192.
- Coffey, K.A., & Hartman, M. (2008). Mechanisms of action in the inverse relationship between mindfulness and psychological distress. *Complementary Health Practice Review*, 13(2), 79-91. doi:10.1177/1533210108316307
- Cohen J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale NJ: Lawrence Erlbaum.
- Cohen, S., Janicki-Deverts, D., & Miller, G. E. (2007). Psychological stress and disease. *JAMA: Journal of the American Medical Association*, 298(14), 1685-1687. doi: 10.1001/jama.298.14.1685
- Cole, D. A., & Maxwell, S. E. (2003). Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology*, 114, 558-577. doi:10.1037/0021-843X.112.4.558
- Collins, L. M., Graham, J. W., & Flaherty, B. P. (1998). An alternative framework for defining mediation. *Multivariate Behavioral Research*, 33, 295-312.
- Creswell, J. D., Myers, H. F., Cole, S. W., & Irwin, M. R. (2009). Mindfulness meditation training effects on CD4+ T lymphocytes in HIV-1 infected adults: A small randomized controlled trial. *Brain, Behavior, and Immunity*, 23(2), 184-188. doi: 10.1016/j.bbi.2008.07.004
- Creswell, J. D., Welch, W. T., Taylor, S. E., Sherman, D. K., Gruenewald, T. L., & Mann, T. (2005). Affirmation of Personal Values Buffers Neuroendocrine and

Psychological Stress Responses. *Psychological Science*, 16(11), 846-851. doi: 10.1111/j.1467-9280.2005.01624.x

- Dahl, J. C., Plumb, J. C., Stewart, I., & Lundgren, T. (2009). *The art and science of valuing in psychotherapy: Helping clients discover, explore, and commit to valued action using acceptance and commitment therapy*. Oakland, CA US: New Harbinger Publications.
- Dahl, J., Wilson, K. G., & Nilsson, A. (2004). Acceptance and Commitment Therapy and the treatment of persons at risk for long-term disability resulting from stress and pain symptoms: A preliminary randomized trial. *Behavior Therapy*, 35, 785–801.
- Davidson, R. J. (2010). Empirical explorations of mindfulness: Conceptual and methodological conundrums. *Emotion*, 10(1), 8-11. doi: 10.1037/a0018480
- Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., . . . Sheridan, J. F. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine*, 65(4), 564-570. doi: 10.1097/01.psy.0000077505.67574.e3
- Davis, K. M., Lau, M. A., & Cairns, D. R. (2009). Development and preliminary validation of a trait version of the Toronto Mindfulness Scale. *Journal of Cognitive Psychotherapy*, 23(3), 185-197. doi: 10.1891/0889-8391.23.3.185
- Deci, E. L., & Ryan, R. M. (1980). Self-determination theory: When mind mediates behavior. *Journal of Mind and Behavior*, 1(1), 33-43.
- Deci, E. L., & Ryan, R. M. (2008). Hedonia, eudaimonia, and well-being: An introduction. *Journal of Happiness Studies*, 9(1), 1-11. doi:10.1007/s10902-006-9018-1
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49(1), 71-75. doi: 10.1207/s15327752jpa4901_13
- Dorjee, D. (2010). Kinds and dimensions of mindfulness: Why it is important to distinguish them. *Mindfulness*, 1, 152-160. doi: 10.1007/s12671-010-0016-3
- Emmons, R. A. (1986). Personal strivings: An approach to personality and subjective well-being. *Journal of Personality and Social Psychology*, 51(5), 1058-1068. doi: 10.1037/0022-3514.51.5.1058

