THESIS

EXAMINING MINDFULNESS-BASED TRAINING EFFECTS UPON UNCERTAINTY

REDUCTION IN INITIAL INTERACTION BETWEEN STRANGERS

Submitted by

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ABSTRACT

EXAMINING MINDFULNESS-BASED TRAINING EFFECTS UPON UNCERTAINTY

REDUCTION IN INITIAL INTERACTION BETWEEN STRANGERS

This research project is meant to supplement the extant literature on initial interaction between strangers. The central inquiries of this study examine whether individuals can reduce relational automaticity found in initial interactions and, in turn, embody more openness toward strangers. The study investigates the growing field of mindfulness practice, known for reducing behavioral automaticity and boosting pro-social effects, and determines how it impacts the relational outcomes in initial interaction. To accomplish this, it compares the performance of two experimental groups in initial interaction, one group that is exposed to a mindfulness treatment and one control. By analyzing the participants' uncertainty reduction strategies, this research aims to determine whether mindfulness plays a moderating role for uncertainty reduction in initial interaction.

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CHAPTER ONE: INTRODUCTION

A common adage, "practice makes perfect," has been a motivational staple for teachers, coaches, mentors, and instructors for decades. Infused in the phrase is a notion suggesting that if one puts in the necessary time and effort into a particular endeavor, he or she will inevitably become better at the task. As humans, there are certain things that we are not naturally skilled at performing. Public speaking, for example, has been an activity notorious for its anxiety provoking and incapacitating effects, yet, as many individuals come to find, it is a skill capable of refinement, and the fear of public speaking can be overcome when given proper training (source). A similar such task that can be equally challenging, unnerving, and unnatural is engaging strangers in initial interaction. Despite the need, however, few scholars have been able to prescribe practices and resources that aid in positive relational outcomes in initial interaction.

Like public speaking, initial interaction is a performance fraught with uncertainty (Berger & Calabrese, 1975) and accompanied by its affective equivalent, anxiety (Gudykunst, 2005). However, despite the way the experience makes us feel, we inevitably find ourselves in the company of strangers nearly every day (i.e., passersby, store clerks, newly hired co-workers), and depending on our ability to manage uncertainty and negative affect in initial interaction, a variety of outcomes can transpire, both positive and negative. For example, friendships can be made, conflicts can be started, knowledge can be gained, and socially divisive perceptions can be reinforced. Of course, as our diverse society continues to mature, it is vital that we aim to limit negative relational outcomes and increase positive ones. A promising avenue for this endeavor is practicing mindfulness, for as Gudykunst (2005) explains, if persons are not mindful during communication, the communication is ineffective.

Thus, in pursuit of a practice that will foster effective communication with and openness to strangers in initial interaction, this study will integrate mindfulness practice with the initial interaction framework and, in turn, investigate its comparative efficacy with less mindful exchanges in initial interaction. The rationale for this study will unfold in the following stages. First, it will explore the nature of mindfulness practice and the function it has served in other contexts. Next, the review will address the variables that hinder openness to strangers— uncertainty and anxiety—as well as how previous scholars have sought to understand uncertainty as it unfolds in initial interaction. Finally, it will transition into how mindfulness may play a moderating role in uncertainty reduction in initial interaction by positing hypotheses and a research question.

Literature Review

Mindfulness*. As Kabat-Zinn (1993) explains, mindfulness is "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment" (p. 145). Previous research has found support for mindfulness's positive effect on relational well-being. For instance, Barnes, Brown, Krusemark, Campbell, and Rogge (2007) suggest that, by its propensity to increase quality partner communication, mindfulness may be an integral feature of relationship satisfaction. Further, Saavedra, Chapman, & Rogge (2010) report an association between mindfulness and improved intimate relationship satisfaction. Other studies similarly show that engaging in mindfulness meditation training positively influences one's sense of social connectedness (Cohen & Miller, 2009; Hutcherson, Seppala, & Gross, 2008). For example, Hutcherson et al. (2008) found that a brief loving-kindness meditation increased individuals' feeling of social connection and positivity toward strangers on both explicit and implicit levels. Additionally, studies have found

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mindfulness to positively alter relational schema, or cognitive structures that delineate interpersonal relatedness (Lee et al., 2001), by increasing levels of empathic identification (Shapiro, Schwartz, & Bonner, 1998). Furthermore, Block and Wulfert (2000) found that mindfulness training can improve performance in social situations and reduce social anxiety; this conclusion may, in part, be due to mindfulness's association with enhanced regulation of affect (Brown & Ryan, 2003; Creswell, Way, Eisenberger, & Lieberman, 2007) as well as its ability to temper cortisol responses to acute social stressors (Brown, Weinstein, & Creswell, 2012). Finally, neuroscientists have observed mindfulness training's effects on the brain. Specifically, studies have found that prolonged mindfulness training (i.e., many mindfulness-based stress reduction interventions can be eight weeks or longer) has been associated with increased alpha activity, which is an indicator of relaxation and decreased anxiety, increased theta activity, which is a marker for reduced state and trait anxiety, and increased gamma activity, which assists in affect regulation (Treadway & Lazar, 2009).

When considering the mindfulness and mindlessness in initial interaction, it is important to consider, too, the automaticity that exists in interactive exchanges. Kang, Gruber, and Gray (2013) define automaticity as "the ability to effortlessly engage in behaviors without paying conscious attention to their operational details" (p. 193). As Langer (1989) points out, individuals are typically not acutely aware of their behavior while engaging with others because many communicative acts are habitual or routine (e.g., Schneider & Chein, 2003)—they do not require a high degree of cognitive attention. While automaticity may have its benefits, it is important to consider how it may be detrimental, as well. For instance, Kang, Gruber, and Gray (2013) discovered that highly automatized cognitive and emotional responses are associated with negative social and individual outcomes such as stereotyped prejudice and negative thought

patterns found in mental disorders. Knowing the negative outcomes of automaticity, then, it is important to continually reflect on the day to day occurrences that operate in this fashion. Engaging strangers in initial interaction is a context that has received considerable attention for decades; however, research is lacking in determining the potentially harmful effects of automaticity found in initial interaction and, in turn, how a practice such as mindfulness may benefit relational outcomes.

As Berger and Calabrese (1975) indicate, the action that takes place between strangers occurs in a relatively routine, or automatic, fashion—especially in the entry phase of relationship building where strangers initially meet and reduce uncertainty about each other and the particular social context. For instance, the entry phase typically abides by implicit and explicit interactional rules such as types of disclosure, reciprocity of shared information, and information seeking tactics. Then, as strangers engage in initial interaction, they also categorize the self in regard to a particular class of stimuli, either as similar or dissimilar (e.g., comparing social class, race, age, sex) (Turner et al., 1987). These categorizations are cognitive groupings that construct notions of "us" vs. "them" (Turner, Oakes, Haslam, & McGarty, 1994).

As Devine and colleagues explain (Devine, 1989; Devine, Evett, & Vasquez-Suson, 1996; Devine, Monteith, Zuwerink, & Elliot, 1991; Plant & Devine, 1998), social categorization schemes are automatic cognitive processes as well. They begin, for example, in childhood—the bond between parents and child offers a child's burgeoning mind an initial sense of likeness and security with another. In adolescence, these attachments broaden to peer affiliations and group memberships based on appearance, interests, and talents. Finally, adulthood assimilates the past and present relationship experiences into a relatively stable sense of self in relation to others, providing an individual with a boundary of social connectedness (Lee & Robbins, 1995). While

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these automatic tendencies may be inherent, however, there are benefits to broadening one's sense of social connectedness, which refers to a cognitive framing of one's enduring interpersonal closeness with the social world (Lee, Draper, & Lee, 2001).

The benefit of social connection has been well illustrated by research. For example, it has been linked to increases in psychological and physical well-being (Brown, Nesse, Vinokur, & Smith, 2003; De Vries, Glasper, & Detillion, 2003) as well as decreases in the risk of depression and poor physical health (Hawkley, Masi, Berry, & Cacioppo, 2006). However, while the benefits of social connection are evident, the form and quality of connection have become less clear in a contemporary social sphere influenced by technology and online communication. A recent study by Pollet, Roberts, & Dunbar (2010) suggests that having a large online social network and involvement with social media does not necessarily translate into having a larger offline network, and interaction with the online network is not associated with stronger feelings of emotional closeness with the offline network. Furthermore, Reich, Espinoza, & Subrahmanyam (2012) explain that, amongst adolescents and young teens, social media and online communication are predominantly used for communicating with established friendships—that is, even though social media and online communication provide an opportunity to engage with strangers and unknown others, it is not as common to use these mediums for this purpose. Undoubtedly, it will be worthwhile to investigate computer mediated stranger interaction in the future; however, this study intends to build off the extant literature on mindfulness practice by investigating the effect it has upon face-to-face interaction between strangers. As the amount of research evidencing mindfulness's beneficial effects grows, researchers have been refining how this process works.

With growing appeal, yet arising from a historic tradition, Kabat-Zinn, Lipworth, and Burney (1985) offered four integral elements of mindfulness: awareness, sustained attention, focus on present moment, and nonjudgmental acceptance. By integrating these principles, Glomb, Duffy, Bono, and Yang (2011) have theorized that mindfulness assists individuals in (1) decentering oneself, or one's ego, from events, experiences, thoughts, and emotions, (2) mitigation of mental automaticity linked to past experience, schemas, and habitual cognitions, and (3) increased attention to and regulation of physiological. For example, basic instances of mindfulness in an interaction may include noticing the positioning of oneself in regard to another when engaging in conversation, being aware of our bodies sitting, standing, and expressing while communicating, and paying attention to eye contact, gestures, and intonation of voice (Siegel, Germer, & Olendzki, 2009). Also, in regard to decentering one's ego, mindfulness would encourage an individual to experience the encounter apart from ego-attached notions such as social identity and group affiliation. Furthermore, in this example, mindfulness involves acknowledging the presence of various cues but also refraining from casting negative evaluations toward them (Glomb et al., 2011) such as a furrowed brow or a prolonged silence.

Very little research, if any, has specifically integrated mindfulness with face to face initial interaction. Independently, both have acquired an extensive amount of supporting literature and, at times, elucidated complimentary concepts. The following sections will explore the components found within initial interaction in further depth as well as explain the way scholars have theorized their operationalization in Uncertainty Reduction Theory (URT) and the Theory of Motivated Information Management (TMIM). Coupled with mindfulness literature, the following principles will offer a basis for experimentation.