- Emmons, R. A. (1992). Abstract versus concrete goals: Personal striving level, physical illness, and psychological well-being. *Journal of Personality and Social Psychology*, 62(2), 292-300. doi: 10.1037/0022-3514.62.2.292
- Emmons, R. A., & Diener, E. (1986). A goal-affect analysis of everyday situational choices. *Journal of Research in Personality*, 20(3), 309-326. doi: 10.1016/0092-6566(86)90137-6
- Epstein, S. (1989). Values from the perspective of cognitive-experiential self-theory. In N. Eisenberg, J. Reykowski, & E. Staub (Eds.), *Social and moral values: Individual and societal perspectives* (pp. 3-22). Hillsdale, NJ: Lawrence Erlbaum.
- Erickson, R.J. (1995). The importance of authenticity for self and society. *Symbolic Interaction*, 18, 121-144.
- Evans, S.H. & Anastasio, E.J. (1968). Misuse of analysis of covariance when treatment effect and covariate are confounded. *Psychological Bulletin*, 69(4), 225-234.
- Feather, N. T. (1992). Values, valences, expectations, and actions. *Journal of Social Issues*, 48, 109-124.
- Fidell, L. S., & Tabachnick, B. G. (2003). Preparatory data analysis. In J.A. Schinka, W.F. Velicer (Eds.), *Handbook of psychology: Research methods in psychology, Vol. 2* (pp. 115-141). Hoboken, NJ: John Wiley & Sons Inc.
- Fledderus, M., Bohlmeijer, E. T., Smit, F., & Westerhof, G. J. (2010). Mental health promotion as a new goal in public mental health care: A randomized controlled trial of an intervention enhancing psychological flexibility. *American Journal of Public Health*, 100(12), 2372-2378. doi: 10.2105/ajph.2010.196196
- Fong, G., & Markus, H. (1982). Self-schemas and judgments about others. *Social Cognition*, 1, 191-204.
- Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*, 95(5), 1045-1062. doi: 10.1037/a0013262
- Furr, R. M., & Funder, D. C. (2007). Behavioral observation. In R. W. Robins, R. C. Fraley & R. F. Krueger (Eds.), *Handbook of research methods in personality psychology*. (pp. 273-291). New York, NY US: Guilford Press.

- Gold, E., Smith, A., Hopper, I., Herne, D., Tansey, G., & Hulland, C. (2010). Mindfulness-Based Stress Reduction (MBSR) for primary school teachers. *Journal of Child and Family Studies, 19*(2), 184-189. doi: 10.1007/s10826-009-9344-0
- Goldenberg, D. L., Kaplan, K. H., Nadeau, M. G., Brodeur, C., Smith, S., & Schmid, C. H. (1994). A controlled study of a stressreduction, cognitive-behavioral treatment program in fibromyalgia. *Journal of Musculoskeletal Pain, 2*, 53-66. doi: 10.1300/J094v02n02_05
- Goldin, P. R., & Gross, J. J. (2010). Effects of mindfulness-based stress reduction (MBSR) on emotion regulation in social anxiety disorder. *Emotion, 10*(1), 83-91. doi: 10.1037/a0018441
- Greeson, J. M. (2009). Mindfulness research update: 2008. *Complementary Health Practice Review, 14*(1), 10-18. doi: 10.1177/1533210108329862
- Greeson, J. M., Webber, D. M., Smoski, M. J., Brantley, J. G., Ekblad, A. G., Suarez, E. C., & Wolever, R. (2011). Changes in spirituality partly explain health-related quality of life outcomes after Mindfulness-Based Stress Reduction. *Journal of Behavioral Medicine, 34*(6), 508-518. doi:10.1007/s10865-011-9332-x
- Gross, C. R., Kreitzer, M. J., Russas, V., Treesak, C., Frazier, P. A., & Hertz, M. I. (2004). Mindfulness meditation to reduce symptoms after organ transplant: A pilot study. *Advances in Mind-Body Medicine, 20*(2), 20-29.
- Grossman, P., Tiefenthaler-Gilmer, U., Raysz, A., & Kesper, U. (2007). Mindfulness training as an intervention for fibromyalgia: Evidence of postintervention and 3-year follow-up benefits in well-being. *Psychotherapy and Psychosomatics, 76*(4), 226-233.
- Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy, 44*(1), 1-25. doi: 10.1016/j.brat.2005.06.006
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and Commitment Therapy: An experiential approach to behavior change*. New York: Guilford Press.
- Hewitt, J.P. (1997). *Self and society: A symbolic interactionist social psychology*. Boston, MA: Allyn and Bacon.
- Hitlin, S. (2003). Values as the core of personal identity: Drawing links between two theories of self. *Social Psychology Quarterly, 66*(2), 118-137. doi: 10.2307/1519843