Uncertainty. Uncertainty refers to "the number of alternative outcomes possible in a given situation and the relative likelihood of their occurrence" (Baxter & Braithwaite, 2009, p. 26). In this conceptualization, which was pioneered by Shannon and Weaver (1949), uncertainty increases in two ways: (a) when the number of alternative outcomes increases and (b) when the probabilities of alternative outcomes occurring become equal. Bridging from this work, Berger & Calabrese (1975) recognized that uncertainty is particularly salient in initial interaction. Their application of uncertainty illustrated that, in any interaction, uncertainty arises from a lack of knowledge about ourselves and others. Whether it be the complexity of an issue, a variety of potential outcomes, lack of quality information, or ill-structured information (Babrow, Kasch, & Ford, 1998), the freedom of choices or alternatives in a situation (Shannon & Weaver, 1949), an unpredictable environment (Berger & Bradec, 1982), or difficulty in judging the probability of various actions (Ford, Babrow, & Stohl, 1996), uncertainty appears to be an unavoidable component of initial interaction. As Goldsmith (2001) explains, uncertainty is a fundamental human experience, and communication is integral to managing this uncertainty effectively. However, despite humans' desire to reduce uncertainty (Berger & Calabrese, 1975), it does serve a critical social function.

Experiencing uncertainty is an adaptive mechanism. For example, research suggests that uncertainty may be conducive to cognitive development and motivation (Acredolo & O'Connor, 1991). Because certainty is a rather idealized and unobtainable state (Kramer, 2004), and complete predictability is more illusory than achievable (Bradac, 2001), living in uncertainty has been a progress instigating force for humankind. Also, even if complete certainty was attainable, it would likely be undesirable. Baxter & Montgomery (1996) argue that humans are torn between the comfort found in predictability and the excitement found in novelty. As the following section

will further illuminate, however, experiencing anxiety and uncertainty in the presence of strangers may have had important survival ramifications for our ancestral kin. Insights from an evolutionary perspective will assist in answering *why*—why do we automatically experience uncertainty in initial interaction? The upcoming section will explore two potential answers to this question; it will integrate perspectives outlining both the proximal (nurtured) and ultimate (natured) causes of uncertainty.

Distinguishing the two causal systems of uncertainty is relevant to this study because both can explain our inherent uncertainty of stranger—proximal causes influence an individual through acquired pathways while ultimate causes influence an individual through innate pathways (Floyd, 2014). To explain further, the proximal causes are from acquired pathways because they are the product of one's environment and social influence while ultimate causes are from innate pathways which are engrained through heredity and ancestral history. Most of the uncertainty research mentioned thus far has described the proximal causes of uncertainty; however, in contrast to proximal causes, the ultimate causes of uncertainty describe it as a function of one's survival and/or the reproduction of one's genes. Contemporary communication scholars have been pushing for a bio-evolutionary perspective to be applied to the field of communication research, for as interpersonal communication scholar Floyd (2014) states, "[i]t would be profoundly naïve to believe that modern developments erase the effects of thousands of years of evolutionary pressures on human behavior" (p. 4). Furthermore, understanding both the proximal and ultimate causes of uncertainty will benefit our understanding of the potential role mindfulness may, or may not, be able to play in the management of uncertainty in initial interaction. While many mindfulness studies have investigated de-automatization (see Kang et al., 2013), more research is needed to specify whether mindfulness is fit to thwart proximal

automaticity, ultimate automaticity, or both. To consider an evolutionary perspective, however, it is important to analyze the social life of our ancestors and how, particularly, they came to regard strangers.

Research suggests that humans originated from small, cooperative bands or tribes of people (Richerson & Boyd, 2005) who were predominantly biologically related (Foley, 1992). Beyond intergroup trade or warfare, contact between the small nomadic groups was infrequent and they were therefore left to fight for their own survival and wellbeing (Wright, 1994). According to the principles of inclusive fitness (Hamilton, 1964), an innate drive of humans is to ensure the survival of their own genetic lineage. Consequently, humans prioritize the well-being of their genetically related kin above and beyond the well-being of non-related humans (Hamilton, 1964). It comes as no surprise, then, that related individuals would form groups, as doing so allowed them to aid and look after each other. In fact, Brewer & Caporael (1990) explain that the formation of cooperative groups was, perhaps, the primary survival strategy of our ancestors because lone individuals are simply more vulnerable to the hostile forces of nature and are at an obvious disadvantage when competing with humans obliging to cooperative groups. Upon the emergence of homogenous groups, however, was the inherent presence of out-groups, or strangers. As contact increased, struggles between these groups inevitably ensued.

As human population began to grow, so did the intergroup contact and aggression used to secure resources (Blute, 2010). As hunter-gatherer societies became more complex and numbered, there was an emergence of a sedentary lifestyle and the likeness of property ownership—conflict would arise from the overt and chronic competition over survival resources within and between groups (Knauft, 1991). As Pitman (2011) explains, the cooperation between in-group members and competition with out-group members was a characteristic of the hunter-

gatherer societies and has persisted to the contemporary human societies as well. Considering, again, the principles of inclusive fitness (Hamilton, 1964), an outsider seeking the same resources as one's in-group represented a direct impedance upon the attainment of survival resources for oneself, one's kin, and close-to-kin. As a result, when the potential success of one group threatens the well-being of another, negative attributions are casted toward the out-group (Sherif & Sherif, 1969). Therefore, xenophobia, or the fear of strangers, may well be a product of humans' long history of competing for survival resources, for as Wimmer (1997) explains, xenophobia stems from an intensive rivalry between groups.

For our ancestors, affective states such as fear and anxiety may have assisted in survival because they prompted the need to reduce uncertainty about outsiders before trusting them and including them into the group. After all, without gathering the necessary information, it would be difficult knowing whether the outsider meant to trade or buy goods, become a friend or ally, or steal or kill for survival resources. Thus, consistent with Shannon & Weaver's (1949) definition of uncertainty, the multitude of alternative outcomes from any one initial interaction fashioned an unavoidable uncertainty regarding strangers—an occurrence that undoubtedly has persisted until today.

From the above synopsis, it has been shown that uncertainty may stem from ultimate causes, otherwise understood as factors shaping the evolution of humans through the forces of natural selection and sexual selection (Floyd, 2014). Regardless of the causal system, however, it has become clear that uncertainty is inextricably woven into our daily lives, especially in regard to initial interaction. Its presence in initial interaction arises from a number of sources, both proximal and ultimate, and as the following section will indicate, its presence plays an integral role in humans' subsequent behavior. The Uncertainty Reduction Theory describes how

uncertainty governs relational development as well as illuminates communicative practices that facilitate uncertainty reduction and exacerbation.

Uncertainty Reduction Theory. Uncertainty Reduction Theory (URT) was pioneered by Berger & Calabrese (1975). The theory suggests that humans are innately motivated to reduce the uncertainty within initial interaction. Similar to notions already stated, Berger and Calabrese (1975) suggest that uncertainty can stem from another individual, the self, or the social context. For example, a discussant may question his or her interaction performance quality, the motives and attitudes of the discussant partner, or what the particular interaction may mean for the future. In essence, uncertainty arises from the inability to predict and explain the events that transpire in and around the social interaction.

The qualities that make URT such a seminal piece of work are the testable axioms it posits about the way uncertainty unfolds in initial interaction. These axioms associate uncertainty with (a) decreased verbal communication, nonverbal expressiveness, intimacy of disclosure, similarity between discussant partners, liking and (b) increased information seeking and reciprocity (Berger & Calabrese, 1975). Additionally, building from Altman & Taylor's (1973) Social Penetration Theory, Berger & Calabrese (1975) described a three-phased process of relational development which begins as generally rule-bound, predictable, and superficial. In the personal phase, then, depending on management of uncertainty, it progresses to a more in-depth, personal phase. Finally, in the exit phase, individuals determine whether or not to they would like to engage in future exchanges. However, while Berger and Calabrese's (1975) influential work is important, other scholars have continued the URT legacy.

Since the inception of URT, subsequent research has limited its scope to initial interaction. For example, the theory's original principles required modification when applied to

relationships that were beyond the initial interaction context such as intimate or romantic

relationships (Knobloch & Solomon, 2002; Berger, 1987; Parks & Adelman, 1983; Planalp &

Honeycutt, 1985). Consequently, researchers investigating uncertainty in close relationships had

to diverge from the URT framework and, instead, create constructs more befitting for intimate

interpersonal relationships.

Regardless of its refined limitations, many features of URT still have predictive integrity

for initial interaction and many scholars have built upon the work of Berger & Calabrese (1975).

For example, Berger (1979) outlined three situational instances that activate the desire to reduce

uncertainty; these include (a) deviation, such as when expectations are violated, (b) anticipation

of future interaction (e.g., expecting future interaction typically motivates uncertainty reduction),

and (c) control over resources—that is, we are particularly compelled to reduce uncertainty when

the costs and rewards of a particular initial interaction are determined. Then, Berger, Karol, and

Jordan (1989) offered three coping strategies of uncertainty—these are (a) seeking information

(b) planning various actions to achieve a goal, both before and during interaction, and (c)

hedging, which attempts to prevent negative outcomes from occurring. Furthermore, other bodies

of research regarding URT continue to test its basic tenets (e.g., Kellermann & Reynolds, 1990)

and apply it to intercultural initial interaction (e.g., Gudykunst, 1995).

An eighth axiom was added to URT by Parks & Adelman (1983). Within this axiom, it

states that the degree of shared communicative network is associated with uncertainty in such a

way that as shared network increases, uncertainty decreases. In general, their study investigated

the nature of romantic relationships and the shared network that is acquired through the dyadic

relationship (i.e., family and friends of partner). It was found that both communication with a

partner's network as well as support from a partner's network assists in lessening the relational uncertainty of that partner.