- Haslam, N., Whelan, J., & Bastian, B. (2009). Big Five traits mediate associations between values and subjective well-being. *Personality and Individual Differences, 46*, 40–42.
- Jha, A. P., Krompinger, J., & Baime, M. J. (2007). Mindfulness training modifies subsystems of attention. *Cognitive, Affective & Behavioral Neuroscience, 7*(2), 109-119. doi: 10.3758/cabn.7.2.109
- Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Chicago, IL: Hillsdale.
- Kabat-Zinn, J. (1982). An out-patient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry, 4*, 33-47.
- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. New York: Delacorte.
- Kabat-Zinn, J. (2007). Mindfulness, stress reduction, and healing [Video file]. Retrieved from <http://www.youtube.com/watch?v=rSU8ftmmhmw>.
- Kabat-Zinn, J., Lipworth, L., & Burney, R. (1985). The clinical use of mindfulness meditation for the self-regulation of chronic pain. *Journal of Behavioral Medicine, 8*(2), 163-190. doi: 10.1007/bf00845519
- Kabat-Zinn, J., Lipworth, L., Burney, R., & Sellers, W. (1986). Four-year follow-up of a meditation-based program for the self-regulation of chronic pain: Treatment outcomes and compliance. *The Clinical Journal of Pain, 2*(3), 159-774.
- Kabat-Zinn, J., Massion, A. O., Kristeller, J., & Peterson, L. G. (1992). Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *The American Journal of Psychiatry, 149*(7), 936-943.
- Kabat-Zinn, J., Wheeler, E., Light, T., Skillings, A., Scharf, M. J., Cropley, T. G., . . . Bernhard, J. D. (1998). Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA). *Psychosomatic Medicine, 60*(5), 625-632.
- Kang, C., & Whittingham, K. (2010). Mindfulness: A dialogue between Buddhism and clinical psychology. *Mindfulness, 1*(3), 161-173. doi: 10.1007/s12671-010-0018-1

- Kaplan, K. H., Goldenberg, D. L., & Galvin-Nadeau, M. (1993). The impact of a meditation-based stress reduction program on fibromyalgia. *General Hospital Psychiatry, 15*(284–289). doi: 10.1016/0163-8343(93)90020-O
- Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review, 30*(4), 467-480. doi: 10.1016/j.cpr.2010.03.001
- Kenny, D. A., Kashy, D. A., & Bolger, N. (1998). Data analysis in social psychology. In D. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology (4th ed., Vol. 1, pp. 233-265)*. New York, NY: McGraw-Hill.
- Keyes, C. M. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of Health and Social Behavior, 43*(2), 207-222. doi:10.2307/3090197
- Kimbrough, E., Magyari, T., Langenberg, P., Chesney, M., & Berman, B. (2010). Mindfulness intervention for child abuse survivors. *Journal of Clinical Psychology, 66*(1), 17-33.
- Kline, R.B. (2011). *Principles and practice of structural equation modeling*. New York, NY: Guilford Press.
- Koestner, R., Lekes, N., Powers, T. A., & Chicoine, E. (2002). Attaining personal goals: Self-concordance plus implementation intentions equals success. *Journal of Personality and Social Psychology, 83*(1), 231-244. doi: 10.1037/0022-3514.83.1.231
- Kristiansen, C. M., & Zanna, M. P. (1988). Justifying attitudes by appealing to values: A functional perspective. *British Journal of Social Psychology, 27*(3), 247-256.
- Lau, M. A., Bishop, S. R., Segal, Z. V., Buis, T., Anderson, N. D., Carlson, L., . . . Devins, G. (2006). The Toronto Mindfulness Scale: Development and Validation. *Journal of Clinical Psychology, 62*(12), 1445-1467. doi: 10.1002/jclp.20326
- Lillis, J., Hayes, S. C., Bunting, K., & Masuda, A. (2009). Teaching acceptance and mindfulness to improve the lives of the obese: A preliminary test of a theoretical model. *Annals of Behavioral Medicine, 37*(1), 58-69. doi: 10.1007/s12160-009-9083-x
- Little, B. R. (1983). Personal projects: A rationale and method for investigation. *Environment and Behavior, 15*(3), 273-309. doi: 10.1177/0013916583153002
- Luk, C. L., & Bond, M. H. (1993). Personality variation and values endorsement in Chinese university students. *Personality and Individual Differences, 14*, 429–437.