One of the latest developments in uncertainty management scholarship has been the Theory of Motivated Information Management (TMIM; Afifi & Weiner, 2004), and its tenets are important to consider in this study because they illuminate the emotional component of uncertainty management whereas other models have predominantly considered uncertainty as a cognitive phenomenon. The role of emotion in social contexts has been predominantly eclipsed by cognitive frameworks in decades past, but with growing emphasis, researchers have been demonstrating that the onset of particular discrete emotions (i.e., fear, anger, sadness, happiness, disgust, etc.) has predictable outcomes on risk perception and decision making (Nabi, 2010). For instance, in regard to risk assessments, fear is associated with more pessimistic judgments while anger is associated with more optimistic outlooks; the difference in these assessments is contingent upon appraisals of control and certainty (Lerner & Keltner, 2000; 2001). Undoubtedly, the culmination of these appraisals will lead to varying communicative behavior. Similarly, with anxiety's presence in initial interaction, understanding its role in contextual perception and decision making during uncertainty management is pivotal to the investigation. Thus, borrowing from pre-existing uncertainty literature (e.g., URT, Uncertainty Management Theory), TMIM expanded the framework to improve our understanding of uncertainty management choices, especially in regard to the presence of anxiety (Afifi & Matsunaga, 2008).

To begin, TMIM describes the uncertainty management process as a cyclical three-phased process. The first phase, known as the interpretation phase, begins with an individual noticing a discrepancy between the amount of uncertainty s/he has and the amount of uncertainty s/he wants (Afifi & Weiner, 2004). For example, a stranger seeking the company of another will

have a high level of uncertainty (e.g., about self, other, and context), but s/he wants less uncertainty (e.g., clarity in potential outcomes) before engaging with this other individual. This difference has been termed *uncertainty discrepancy*, and TMIM suggests that it is this discrepancy that motivates individuals to manage uncertainty, for as Afifi & Weiner (2004) explain, uncertainty discrepancy is anxiety producing. Thus, the stranger in the example above experiences anxiety from uncertainty discrepancy and therefore faces a decision in how to cope with the anxiety. In other words, the anxiety beckons individuals into the second phase of the process, known as the evaluation phase.

The evaluation phase is two-fold. In this process individuals (1) consider the outcomes that may result from seeking information, branded as *outcome expectancy* and (2) consider whether or not they are capable of gathering the necessary information and coping with it once it is garnered, otherwise known as *efficacy* (Afifi & Weiner, 2004). For example, if a stranger is romantically interested in another and thinking about asking this person out on a date, s/he is considering the potential outcomes (i.e., denial, consent) and, if denied, deciding whether s/he can handle such a response. Thus, this phase is characterized by the perceived cost and benefit of searching for more information (Afifi & Weiner, 2004). Moreover, the theory predicts that "people are increasingly less likely to seek information when they expect negative outcomes and even less likely when they feel they do not have the ability to gather or cope with those expected outcomes" (Afifi & Matsunaga, 2008, p. 128). Therefore, if our date-seeking stranger expects the request of a target individual to be fruitless and has also been hurt by denials in the past, s/he will likely avoid the interaction altogether. However, if mindfulness can regulate negative affect like some studies suggest (Brown & Ryan, 2003; Creswell, Way, Eisenberger, & Lieberman, 2007), perhaps the anxiety produced by uncertainty discrepancy and the emotional burden of denial will

be less consequential. Again, mindfulness allows individuals to distance themselves from emotions that arise in a given situation (Glomb et al., 2011). By regulating our affective state through mindfulness, our evaluation of a given scenario may be drastically different—for instance, with the down-regulation of anxiety, discussants may be compelled to engage more openly, despite uncertainty discrepancy. In any regard, the culmination of the evaluation phase is the decision to act in way that is deemed most appropriate.

The third phase, known as the decision phase, of TMIM is when the individual decides to implement a particular uncertainty management strategy (Afifi & Weiner, 2004). These strategies could include direct information seeking (i.e., approaching or questioning the stranger directly), indirect information seeking (i.e., discrete probing of the stranger or consulting a mutual friend), active avoidance (i.e., heeding the adage "stranger danger" by overtly avoiding interaction), and passive avoidance (i.e., neither avoiding nor actively seeking initial interactions) (Afifi & Weiner, 2004).

Once individuals implement their uncertainty management strategy, however, they find themselves, again, at the beginning of the cycle—that is, they interpret whether uncertainty discrepancy still exists and, if so, evaluate and decide upon another strategy. Another feature of TMIM that Afifi & Weiner (2004) illuminated was its rather fluid process—assessments of outcomes and efficacy can change during interaction which in turn immediately affects persons' strategies and communicative goals. With the date-seeker example, s/he may approach the target with the intent of asking him or her out on a date; however, after the first few moments, it becomes clear from the target's feedback that s/he is uninterested. In this instance, the initiator must shift strategies and goals in order to end the interaction effectively. TMIM asserts that it is this dance-like feature between information seeker and provider that is central to the uncertainty

management process (Afifi & Matsunaga, 2008). By supplementing the URT framework with affective components as well as additional rationale for why humans are compelled to manage uncertainty, TMIM provides additional basis for understanding the potential relationship between mindfulness practice and uncertainty reduction in initial interaction.

By incorporating its more recent advancements, the Uncertainty Reduction Theory framework remains one of the most validated and applicable theories in communication. With its elegant design and axiomatic components, scholars have been able to continually test its propositions and add to its basic tenets. However, the majority of the work done on URT merely describes how we reduce uncertainty in initial interaction and hardly delves into the socially divisive ways we reduce uncertainty. That is, one method that seems to be a pervasive way of coping with stranger uncertainty is isolating into homogenous groups.

When considering the potentially adverse nature of our uncertainty reduction processes, a URT axiom of particular interest is the sixth—uncertainty is high when perceived similarity is low. Important, here, is that a high degree of uncertainty discrepancy is accompanied by anxiety (Afifi & Weiner, 2004), and anxiety level has a direct impact on one's willingness to approach or avoid communication—that is, high anxiety fosters avoidant tendencies while low anxiety is more conducive for affiliation (Gudykunst, 1993, 1995, 2005). Thus, humans have a natural tendency to communicate with those who are similar to themselves and avoid those who are dissimilar. As the following section will elucidate, forming and maintaining social bonds upon social identity is pervasive. Much like our ancestors, we prefer the company of similar others. The problem, however, is that the avoidance strategy is a poor way of coping with uncertainty— instead of engaging dissimilar others and making use of URT's third axiom, information-seeking behavior, we choose to leave the stranger in a state of ambiguity. This ambiguous figure, then,

imposes a state of uncertainty discrepancy for the observer and, consequently, instills anxiety. The following section will illuminate the extent of our similar-seeking behavior and, in turn, how continuing this behavior is disadvantageous for social progress.

Homophily. For decades, social scientists have investigated homophily, which refers to humans' tendency to converge into groups whose members share similar characteristics (Lazarsfeld & Merton, 1954). In fact, dating as far back as times of antiquity, homophily was observed by Aristotle who claimed that people "love those who are like themselves" (Aristotle, 1934) and Plato who described in *Phaedrus* that "similarity begets friendship" (Plato, 1968). Contemporary scholars have continued to investigate homophily, and there is an exhaustive amount of literature supporting its pervasiveness in society (see McPherson, Smith-Lovin, & Cook, 2001). For example, it has been shown that humans prefer to associate with others on the basis of shared race and ethnicity (Kalmijn, 1998; Marsden, 1987, 1988; Shrum et al., 1988; Mayhew et al., 1995), sex and gender (see Smith-Lovin & McPherson, 1993), age (Feld, 1982; Fischer, 1982), religion (Laumann, 1973; Fischer 1977; Louch, 2000), behavior (Cohen, 1977; Kandel, 1978), and attitudes (see Huston & Levinger, 1978). While this research is important for understanding innate human drives, it is important to recognize, too, that there are benefits to breaking free from this in-group seeking behavior.

Exposure, both directly and indirectly, to individuals who are different may contribute to the well-being of society largely by modulating intergroup antagonism and fostering prosocial behavior. Studies have indicated, for example, that children tasked with having an imagined interaction with an out-group member were less likely to infrahumanize the other (Vezzali, Capozza, Stathi & Giovannini, 2012). Other studies show that diverse organizations are more fit for innovation than homophilous ones (Rogers, 2003). As such, when two diverse groups come

into contact with one another under the right conditions, such as holding common goals, new appreciation and understanding for one another grows while prejudice diminishes (Allport, 1954). Knowing this, then, what can we do about it? As mentioned in the aforementioned literature, because mindfulness is conducive to altered interpersonal schema, de-automaticization, and increased sense of social connection, it is possible that it will assist us in distancing ourselves from the antisocial dispositions that continue to confine sociality into homogenous groups.

Hypotheses and Research Questions

As the aforementioned literature and research demonstrates, uncertainty reduction in initial interaction is governed by a set of axioms describing the associations between uncertainty levels and communicative strategies—predictions that are derived from the framework of URT. Since URT's inception, some of its basic tenets have been falsified when applied to contexts outside of initial interaction (Knobloch & Solomon, 2002; Berger, 1987; Parks & Adelman, 1983; Planalp & Honeycutt, 1985), and other tenets have been added (Parks & Adelman, 1983; Neuliep & Grohskopf, 2000). Following the tradition of these past scholars and with the budding field of mindfulness research, it has become feasible to conjecture yet another variable involved with uncertainty in initial interaction. On the basis of mindfulness-based training's empirical findings, it is proposed that uncertainty, anxiety, and the components embedded in URT's axioms are moderated by mindfulness.

Because mindfulness allows an individual to decouple from the events, experiences, thoughts, and emotions that typically guide habitual actions, the resulting behavior is contingent upon the contextual moment and progresses in a novel, non-automatic fashion (Glomb et al., 2011). For example, with mindfulness's propensity to promote a sense of social connectedness

(Cohen & Miller, 2009; Hutcherson, Seppala, & Gross, 2008), positively alter relational schemata (Lee et al., 2001), and increase levels of empathic identification (Shapiro, Schwartz, & Bonner, 1998), it is likely that the participants exposed to a mindfulness treatment, as opposed to those who are not exposed to mindfulness treatment, will experience less uncertainty about their partners and, therefore, less uncertainty discrepancy overall. Thus, the following is proposed:

> H1: Participants exposed to a mindfulness treatment will experience less
>
> uncertainty in initial interaction than participants in the control treatment.

The first axiom of URT suggests that as verbal communication increases, there is a negative association with uncertainty (Berger & Calabrese, 1975). Intuitively, this makes sense; with more dialogue comes more information to supplement our perceptual framework. However, intervening variables such as ethnocentrism (Neuliep et al., 2001; Neuliep & Ryan, 1998) and intercultural communication apprehension (Neuliep and McCroskey, 1997) have been shown to affect our willingness to engage in communication as well. Because mindfulness practice assists individuals in decentering ego-involvement and affective states (Glomb et al., 2011), it can be inferred that barriers to verbal communication such as ethnocentrism (e.g., an ego-involvement) and apprehension (e.g., an affective state) will be mitigated. Furthermore, because of mindfulness's ability to regulate negative affect (Brown & Ryan, 2003; Creswell, Way, Eisenberger, & Lieberman, 2007), participants who undergo the mindfulness treatment may experience less anxiety and, therefore, experience less of uncertainty's incapacitating effects such as decreased verbal communication. Hence, the following hypothesis is posited:

> H2: Discussant partners will perceive greater degrees of verbal communication
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> with participants who are exposed to a mindfulness treatment than
>
> participants in the control treatment.

The second axiom of URT suggests that as nonverbal affiliativeness increases, uncertainty decreases (Berger & Calabrese, 1975). Much like verbal communication, nonverbal communication provides an abundance of valuable information. However, as Mehrabian (1971) suggests, nonverbal affiliativeness is associated with interpersonal liking. Even though, by definition, mindfulness practices encourages a non-judgmental stance towards environmental stimuli (e.g., neither liking nor disliking), the evidence provided by Hutcherson et al. (2008) and Cohen and Miller (2009) suggests that mindfulness meditation increases individuals' sense of social connectedness. Thus, it is reasonable to expect that social connectedness will draw a similar response as interpersonal liking; that is, feeling social connection will increase one's willingness to be non-verbally affiliative. As such, participants exposed to the mindfulness treatment will be more nonverbally affiliative than the control group, and the following hypothesis is offered:

> H3: Discussant partners will perceive greater degrees of expressed nonverbal affiliativeness with the participants exposed to a mindfulness treatment than participants in the control treatment.

The third axiom of URT suggests that in high uncertainty situations, individuals are compelled to engage in information-seeking strategies (Berger & Calabrese, 1975). However, because participants exposed to mindfulness may experience less uncertainty discrepancy and anxiety than the control (Cohen & Miller, 2009; Hutcherson, Seppala, & Gross, 2008; Lee at al., 2001; Shapiro, Schwartz, & Bonner, 1998), they may feel less compelled to engage in information seeking strategies. Conversely, it is possible, too, that because mindful individuals rely less on preconceived notions and stereotype (Lee at al., 2001; Shapiro, Schwartz, & Bonner, 1998), participants exposed to mindfulness treatment may be equally compelled to ask questions

and seek information more than others who are not exposed to such a treatment. Thus, the following research question is proposed:

RQ1: Will participants exposed to a mindfulness treatment engage in more or less information-seeking with the discussant partners than participants in the control treatment?

The fourth axiom of URT suggests that as uncertainty decreases, discussants are more willing to divulge intimate information (Berger & Calabrese, 1975). Building, again, from Hutcherson et al.'s (2008) work suggesting that mindfulness meditation bolsters one's sense of social connectedness as well as Saavedra et al.'s (2010) report suggesting that mindfulness improves intimate relationship quality, participants exposed to mindfulness treatment will likely feel more comfortable expressing intimacy than participants in the control condition. Furthermore, with mindfulness's ability to disengage individuals from relational automaticity (Glomb et al., 2011), it is possible that the conventional interactional norms that tend to impede upon intimate self-disclosure in early phases of relational development will be altered. Consequently, the following hypothesis is proposed:

H4: Discussant partners will perceive greater degrees of intimacy with the participants exposed to a mindfulness treatment than participants in the control treatment.

The fifth axiom of URT suggests that as uncertainty is mitigated, the need for equal reciprocity is less consequential to the success of the interaction (Berger & Calabrese, 1975). For example, Berger & Calabrese (1975) explain that in the early stages of relational development where uncertainty is relatively high for both parties, it is important that one discussant does not gain information power over the other; both discussants are using their information-seeking

strategies to garner a better understanding of one another, so they take turns, or reciprocate, in asking and responding. However, because participants who underwent the mindfulness treatment may experience less anxiety (Glomb et al., 2011), and therefore less of a need to use uncertainty reducing strategies (Afifi & Weiner, 2004), they will likely feel less of a need to reciprocate equally—that is, expounding on a question or letting their partner speak for longer lengths. Hence, the next hypothesis proposes:

> H5: Discussant partners will perceive lesser degrees of reciprocation with the
>
> participants exposed to a mindfulness treatment than the participants in the
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> control treatment.

The sixth axiom of URT suggests that similarities between discussants reduce uncertainty (Berger & Calbrese, 1975). Because mindful individuals are keen to more incoming stimuli and capable of creating new, idiosyncratic personal categories (Neuliep, 2011), however, it is possible that the participants exposed to mindfulness treatment will be able to identify more shared similarities than the control. As a result, the following hypothesis is put forward:

> H6: Participants exposed to a mindfulness treatment will perceive more shared
>
> similarity with the discussant partner than participants in the control
>
> treatment.

The seventh axiom of URT suggests that as uncertainty decreases there is a positive association with interpersonal liking (Berger & Calabrese, 1975). In addition to the extensive amounts of literature outlining homophily, Berger and Calabrese (1975) explain that there are strong associations between interpersonal liking and perceived interpersonal similarity. As a result, because participants exposed to a mindfulness treatment will likely perceive more

interpersonal similarity, then they will also have more interpersonal liking for their discussant partner. Therefore, the last hypothesis proposes:

H7: Participants exposed to the mindfulness treatment will have more interpersonal liking for their discussant partner than participants in the control treatment.

CHAPTER TWO: METHOD

This study gathered data from two groups—a mindfulness treatment group and a control group. A pre-interaction survey gathered demographic information as well as measured items such as baseline mindfulness, personal report of communication apprehension, and uncertainty. Then, a post-interaction survey measured the axiom components of URT with scales relevant to each particular component; both interaction partners reported the communicative performance of their partner.

Participants

The sample for this study was collected through a few different strategies. To begin, with the help of cooperating instructors, extra-credit was awarded to students willing to participate in the study. The co-principal investigator sent out an email to these instructors detailing the call for participation and nature of the study which was, then, forwarded to their class roster. Interested students contacted the co-principal investigator with any questions and/or indicated their willingness to participate. Similarly, the investigator recruited by word of mouth. Recruitment of participants was from the undergraduate and graduate student populations at a large university in the Mountain West, United States. Additionally, once recruitment began, individuals were given a deadline for when they must indicate their willingness to partake in the study. The sample was comprised of more females (58.5%) than males (37.2%). The majority of the sample reported they were heterosexual (85.1%); bisexual (5.3 %), "other" (5.3%), and gay (1.1%) represented a portion of the sample as well. Participants ranged in age from 18 to 30, with an average of 20.7 years ($SD = 2.06$). Participants were predominantly Caucasian (67%), with 14.9% Asian/Pacific-Islander, 3.2% Black/African-American, 9.6% Hispanic, and 5.3% unspecified. In total there

were 21 participants assigned to the mindfulness treatment group, 21 participants assigned to the control treatment group, and 42 viable discussant partners.

Procedure

      Pre-study experimental procedures. Once individuals indicated their willingness to participate in the study, they were directed to an online consent form on Qualtrics, an online survey-building tool. Once consent was acquired, the participant was emailed a hyperlink to Appointy, an online scheduling tool. In Appointy, the participant indicated whether or not they could make it to one of the designated lab days. If the participant did have availability during one of the designated lab visits, s/he was asked whether or not the investigator could re-contact him/her in case of added lab days—if uninterested, the participant was thanked for his/her time and removed from the study. If a participant's availability did coincide with lab days, however, s/he proceeded to the next stage.

      Because this study is investigating the nature of stranger interaction, the participant needed to determine whether there was another participant in the study who was, indeed, a stranger to them. Thus, the participant was given a hyperlink to Qualtrics, and within the online survey was a list of participants who indicated the same lab day availability. The survey allowed the participant to manually drag each name with the cursor into one of two categories: 1) stranger and 2) non-stranger. If there were no strangers within the pool of names for a particular participant, s/he was asked whether or not the investigator could re-contact him/her in case of added lab days—if uninterested, the participant was thanked for his/her time and removed from the study. Participants who do indicated strangers within the pool of names, however, were randomly assigned to treatment conditions and dyadic pairs. Once treatment condition was determined, all participants were assigned a randomized identification code. This code was used

on all subsequent data collection to protect participants' anonymity. The code was linked to the participant's email; however, the link between code and email was password and username protected, and it was only accessible to the primary investigators. Once identification codes were assigned, participants completed a survey through Qualtrics identifying demographic information as well as measuring baseline mindfulness and dyadic communication apprehension. Mindfulness measures are included at this time because it is important determine the level of trait mindfulness an individual exudes prior to any manipulation takes place, and trait dyadic communication apprehension may be in intervening variable in the subsequent initial interaction.

The next phase of the study was to inform each group of their particular assignments. The participants who were assigned to the mindfulness treatment group (n=21) were instructed to create an account with HeadSpace.com which is a free online guided meditation program. The program seeks to train individuals in mindfulness through its daily 10-minute exercises called "take-10." These exercises guide participants through meditation practices such as focused breathing, body scanning, and experiencing the present moment. Additionally, because mindfulness practice is often a novel experience for individuals, the program infuses interactive videos in between the "take-10" exercises to assist in further describing and contextualizing the goals and aims of mindfulness practice. The mindfulness treatment group was instructed to complete four of these 10-minute sessions—one daily session in the three days prior to the study, and one final session on the lab day prior to arrival. On the other hand, the control treatment group (n=21) was instructed to simply take 10 minutes out of their day for quiet alone time. Similar to the mindfulness treatment group, the control treatment group was instructed to complete four of these 10-minute sessions as well—one daily session in the three days prior to the study, and one final session on the lab day prior to arrival. No formal logging or recording of

exercises were required of the participants; the participants were trusted to complete the exercises on their own accord and answer the manipulation check questions honestly. Finally, the discussant partners (n=42) were non-treatment participants; they were instructed to arrive on the designated lab day for a 10-minute dialogue with a stranger. The discussant partner's role in the study was to create a dyad consisting of one treatment and one non-treatment participant.