- Lundgren, T., Dahl, J., & Hayes, S. C. (2008). Evaluation of mediators of change in the treatment of epilepsy with acceptance and commitment therapy. *Journal of Behavioral Medicine, 31*, 225-235.
- Lydon, J. E., & Zanna, M. P. (1990). Commitment in the face of adversity: A value-affirmation approach. *Journal of Personality and Social Psychology, 58*(6), 1040-1047. doi: 10.1037/0022-3514.58.6.1040
- Lykins, E. L. B., & Baer, R. A. (2009). Psychological functioning in a sample of long-term practitioners of mindfulness meditation. *Journal of Cognitive Psychotherapy, 23*(3), 226-241. doi: 10.1891/0889-8391.23.3.226
- MacKinnon, D.P. & Fairchild, A.J. (2009). Current directions in mediation analysis. *Current Directions in Psychological Science, 18*(1), 16-20.
- MacKinnon, D.P., Krull, J.L., & Lockwood, C.M. (2000). Equivalence of the mediation, confounding, and suppression effect. *Prevention Science, 1*, 173-181.
- Maio, G.R., & Olson, J.M. (1995). Relations between values, attitudes, and behavioral intentions: The moderating role of attitude function. *Journal of Experimental Social Psychology, 31*, 266-285.
- Maio, G.R., & Olson, J.M. (2000). What is a “value-expressive” attitude? In G.R. Maio & J.M. Olson (Eds.), *Why we evaluate: Functions of attitudes* (pp. 249-269). Mahwah, NJ: Erlbaum.
- Markus, H. R. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35*, 63-78.
- Matousek, R. H., Dobkin, P. L., & Pruessner, J. (2010). Cortisol as a marker for improvement in mindfulness-based stress reduction. *Complementary Therapies in Clinical Practice, 16*(1), 13-19. doi: DOI: 10.1016/j.ctcp.2009.06.004
- Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods, 12*, 23-44. doi:10.1037/1082-989X.12.1.23
- McCown, D., & Reibel, D. (2010). Mindfulness and mindfulness-based stress reduction. In D. A. Monti & B. D. Beitman (Eds.), *Integrative psychiatry*. (pp. 289-338). New York, NY US: Oxford University Press.
- McCracken, L.M., & Yang, S.Y. (2006). The role of values in a contextual cognitive-behavioral approach to chronic pain. *Pain, 123*(1-2), 137-145. doi: 10.1016/j.pain.2006.02.021

- Michelson, S. E., Lee, J. K., Orsillo, S. M., & Roemer, L. (2011). The role of values-consistent behavior in generalized anxiety disorder. *Depression and Anxiety, 28*(5), 358-366. doi: 10.1002/da.20793
- Miller, G. A., & Chapman, J. P. (2001). Misunderstanding analysis of covariance. *Journal of Abnormal Psychology, 110*(1), 40-48. doi:10.1037/0021-843X.110.1.40
- Miller, J. J., Fletcher, K., & Kabat-Zinn, J. (1995). Three-year follow-up and clinical implications of a mindfulness meditation-based stress reduction intervention in the treatment of anxiety disorders. *General Hospital Psychiatry, 17*(3), 192-200. doi: 10.1016/0163-8343(95)00025-m
- Morris, C. (1956). *Varieties of human value*. Chicago: University of Chicago Press.
- Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*(3), 223-250. doi: 10.1080/15298860309027
- Parks, L., & Guay, R. P. (2009). Personality, values and motivation. *Personality and Individual Differences, 47*, 675-684.
- Plumb, J. C., Stewart, I., Dahl, J., & Lundgren, T. (2009). In search of meaning: Values in modern clinical behavior analysis. *The Behavior Analyst, 32*, 85-103.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments & Computers, 36*(4), 717-731.
- Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology & Psychotherapy, 18*(3), 250-255.
- Ramel, W., Goldin, P. R., Carmona, P. E., & McQuaid, J. R. (2004). The effects of mindfulness meditation on cognitive processes and affect in patients with past depression. *Cognitive Therapy and Research, 28*(4), 433-455. doi: 10.1023/b:cotr.0000045557.15923.96
- Reibel, D. K., Greeson, J. M., Brainard, G. C., & Rosenzweig, S. (2001). Mindfulness-based stress reduction and health-related quality of life in a heterogeneous patient population. *General Hospital Psychiatry, 23*(4), 183-192. doi: 2001-18794-00210.1016/S0163-8343(01)00149-9. 10.1016/S0163-8343(01)00149-9
- Roccas S., Sagive L., & Knafo A. (2002). The big five personality factors and personal values. *Personality & Social Psychology Bulletin, 28*, 789-801.