Study experimental procedures. On the day of the lab visit, participants were instructed to arrive at the lab space at the designated time. Upon arrival, the researcher requested that participants refrain from interacting with each other until the study begins. However, despite this request, it could be assumed that participants were still communicating nonverbally and unconsciously. Once all participants had arrived, the researcher informed each participant of their dyad partner and asked that they find a space within the lab to converse. Before conversing, however, the participants completed a pre-interaction survey. This survey measured mindfulness, state anxiety, and uncertainty. Once both dyadic partners completed the survey, they were asked to "get acquainted" with each other and left to converse with each other for 10 minutes (Neuliep & Grohskopf, 2000; Sunnafrank, 1988). After the 10 minutes transpired, the participants completed a post-interaction survey measuring self- and partner-related items of verbal communication, non-verbal communication, information-seeking behavior, reciprocity of self-disclosure, interpersonal liking, perceived similarity, and intimacy. After completing this survey, the participants were free to leave, and their participation in the study was complete.

Measures

The instruments used in this research project measured mindfulness, communicative anxiety, interactional certainty, and components within the seven original axioms of Uncertainty Reduction Theory. The inclusion of such measures attempted to identify the impact, if any, a

mindfulness treatment intervention would have upon the communicative process within initial interaction.

Mindfulness. To measure mindfulness, participants took the Kentucky Inventory of Mindfulness Skills (Baer, Smith, & Allen, 2004). The measure identifies the level, or degree, to which an individual is mindful. On a 5-point Likert scale (1 = Never True to 5 = Always True), respondents are asked to answer questions such as "I notice when my moods begin to change" and "I drive on 'automatic pilot' without paying attention to what I'm doing." The measure was given twice throughout the experiment—once at the beginning to measure baseline mindfulness and once after treatment to determine whether a successful manipulation of mindfulness occurred. That is, comparing the before and after manipulation mindfulness reports determine the efficacy of the mindfulness treatment intervention done within this study. Furthermore, the instrument has good internal reliability. In Baer et al. (2004), the test-retest reliability was .65, .81, .86, and .83, respectively. In this study, the Cronbach's α of the pre-manipulation KIMS survey was .79. The post-manipulation KIMS survey's Chronbach's α was .75.

The KIMS has four subscales which were tested for reliability and used in analyses as well. These subscales are comprised of individual factors of mindfulness: observing, describing, acting with awareness, and accepting without judgment (Baer et al., 2004). The observing subscale had pre-manipulation Chronbach's α = .86 and a post-manipulation Chronbach's α = .86. The describing subscale had pre-manipulation Chronbach's α = .75 and a post-manipulation Chronbach's α = .77. The acting with awareness subscale had pre-manipulation Chronbach's α = .52 and a post-manipulation Chronbach's α = .59—due to this low reliability, no analyses were run with this particular subscale. The accepting without judgment subscale had pre-manipulation Chronbach's α = .86 and a post-manipulation Chronbach's α = .91.

Dyadic apprehension. To measure the degree of predisposed apprehension that a participant may have prior to initial interactions, participants took the dyadic apprehension items of the Personal Report of Communication Apprehension (McCroskey, Beatty, Kearney, and Plax 1985). The scale consists of 6 items asking participants to indicate their disposition toward the items' contents on a 5 point Likert scale (1 = strongly agree to 5 = strongly disagree). In this study, the scale demonstrated a Chronbach's α = .66.

State Anxiety. To measure the state anxiety a participant may be experiencing prior to the interaction, s/he completed the state anxiety portion of the State Anxiety Inventory for Adults (Spielberger, 1977). The inventory consists of 20 items asking participants the extent to which they agree with particular statements such as "I feel calm" and "I feel secure" on a four-point Likert scale. Test-retest reliability coefficients have ranged from .65 to .75 over a 2-month interval (Spielberger et al., 1983). In this study, the scale demonstrated a Chronbach's α = .84.

Uncertainty. Several studies investigating uncertainty reduction include the CL7 Attribution Confidence Scale (Neuliep & Grohskopf, 2000; Clatterbuck 1979; Sunnafrank 1990; Douglas 1994). The measure consists of seven items, and the reliability and validity of the items is evidenced in Clatterbuck (1979). In Neuliep & Grohskopf's (2000) study, the measure had a Cronbach's α = .85. Because of the efficacy of the CL7 in the aforementioned research, it has sufficient face validity. The CL7 measures global uncertainty about the other person and includes items such as "How accurate are you at predicting the values your research partner holds?" and "How well can you predict your research partner's feelings and emotions?" In this study, the scale demonstrated a Chronbach's α = .80.

Verbal Communication. To measure the first axiom of Uncertainty Reduction Theory, the participants will be asked a single item: "How much talk did your interaction partner contribute?" In other studies investigating the first axiom, similar approaches were used. For example, "Gudykunst et al. (1985) and Sunnafrank (1988) reported high test-retest reliabilities for similar single-item measures of communication amount, but only a single version of this item was employed . . . and reliability was not assessed" (Sunnafrank 1990). However, due to its efficacy in Gudykunst (1985) and Sunnafrank (1988) the item has sufficient face-validity.

Nonverbal Affiliativeness. To measure the second axiom of Uncertainty Reduction Theory, participants will complete the Nonverbal Immediacy Scale-Observer Report (NIS-O) (Richmond, McCroskey, & Johnson 1995). The scale consists of 26 items asking the participants to indicate their disposition toward items' such as "He/she had a tense body position while talking to me" and "He/she sat close or stood close to me when talking to me" on a 5 point Likert scale (1 = never to 5 = very often). The measure has a reliability Cronbach's α = .80. Because of the NIS-O's efficacy in the aforementioned research, it has sufficient face-validity. In the current study, the scale demonstrated a Chronbach's α = .90.

Information-Seeking Behavior. To measure the third axiom of Uncertainty Reduction Theory, participants will be asked to indicate on a Likert scale (1 = Never to 5 = Very Frequently) how often s/he turned to his or her interaction partner for information or knowledge as well as how often his or her interaction partner turned to him or her for information or knowledge (Borgatti & Cross 2003). Reliability of this measure was not offered, but it yielded useful data by evaluating "(1) the amount i claimed to seek information from i and (2) the amount that i indicated that he or she was sought out by i" (Borgatti & Cross 2003).

Intimacy of Communication. To measure the fourth axiom of Uncertainty Reduction

Theory, participants will be asked to respond to 14 items designed by Burgoon and Hale (1987)

measuring level of communicative intimacy. For example, participants will be asked to respond

to questions such as, "He/she was willing to self-disclose personal thoughts to me" and "He/she

communicated coldness rather than warmth." The items were scored on a 5-point Likert scale

and demonstrated a Cronbach's $\alpha = .91$ in the current study.

Reciprocity Rate. To measure the fifth axiom of Uncertainty Reduction Theory, the

investigators used 3 universal measures. Participants will be asked to indicate the extent to which

they agree or disagree with "I feel that my partner and I disclosed information about ourselves in

a similar manner," "I feel that I disclosed more information than my partner," and "I chose not to

disclose as much information about myself to my partner as my partner disclosed to me."

Similarity. To measure the sixth axiom of Uncertainty Reduction Theory, the

investigators used the Perceived Homophily in Interpersonal Relationships scale designed by

McCroskey, Richmond, & Daly (1975). The instrument places antithetical statements along a

seven point continuum such as "thinks like me" and "doesn't think like me," and participants are

asked to indicate where they perceive their partner along the continuum. In the current study, the

scale demonstrated a Chronbach's $\alpha = .88$.

Liking. To measure the seventh axiom of Uncertainty Reduction Theory, participants

will be asked to respond to 3 items measuring interpersonal liking (Nicholson, Compeau, & Sethi

2001) such as "Even without this research study, I would choose to be around my interaction

partner" and "I like my interaction partner as much as other people that I know." Each item on

the liking scale was responded to on a 5 point Likert scale (1 = strongly agree to 5 = strongly

disagree). In the current study, the scale demonstrated a Chronbach's $\alpha = .78$.

Analysis

     Statistical analyses were applied to the data. Using SPSS, the researcher identified the

impact, if any, mindfulness had upon uncertainty and its association with the axiomatic

components of URT. ANOVAs (analysis of variance) and ANCOVAs (analysis of covariance)

were the primary tests used for analysis. For instance, ANOVA served as a manipulation check

to determine differences between pre- and post-manipulation mindfulness inventories.

Additionally, ANOVAs and ANCOVAS were used to determine any differences, if any, existing

between treatment groups with regards to the dependent variables—these included

communication apprehension, anxiety, uncertainty, verbal communication, non-verbal

affiliativeness, information seeking behavior, reciprocity, interpersonal liking, perceived

similarity, and intimacy.

CHAPTER THREE: RESULTS

Descriptive Analysis

Manipulation Check. In order to determine whether the four day mindfulness treatment exercises on HeadSpace effected participants' mindfulness level, a univariate analysis of variance (ANOVA) assessed any potential mindfulness differences between treatment groups after the manipulation was complete. To be included in the analyses, however, participants needed to have completed at least three of the four treatment exercises. The ANOVA compared post-manipulation Kentucky Inventory of Mindfulness Scores (KIMS) between the mindfulness treatment group and control treatment group while including the pre-manipulation KIMS score and state anxiety as a covariate $F(1,21) = 4.805$, $p = .04$, partial $\eta^2 = .186$. Persons in the mindfulness treatment group became significantly more mindful (M = 3.32) than the control treatment (M = 3.12) after the manipulation took place. Therefore, the manipulation was successful—the participants who completed the four days of HeadSpace became more mindful than the control treatment.

Uncertainty. Hypothesis one predicted that participants exposed to a mindfulness treatment would experience less uncertainty than participants in the control treatment before the 10-minute initial interaction with a stranger. ANOVA results demonstrate no differences between the mindful (M = 2.60) and control participants (M = 2.44) with regards to their pre-interaction uncertainty $F(1, 36) = .433$, $p = .515$, partial $\eta^2 = .012$. Thus, hypothesis one was not supported.

Verbal Communication. Hypothesis two predicted that discussant partners would perceive greater degrees of verbal communication with participants who were exposed to a mindfulness treatment than participants in the control treatment. Results of an ANOVA demonstrate no significant difference between discussant partners' reports of verbal communication with mindful (M = 3.71) and control (M = 3.79) participants $F(1, 38) = .227$, $p = .637$. Therefore, hypothesis two is not supported.

Nonverbal Affiliativeness. Hypothesis three predicted that discussant partners would perceive greater degrees of expressed nonverbal affiliativeness with the participants exposed to a mindfulness treatment than participants in the control treatment. ANOVA results demonstrate no significant differences between discussant partners' perceptions of the mindfulness treatment (M = 73.89) and control treatment (M = 76.27) with regards to nonverbal affiliativeness, $F(1,34) = 2.381$, $p = .132$. Hence, hypothesis three is not supported.

Information-Seeking Behavior. A research questions asked to what extent, if any, participants exposed to a mindfulness treatment would engage in more or less information-seeking behavior with their discussant partners than participants in the control treatment. An ANOVA indicates that discussant partners were no more or less likely to perceive mindfulness treatment participants (M = 3.81) as engaging in more information-seeking behavior than control treatment participants (M = 3.53), $F(1, 38) = 1.087$, $p = .304$.

Intimacy. Hypothesis four predicted that discussant partners would perceive greater degrees of intimacy with the participants exposed to a mindfulness treatment than participants in the control condition. ANOVA results demonstrate no difference between the discussant partners' perceptions of the mindfulness treatment participants (M = 3.77) versus the control

treatment participants (M = 3.91) with respect to their communicative intimacy $F(1, 37) = 1.098$, $p = .302$. Thus, hypothesis four is not supported.

Reciprocity. Hypothesis five predicted that discussant partners would perceive lesser degrees of information reciprocation with the participants exposed to a mindfulness treatment than the participants in the control treatment. Because the reciprocity measures were not from a previously validated scale, but rather, global questions of conceptually related items constructed by the researcher, a multivariate analysis of variance (MANOVA) was used for analysis. However, the MANOVA of reciprocity items did not demonstrate any significant main effect of the treatment condition upon the reciprocity of information $F(1, 17) = .965$, $p = .435$. Therefore, hypothesis five was not supported.

Perceived Similarity. Hypothesis six predicted that participants exposed to a mindfulness treatment would perceive more shared similarity with the discussant partner than participants in the control treatment. This hypothesis was initially tested with an ANOVA, which demonstrated no significant differences between groups $F(1,34) = 1.036$, $p = .316$. Three confounding variables were then excluded from analysis using an ANCOVA (analysis of covariance). Because research has demonstrated that when individuals perceive cultural differences, they tend to regard the other coming from a different culture as a stranger (e.g., and consequently, less familiar) (Gudykunst & Kim, 1997), the influence of ethnicity was controlled by including it as a covariate. Moreover, research has demonstrated that levels of assumed similarity can vary between males and females (Jowett & Clark-Carter, 2006), sex was controlled by including it as a covariate. Finally, as liking is found to greatly affect the degree to which one finds similarity in a conversational partner (Berger & Calabrese, 1975), the influence of participants' level of liking was controlled in the model. When adjusted for these covariates,

an ANCOVA yielded a significant difference between mindfulness treatment participants' (M = 3.93) and control treatment participants' (M = 4.32) perceptions of shared similarity with their discussant partners $F(1,30) = 5.677$, $p = .024$, partial $\eta^2 = .159$. The results, however, are in the opposite direction of the predicted hypothesis and, therefore, hypothesis six is not supported.

Interpersonal Liking. Hypothesis seven predicted that participants exposed to the mindfulness treatment would have more interpersonal liking for their discussant partner than participants in the control treatment. The initial ANOVA test demonstrated no significant difference between mindfulness treatment participants (M = 3.59) and control treatment participants (M = 3.50) $F(1,35) = .197$, $p = .660$, partial $\eta^2 = .006$. Then, two variables were included in the model as covariates: sex and perceived similarity. The influence of perceived similarity was controlled because, as mentioned, perceived similarity and interpersonal liking have a positively related association (Berger & Calabrese, 1975). Further, research suggests that homophily (e.g., the liking of perceived similarity) can vary between sexes. Ibarra (1992) posits that, while both sexes engage in homophilous behavior, women's pattern of relationships are more differentiated than males—that is, women's network contacts include a more balanced ratio of men and women; men's network contacts are predominantly men. Thus, sex was included as a covariate because it contributes to a varying scope of homophily which, in turn, can impact the inclusivity of interpersonal liking between sexes. When accounting for perceived similarity and sex as covariates, there was a significant difference between treatment groups in regard to their interpersonal liking of discussant partners. The mindfulness treatment group (M = 3.69) expressed more interpersonal liking for their partner than did the control (M=3.50) treatment group $F(2,34) = 6.271$, $p = .003$, partial $\eta^2 = .283$. The results provide support for hypothesis seven when controlling for the influence of sex and perceived similarity.

Post-Hoc Analysis

After the main hypothesis testing was concluded, additional analyses of the entire sample were performed to determine relationships between the primary variables. Bivariate correlations were conducted in two stages. First, correlations tested the relationships between variables associated with each axiom of URT. Berger and Calabrese (1975) postulated a negative association between intimacy and uncertainty (axiom 4). The results suggests that uncertainty is, instead, positively correlated with the intimacy level of communication content $r(87) = .217$, $p = .041$. Beyond this relationship, however, the results demonstrate no significant association between uncertainty and verbal communication (axiom 1), nonverbal affiliativeness (axiom 2), information-seeking behavior (axiom 3), reciprocity (axiom 5), perceived similarity (axiom 6), or interpersonal liking (axiom 7). The results for these bivariate correlations as well as those associated with the primary variables in the analyses are listed in Table 1.

The second stage of the post hoc analyses investigated the relationship between pre-interaction mindfulness and the primary variables. Bivariate correlations between individuals' total mindfulness scores and URT variables were assessed, as well as the relationships amongst the subscales of the KIMS. For example, a significant positive correlation emerged between pre-interaction mindfulness and pre-interaction uncertainty score, $r(83) = .234$, $p = .031$. While this finding is counter to the logic of hypothesis one, it reaches an important verdict for this research study: uncertainty is exacerbated by mindfulness. Then, individuals' "observing mindfulness score" (e.g., KIMS subscale measuring the degree to which individuals notice or attend to various stimuli including internal and external phenomena) is positively correlated with their personal information seeking behavior $r(86) = .237$, $p = .026$. Individuals' "accepting without judgment mindfulness score" (e.g., KIMS subscale measuring the degree to which individuals

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allow reality to be as it is without judging, avoiding, changing, or escaping it) is positively correlated with their perceived amount of partners' information seeking behavior $r(90) = .279$, $p = .008$ as well as their perceived amount of partners' verbal communication $r(88) = .207$, $p = .050$. Individuals' "describing mindfulness score" (e.g., KIMS subscale measuring the degree to which participants describe or label observed phenomena by applying words in a nonjudgmental way) is negatively correlated with perceived similarity $r(90) = .265$, $p = .011$, and it is positively correlated with their amount of personal information seeking behavior $r(89) = .364$, $p < .000$. When considering individuals' "total mindfulness score" (e.g., KIMS subscales scored as one comprehensive mindfulness measure), a positive correlation exists between individuals' pre-interaction mindfulness score and personal information seeking behavior $r(82) = .244$, $p = .025$. Furthermore, in support of mindfulness's ability to down-regulate negative affect (Glomb et al., 2011), a significant negative correlation exists between mindfulness and dyadic apprehension $r(74) = -.272$, $p = .018$, and a significant negative correlation exists between individuals' describing mindfulness KIMS subscale score and state anxiety $r(81) = -.552$, $p < .001$. Finally, state anxiety had two other noteworthy correlations: it was positively correlated with perceived similarity $r(79) = .508$, $p < .000$, and it is negatively correlated with individuals' personal information seeking behavior $r(80) = -.242$, $p = .029$.

CHAPTER FOUR: DISCUSSION

A growing body of research has illustrated the influence mindfulness has upon the individual self, but the effect mindfulness has upon interpersonal relationships is still largely unexplored. This study sought to understand how mindfulness could potentially alter the manner in which individuals typically navigate uncertainty reduction in initial interaction—that is, the study tested the axioms of Uncertainty Reduction Theory when considering mindfulness as a potential moderating variable.

Both the main analyses and post hoc tests demonstrate important findings for research on stranger interactions. In brief, ANOVA tests indicate, in lieu of a successful experimental manipulation and mindfulness intervention, two significant differences among treatment groups' communicative behavior (e.g., interpersonal liking and perceived similarity) exist, and both of these significant findings require the use of covariates to achieve statistical significance. Furthermore, correlational analyses indicate that this particular sample of participants did not exude uncertainty reduction behavior as outlined by Berger & Calabrese (1975). The findings that emerged from this study have several implications which will be outlined next.

To begin, the results indicate that participants in the mindfulness treatment perceived less similarity with their partner than the control treatment. The findings can be interpreted in at least two different ways. First, it suggests that mindfulness may aid individuals in perceiving more idiosyncratic and distinctive features of others. In other words, a brief exposure to mindfulness practice facilitates an increased attention toward and awareness of interpersonally differentiating characteristics. Similarly, this finding may also be indicative of a shift in intrapersonal perception as well. Just as mindfulness may encourage more distinctive perceptions of others, it

may encourage the same of oneself—that is, mindfulness may illuminate the idiosyncratic qualities of oneself and, when mentally juxtaposed with others' qualities, an interpersonal differentiating effect follows.

Next, the results indicating that participants exposed to the mindfulness treatment had more interpersonal liking for their partner than the control treatment group offers support for a prosocial effect of mindfulness. More specifically, this result suggests that mindfulness is yet another positive influencing moderator of interpersonal liking.

When taken together, the results illustrating differences between treatment groups' perceived similarity and interpersonal liking for partner provide an important contribution to the existing homophily literature. Again, despite perceiving less similarity, the mindfulness treatment group had more interpersonal liking for their partners—a notion that is counter to homophily. This finding opens up new discussion for mindfulness's potential to induce a heterophily effect (e.g., the opposite of homophily) which will be operationalized as a *love for difference*.

This heterophily effect of mindfulness is, perhaps, the most profound finding of this study because, as the extant literature suggests, homophily is extremely pervasive in society. Homophily is a heavily documented interpersonal automaticity and phenomenon, and the bivariate correlations conducted in this study reinforce it as well—as perceived similarity increases, so does interpersonal liking. However, as the current research suggests, a potential method to escape this homophilous relational automaticity is through mindfulness practice. While these findings are heuristic in nature, future study must investigate the consequences of

heterophilous orientation. For example, what would an increase in heterophily mean for social interaction across cultures or in globalizing organizations?