- Rohan, M.J. (2000). A rose by any name? The values construct. *Personality and Social Psychology Review*, 4(3), 255-277.
- Rokeach, M. (1968). A theory of organization and change within value-attitude systems. *Journal of Social Issues*, 24(1), 13-33.
- Rokeach, M. (1973). *The nature of human values*. New York: Free Press.
- Rosenthal, R. (1984). *Meta-analytic procedures for social research*. Beverly Hills, CA: Sage.
- Rosenzweig, S., Reibel, D. K., Greeson, J. M., Brainard, G. C., & Hojat, M. (2003). Mindfulness-Based Stress Reduction Lowers Psychological Distress In Medical Students. *Teaching and Learning in Medicine*, 15(2), 88-92. doi: 10.1207/s15328015t1m1502_03
- Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, 57(5), 749-761. doi: 10.1037/0022-3514.57.5.749
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68-78. doi: 10.1037/0003-066x.55.1.68
- Ryan, R. M., Huta, V., & Deci, E. L. (2008). Living well: A self-determination theory perspective on eudaimonia. *Journal of Happiness Studies*, 9(1), 139-170. doi:10.1007/s10902-006-9023-4
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069-1081. doi: 10.1037/0022-3514.57.6.1069
- Schmertz, S. K., Anderson, P. L., & Robins, D. L. (2009). The relation between self-report mindfulness and performance on tasks of sustained attention. *Journal of Psychopathology and Behavioral Assessment*, 31(1), 60-66. doi: 10.1007/s10862-008-9086-0
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 24, pp. 1-65). San Diego: Academic.
- Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues*, 50(4), 19-45.

- Schwartz, S. H., & Bilsky, W. (1987). Toward a universal psychological structure of human values. *Journal of Personality and Social Psychology*, 53(3), 550-562. doi: 10.1037/0022-3514.53.3.550
- Seligman, M.E.P. (2002). *Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment*. New York, NY: Free Press.
- Seligman, M.E.P. (2011). *Flourish: A visionary new understanding of happiness and well-being*. New York, NY US: Free Press.
- Shand, A. F. (1896). Character and the emotions. *Mind*, 17, 203–226.
- Shapiro, S. L., Astin, J. A., Bishop, S. R., & Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *International Journal of Stress Management*, 12(2), 164-176. doi: 10.1037/1072-5245.12.2.164
- Shapiro, S. L., Brown, K. W., & Biegel, G. M. (2007). Teaching self-care to caregivers: Effects of mindfulness-based stress reduction on the mental health of therapists in training. *Training and Education in Professional Psychology*, 1(2), 105-115. doi: 10.1037/1931-3918.1.2.105
- Shapiro, S. L., Brown, K. W., Thoresen, C., & Plante, T. G. (2011). The moderation of mindfulness-based stress reduction effects by trait mindfulness: Results from a randomized controlled trial. *Journal of Clinical Psychology*, 67(3), 267-277. doi: 10.1002/jclp.20761
- Shapiro, S. L., Oman, D., Thoresen, C. E., Plante, T. G., & Flinders, T. (2008). Cultivating mindfulness: Effects on well-being. *Journal of Clinical Psychology*, 64(7), 840-862. doi: 10.1002/jclp.20491
- Shapiro, S. L., Schwartz, G. E., & Bonner, G. (1998). Effects of mindfulness-based stress reduction on medical and premedical students. *Journal of Behavioral Medicine*, 21(6), 581-599. doi: 10.1023/a:1018700829825
- Shapiro, S. L., Schwartz, G. E. R., & Santerre, C. (2002). Meditation and positive psychology. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology*. (pp. 632-645). New York, NY US: Oxford University Press.
- Sheldon, K. M. (2002). The self-concordance model of healthy goal striving: When personal goals correctly represent the person. In E. L. Deci, R. M. Ryan, E. L. Deci, R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 65-86). Rochester, NY: University of Rochester Press.

- Sheldon, K. M., & Elliot, A. J. (1998). Not all personal goals are personal: Comparing autonomous and controlled reasons for goals as predictors of effort and attainment. *Personality and Social Psychology Bulletin*, *24*(5), 546-557. doi: 10.1177/0146167298245010
- Sheldon, K. M., & Kasser, T. (1995). Coherence and congruence: Two aspects of personality integration. *Journal of Personality and Social Psychology*, *68*(3), 531-543. doi: 10.1037/0022-3514.68.3.531
- Sheldon, K. M., & Kasser, T. (1998). Pursuing personal goals: Skills enable progress, but not all progress is beneficial. *Personality and Social Psychology Bulletin*, *24*(12), 1319-1331. doi: 10.1177/01461672982412006
- Sheldon, K. M., & Kasser, T. (2001). Getting older, getting better? Personal strivings and psychological maturity across the life span. *Developmental Psychology*, *37*(4), 491-501. doi: 10.1037/0012-1649.37.4.491
- Smith, M.B. (1991). *Values, self, and society: Toward a humanist social psychology*. New Brunswick, NJ: Transaction.
- Specia, M., Carlson, L. E., Goodey, E., & Angen, M. (2000). A randomized, wait-list controlled clinical trial: The effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients. *Psychosomatic Medicine*, *62*(5), 613-622.
- Stopa, L., Brown, M. A., Luke, M. A., & Hirsch, C. R. (2010). Constructing a self: The role of self-structure and self-certainty in social anxiety. *Behaviour Research and Therapy*. doi: 10.1016/j.brat.2010.05.028
- Suckling, J. (2010). Correlated covariates in ANCOVA cannot adjust for pre-existing differences between groups. *Schizophrenia Research*, *126*, 310-311.
- Teasdale, J. D., Segal, Z. V., Williams, J. M. G., Ridgeway, V. A., Soulsby, J. M., & Lau, M. A. (2000). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology*, *68*(4), 615-623. doi: 10.1037/0022-006x.68.4.615
- Valentine, E. R., & Sweet, P. L. G. (1999). Meditation and attention: A comparison of the effects of concentrative and mindfulness meditation on sustained attention. *Mental Health, Religion & Culture*, *2*(1), 59-70. doi: 10.1080/13674679908406332
- Vallacher, R. R., & Wegner, D. M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review*, *94*(1), 3-15. doi: 10.1037/0033-295x.94.1.3