The final implication of this research's findings is that the original axioms of URT may not be as steadfast as scholars had once deduced. Like all good theories, URT provides researchers falsifiable tenets, and the results yielded in this research give reason to conclude that uncertainty, alone, may not be the only factor influencing our communicative behavior in initial interaction. Of course, additional and more rigorous testing is necessary, but these preliminary findings suggest that mindfulness is, indeed, an influential variable in our interpersonal perception and uncertainty. For example, two noteworthy correlations emerged in the post-hoc analysis. First, as mindfulness increases, so does uncertainty. With this correlation, we see that mindfulness is positively associated with individuals' uncertainty levels. Thus, even though this study failed to show difference amongst treatment groups, future study should further explore the extent to which, if any, mindfulness acts as a moderating variable in communicative behavior related to uncertainty reduction. The second notable correlation to emerge for URT relationships suggested that as uncertainty increases, so does intimacy. In regard to this correlation, we see at least one instance of a falsified URT axiom. Unfortunately, there is no way of indicating causation in this relationship—it is merely a heuristic finding for future studies investigating URT and mindfulness.

Limitations. As with most all research, this study was not without limitations. To begin, this study only measured the effect of a brief mindfulness intervention. While a significant treatment effect was induced, there is no way to suggest whether or not the impact upon the individuals' communicative behavior could have been stronger if participants would have received more dosage or longer exposure to mindfulness practice. If the manipulation was

stronger, it is possible that some of the trending analyses could have become statistically significant. Similarly, because this study did not collect longitudinal data, there is no way of knowing whether the effect of the mindfulness treatments lasted beyond the scope of the experiment—that is, more research is needed to conclude whether the observed effect endures into the subsequent days and weeks after manipulation.

Next, the sample demographic used for this study was fairly limited as well. While there was a generally diverse sample of ethnic background, the age range of included participants was relatively small (e.g., 18 to 26 years old). This is problematic for at least two reasons. First, it severely limits the ability to generalize these findings beyond the millennial generation. Second, in the post-hoc analyses, it was found that age is negatively associated with uncertainty, meaning that as age increases, uncertainty decreases. This correlation suggests that, if the sample were to have included older generations, different findings may have emerged in regarding uncertainty which, again, is a fundamental independent variable in the current study.

The final limitation to be discussed is in regard to instrumentation and data collection. While significant findings did emerge from the chosen methodology, there are still a few areas to consider. For example, a crucial part of this study's data collection was reliant upon the perceptions of the discussant partners—these individuals were asked to rate the treatment groups' communicative behavior and, in turn, their ratings were the avenue to determining whether differences exist between treatment groups. However, personal perception is infinitely variable, and this study did not account for that. It may be no surprise, then, that the hypotheses that were contingent upon the rating of a partners' communicative behavior yielded no significant findings whereas two of the three hypotheses that did not require rating a partners' communicative behavior did yield significant findings.

Future Research. Overall, this study offers a fruitful platform for future research. It was concluded that mindfulness plays a mixed, yet influential role in uncertainty reduction in initial interaction. Going forward, there are a few choices that future researchers may want to consider. First, if seeking to replicate this study, it may be worthwhile to use confederate coders as the discussant partners. While this may diminish the authenticity of the stranger interaction experience, there would at least be a way of ensuring consistent perceptions of the treatment groups' communicative behavior. In hindsight, not accounting for variability amongst coder ratings may have been a critical error in experimental design. As research continues to explore the effect of mindfulness in interpersonal relationships, inter-rater reliability ought to be considered. Similarly, it may prove beneficial to video and audio record the interactions so that non-participant observers could code the communicative behavior.

Second, there are other potential intervening variables that could be considered in this model. A couple variables that could be relevant are one's personality type and openness to mindfulness practice. Of course, personality type is influential in ways such as one's willingness to be social, outgoing, and interpersonally engaging; this study included dyadic apprehension and state anxiety scales as a way of measuring similar personality characteristics, but perhaps a more thorough personality inventory would be prove to be effective in accounting for varying social and communicative aptitudes. Then, this study assumed that every participant who underwent the mindfulness intervention responded to it in the same way—more research is needed to determine whether mindfulness interventions are effective for everyone. It may be the case that some individuals are not as open to mindfulness interventions and prefer not to engage in mindfulness practice. This study included a manipulation check to ensure that the condition groups completed

a minimum amount of three doses; however, it did not account for how these doses were received or embodied.

Third, and finally, future research should consider experimental design variations such as including longitudinal data collection, more rigorous manipulation, and a larger sample size. As mentioned, this study only measured the effect of a very brief mindfulness intervention, and there is no way of knowing its enduring effect. Including, perhaps, a second initial interaction at a second time point would determine whether the interpersonal effect of mindfulness lasts beyond the immediate effect illuminated in this study. Also, more rigorous mindfulness manipulation may yield conclusive results as well. This mindfulness intervention was merely four 10-minute guided meditations, and many participants only completed three of the four. This means that 30-40 minutes of mindfulness practice over a four day period was sufficient enough to see an effect. However, there is no way of knowing what results may emerge if participants engage in a heavier dosage of mindfulness prior to initial interaction. Lastly, a larger sample size may strengthen the statistical power. For most of the measures in this study, nearly 40 viable dyads were used for analyses; however, observing an effect in some of these measures may have been easier if there was more power within the sample.

Conclusion. This study is among the first to have investigated mindfulness's effect upon stranger communication. Further study is necessary to validate and refine the results obtained, but it has been illuminated that mindfulness may have benefits beyond those found for personal well-being and, rather, into the territory of interpersonal well-being. The societal implications of this shift are many, but for now, let us reflect upon the findings elucidated non-judgmentally and consider them as we live and engage others in the present moment.

Table 1

Descriptive Information and Bivariate Correlations for Primary Variables in the Main Analysis

	M	(SD)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	3.78	.510	-- N= 92	.093 N=92	.265* N=92	.016 N=89	-.074 N=84	-.025 N=82	.129 N=92	-.236* N=83	.230 N=89	.248* N=92	.254* N=91	-.177 N=88	-.069 N=91	.207* N=90
2.	3.83	.820		-- N=92	.430** N=92	-.268* N=89	.244* N=84	-.242* N=82	-.001 N=92	.075 N=83	.114 N=89	.113 N=92	-.174 N=91	.237* N=88	.364** N=91	-.026 N=90
3.	3.60	.890			-- N=92	.122 N=89	-.031 N=84	-.080 N=82	.037 N=92	.002 N=83	.290** N=89	.292** N=92	.046 N=91	-.164 N=88	-.075 N=91	.279** N=90
4.	16.7	3.12				-- N=91	-.270* N=82	.408** N=82	-.125 N=91	-.046 N=80	.053 N=86	.017 N=89	.371** N=88	-.255* N=86	-.460** N=90	.012 N=89
5.	3.20	.298					-- N=85	-.218 N=77	.234* N=85	.067 N=77	.072 N=82	.088 N=84	0.057 N=83	.683** N=85	.599** N=85	.295** N=85
6.	2.76	.508						-- N=84	-.128 N=84	-.132 N=73	-.132 N=79	-.025 N=82	.508** N=81	-.002 N=80	-.552** N=83	-.108 N=83
7.	2.57	.697							-- N=94	-.030 N=83	.217* N=89	.195 N=92	.118 N=91	.098 N=89	.175 N=93	.164 N=92
8.	74.8	5.51								-- N=83	.108 N=80	-.050 N=83	-.302** N=83	.135 N=80	.176 N=82	-.167 N=81
9.	3.77	.50									-- N=89	.604** N=89	.210* N=88	-.024 N=85	.059 N=88	.032 N=88
10.	3.62	.70										-- N=92	.290** N=91	-.008 N=88	.009 N=91	-.030 N-90
11.	4.13	1.01											-- N=91	-.096 N=87	-.418** N=90	-.276** N=87
12.	3.31	.613												-- N=89	.449** N=88	-.276** N=87
13.	3.24	.57													-- N=93	-.070 N=91
14.	3.20	.76														-- N=92

1. Note: * < .05, ** <.01; 1= Partner Verbal Communication, 2= Personal Information-Seeking Behavior, 3= Partner Information-Seeking Behavior, 4= Dyadic Apprehension, 5= Mindfulness (KIMS Score), State Anxiety, 6= State Anxiety, 7=Uncertainty, 8= Nonverbal Affiliativeness, 9= Intimacy, 10= Liking, 11= Perceived Similarity, 12= Mindfulness Observing, 13= Mindfulness Describing, 14= Mindfulness Accepting

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APPENDIX A: PROTOCOL

Pre-Study

   I.   IRB Approval

  II.   Recruitment

       1. 10 points extra credit will be offered to students of cooperating instructors.

       2. Flyers will be posted around Colorado State University and the community of Fort Collins, Colorado announcing the need for participants.

       3. A call for participation blurb will be sent out on social media.

       4. Interested participants will contact the co-principal investigator, Joe Whitt, by phone or email.

 III.   Informed Consent (via Qualtrics)

 IV.   Scheduling

       1. After expressing interest in participation, participants will be directed to an online scheduling tool (www.appointy.com). The participants will apply their available time slots for a lab visit.

       2. Upon the deadline to express interest, participants will be directed to a Qualtrics survey. This survey allows them to indicate which of the other participants are strangers and non-strangers.

  V.   Assignments

       1. Discussant partner (n=30), mindfulness treatment (n=15), or control treatment (n=15).

2. Participants who indicate a stranger within the pool of names on the same lab day will be randomly assigned to a treatment condition and dyadic pair.

    a) Ideally, the research will incorporate equal numbers of male:male dyads and female:female dyads.

    b) Dyads will consist of one neutral interaction partner and one treatment group participant.

3. Discussant partners are non-treatment participants; they will arrive on the day of the study.

4. Participants in the mindfulness treatment condition will complete daily 10-minute guided meditation exercises on Headspace.com called "take-10" for three consecutive days prior to the lab visit and one final "take-10" on the day of the study prior to arrival.

5. Participants in the control treatment group will merely be given the task of taking 10 minutes out of their day for "quiet alone time" for three consecutive days prior to the lab visit and one final 10-minute session on the day of the study prior to arrival.

VI. Pre-Study Survey

1. Before any manipulation (treatment) occurs, all participant will complete a pre-study survey on Qualtrics.

    a) Demographic information

    b) Kentucky Inventory of Mindfulness Skills (Baer, Smith, & Allen, 2004).

      c)   The dyadic apprehension items of the Personal Report of

               Communication Apprehension (McCroskey, Beatty, Kearney, &

               Plax 1985).