- van den Hurk, P., Giommi, F., Gielen, S., Speckens, A., & Barendregt, H. (2010). Greater efficiency in attentional processing related to mindfulness meditation. *The Quarterly Journal of Experimental Psychology*, 63(6), 1168-1180. doi: 10.1080/17470210903249365
- Van Selst, M., & Jolicoeur, P. (1994). A solution to the effect of sample size on outlier elimination. *The Quarterly Journal Of Experimental Psychology A: Human Experimental Psychology*, 47A(3), 631-650.
- Veage, S. Ciarrochi, J., & Heaven, P.C.L (2011). Importance, pressure, and success: Dimensions of values and their links to personality. *Personality and Individual Differences*, 50, 1180-1185.
- Verplanken, B., & Holland, R. W. (2002). Motivated decision making: Effects of activation and self-centrality of values on choices and behavior. *Journal of Personality and Social Psychology*, 82(3), 434-447. doi: 10.1037/0022-3514.82.3.434
- Weiss, M., Nordlie, J. W., & Siegel, E. P. (2005). Mindfulness-Based Stress Reduction as an Adjunct to Outpatient Psychotherapy. *Psychotherapy and Psychosomatics*, 74(2), 108-112. doi: 10.1159/000083169
- Williams, K. A., Kolar, M. M., Reger, B. E., & Pearson, J. C. (2001). Evaluation of a wellness-based mindfulness stress reduction intervention: A controlled trial. *American Journal of Health Promotion*, 15, 422-432.
- Wilson, K. G., Sandoz, E. K., Kitchens, J., & Roberts, M. (2010). The Valued Living Questionnaire: Defining and measuring valued action within a behavioral framework. *The Psychological Record*, 60(2), 249-272.
- Wilson, T. D., Aronson, E., & Carlsmith, K. (2010). The art of laboratory experimentation. In S. T. Fiske, D. T. Gilbert & G. Lindzey (Eds.), *Handbook of social psychology, Vol 1 (5th ed.)*. (pp. 51-81). Hoboken, NJ US: John Wiley & Sons Inc.

Biography

Jennifer Lynn Guadagno was born in Las Vegas, Nevada on October 25, 1984.

Jennifer received her Bachelor of Arts in Psychology from Pepperdine University in 2007 and her Masters of Arts in Social Psychology from Duke University in 2010. She received a National Science Foundation Graduate Research Fellowship in 2009.

List of Publications

Leary, M.R., & Guadagno, J. (2011). The role of hypo-egoic self-processes in optimal functioning and subjective well-being. In K. Sheldon, T.B. Kashdan, & M.F. Steger (Eds.), *Designing the future of positive psychology: Taking stock and moving forward*. New York: Oxford University Press.

Leary, M. R., & Guadagno, J. (2010). The sociometer, self-esteem, and the regulation of interpersonal behavior. In K.D. Vohs & R.F. Baumeister (Eds.), *Handbook of self-regulation: Research, theory, and applications* (2nd ed). New York: Guilford Publications.

Smart Richman, L. & Guadagno, J. Stigmatization and select attention to signs of acceptance following rejection. *Manuscript in preparation*.

Leary, M. R., Terry, M., Batts-Allen, A., Guadagno, J., & Catalino, L. An integrative model of the determinants of self-enhancement and self-deprecation. *Manuscript in preparation*.