VII.   Study

    1.   Participants arrive at scheduled lab visit time.

       a)   Instruct participants to refrain from conversing until study begins.

       b)   When all participants have arrived, pair randomized dyads

               accordingly.

       c)   Once dyads are paired, tell them to find their own space within the

               lab.

       d)   Before conversing, participants will complete a pre-interaction

               survey.

           i.   CL7 (Clatterbuck, 1979)

           ii.   State Anxiety Scale (Spielberger, 1977)

           iii.   Kentucky Inventory of Mindfulness Skills (Baer, Smith, &

                  Allen, 2004)

    2. Instruct dyads to "get acquainted" with each other. (Sunnafrank, 1990)

    3. Allow partners to converse for 10 minutes. (Sunnafrank, 1988)

    4. Record time of initiation.

    5. Record time of interaction conclusion.

    6. Upon completion of 10-minute dialogue, participants will complete a post-

       interaction survey that addresses self- and partner-related communicative

       performance.

      i.   Verbal communication

      ii.   Non-verbal communication

     iii.   Reciprocity of self-disclosure

     iv.   Information seeking behavior

      v.   Interpersonal liking

     vi.   Intimacy

    vii.   Perceived similarity

7. Conclude lab session

    a)   Thank participants for their participation in study.

    b)   Ask participants if they have any questions.

    c)   Bid farewell.

Thank you so much for participating in our study on communicating in social relationships.

Demographic Questions

1. Please report your participant ID# in the space provided. _____

2. Please report your age: _____

3. What is your biological sex?

      Male

      Female

4. How would you describe your ethnic background?
Black/African American
Asian/pacific islander
Native American
Hispanic
Caucasian
Other

5. Which of the following terms best describes your sexual orientation?
Lesbian
Gay
Bisexual
Queer
Heterosexual
Other

<u>Mindfulness</u>

Kentucky Inventory of Mindfulness Skills (Baer, Smith, & Allen, 2004):

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

	Never or Rarely True	Rarely True	Sometimes True	Often True	Very Often or Always True
I notice changes in my body, such as whether my breathing slows down or speeds up.					
I'm good at finding the words to describe my feelings.					
When I do things, my mind wanders off and I'm easily distracted.					
I criticize myself for having irrational or inappropriate emotions.					
I pay attention to whether my muscles are tense or relaxed.					
I can easily put my beliefs, opinions, and expectations into words.					
When I'm doing something, I'm only focused on what I'm doing, nothing else.					
I tend to evaluate whether my perceptions are right or wrong.					
When I'm walking, I deliberately notice the sensations of my body moving.					

I'm good at thinking of words to express my perceptions, such as how things taste, smell, or sound.					
I drive on "automatic pilot" without paying attention to what I'm doing.					
I tell myself that I shouldn't be feeling the way I'm feeling.					
When I take a shower or bath, I stay alert to the sensations of water on my body.					
It's hard for me to find the words to describe what I'm thinking.					
When I'm reading, I focus all my attention on what I'm reading.					
I believe some of my thoughts are abnormal or bad and I shouldn't think that way.					
I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.					
I have trouble thinking of the right words to express how I feel about things.					
When I do things, I get totally wrapped up in them and don't think about anything else.					
I make judgments about whether my thoughts are good or bad.					
I pay attention to sensations, such as the wind in my hair or sun on my face.					

When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.					
I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.					
I tend to make judgments about how worthwhile or worthless my experiences are.					
I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.					
Even when I'm feeling terribly upset, I can find a way to put it into words.					
When I'm doing chores, such as cleaning or laundry, I tend to daydream or think of other things.					
I tell myself that I shouldn't be thinking the way I'm thinking.					
I notice the smells and aromas of things.					
I intentionally stay aware of my feelings.					
I tend to do several things at once rather than focusing on one thing at a time.					
I think some of my emotions are bad or inappropriate and I shouldn't feel them.					
I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow					

My natural tendency is to put my experiences into words.					
When I'm working on something, part of my mind is occupied with other topics, such as what I'll be doing later, or things I'd rather be doing.					
I disapprove of myself when I have irrational ideas.					
I pay attention to how my emotions affect my thoughts and behavior.					
I get completely absorbed in what I'm doing, so that all my attention is focused on it.					
I notice when my moods begin to change.					

The KIMS is used to assess 4 mindfulness skills:

- Observing: mindfulness involves observing, noticing or attending to various stimuli including internal phenomena (cognitions, bodily sensations) and external phenomena (sounds, smells). Items: 1, 5, 9, 13, 17, 21, 25, 29, 30, 33, 37, 39.

- Describing: involves participant describing, labelling, or noting of observed phenomena by applying words in a nonjudgmental way. Items: 2, 6, 10, 14, 18, 22, 26, 34.

- Acting with awareness: being attentive and engaging fully in one's current activity. Includes the DBT skills of 'participating' and 'one-mindfully'. Items: 3, 7, 11, 15, 19, 23, 27, 31, 35, 38.

- Accepting (or allowing) without judgment: to allow reality or what is there, to be as it is without judging, avoiding, changing, or escaping it. Items: 4, 8, 12, 16, 20, 24, 28, 32, 36.

Scoring: Items are rated on a 5 point Likert scale ranging from 1 (never or very rarely true) to 5 (almost always or always true). Items reflect either direct descriptions of the mindfulness skills, or they describe the absence of that skill and are reverse scored. High scores reflect more mindfulness.

<u>Dyadic apprehension</u>

Personal Report of Communication Apprehension (McCroskey, Beatty, Kearney, & Plax, 1985):

Instructions: Please indicate the degree to which you disagree or agree with the following statements.

	Strongly Disagree	Disagree	Neither disagree or agree	Agree	Strongly Agree
1. While participating in a conversation with a new acquaintance, I feel very nervous.					
2. I have no fear of speaking up in conversations.					
3. Ordinarily I am very tense and nervous in conversations.					
4. Ordinarily I am very calm and relaxed in conversations.					
5. While conversing with a new acquaintance, I feel very relaxed.					
6. I'm afraid to speak up in conversations.					

Dyadic apprehension = 18 + (1) – (2) + (3) – (4) – (5) + (6)

State Anxiety:

State-Anxiety Inventory for Adults (Spielberger, 1977):

1=Not at all
2=Somewhat
3=Moderately So
4=Very Much So

1. I feel calm
2. I feel secure
3. I am tense
4. I feel strained
5. I feel at ease
6. I feel upset
7. I am presently worrying over possible misfortunes
8. I feel satisfied
9. I feel frightened
10. I feel comfortable
11. I feel self-confident
12. I feel nervous
13. I am jittery
14. I feel indecisive
15. I am relaxed
16. I feel content
17. I am worried
18. I feel confused
19. I feel steady
20. I feel pleasant

Interactional Certainty

CL7 Attribution Confidence Scale (Clatterbuck, 1979)*:*

1. How confident are you of your general ability to predict how he/she will behave?
    1. Not confident at all
    2. Little confidence
    3. I am unsure how confident
    4. Fairly confident
    5. Very confident

2. How certain are you that he/she likes you?
    1. Not certain
    2. A little certain
    3. I am unsure how certain
    4. Fairly certain
    5. Very certain
3. How accurate are you at predicting the values he/she holds?
    1. Not accurate at all
    2. A little accurate
    3. I am unsure how accurate
    4. Fairly accurate
    5. Very accurate
4. How accurate are you at predicting his/her attitudes?
    1. Not accurate at all
    2. A little accurate
    3. I am unsure how accurate
    4. Fairly accurate
    5. Very accurate
5. How well can you predict his/her feelings and emotions?
    1. Not well at all
    2. A little
    3. I unsure how well
    4. Fairly well
    5. Very well
6. How much can you empathize with (share) the way he/she feels about himself/herself?
    1. None
    2. A little
    3. Unsure
    4. A fair bit
    5. A lot
7. How well do you know him/her?
    1. None
    2. A little
    3. Unsure
    4. A fair bit
    5. Very well

APPENDIX D: POST-INTERACTION SURVEY

Verbal Communication

	None	Little	Some	A lot
1. How much talk did your interaction partner contribute?				

Non-Verbal Affiliativeness

Nonverbal Immediacy Scale (Richmond, McCroskey, & Johnson, 1995):

	Never	Rarely	Occasionally	Often	Very Often
1. He/she used her/his hand and arms to gesture while talking to me.					
2. He/she touched me on the shoulder or arm while talking to me.					
3. He/she used a monotone or dull voice while talking to me.					
4. He/she looked over or away from others when they touch me while we are talking.					
5. He/she moved away from me when I touched him/her while we were talking.					
6. He/she has a relaxed body position when he/she talked to me.					
7. He/she frowned while talking to me.					
8. He/she avoided eye contact while talking to me.					
9. He/she had a tense body position while talking to me.					
10. He/she sat close or stood close to me when talking to me.					
11. Her/his voice was monotonous or dull when he/she talked to me.					
12. He/she used a variety of vocal expressions when he/she talked to me.					
13. He/she gestured when he/she talked to me.					

14. He/she was animated when he/she talked to me.						
15. He/she had a bland facial expression when he/she talked to me.						
16. He/she moved closer to me when he/she talked to me.						
17. He/she looked directly at me while talking to me.						
18. He/she was stiff when he/she talked to me.						
19. He/she had a lot of vocal variety when he/she talked to me.						
20. He/she avoided gesturing while he/she talked to me.						
21. He/she leaned toward me when he/she talked to me.						
22. He/she maintained eye contact with people when he/she talked to me.						
23. He/she tried not to sit or stand close to me when he/she talked with me.						
24. He/she leaned away from people when he/she talked to me.						
25. He/she smiled when he/she talked to me.						
26. He/she avoided touching me when he/she talked to me.						

Scoring for NIS-O

Step 1. Start with a score of 78. Add the scores from the following items:

　　1, 2, 6, 10, 12, 13, 14, 16, 17, 19, 21, 22, and 25

Step 2. Add the scores from the following items:

　　3, 4, 5, 7, 8, 9, 11, 15, 18, 20, 23, 24, and 26.

Total Score = Step 1 minus Step 2

Information Seeking Behavior

Borgatti & Cross (2003):

	Never	Rarely	Occasionally	Often	Very Often
1. Please indicate how often you turned to this person for information or knowledge.					
2. Please indicate how often this person turned to you for information or knowledge.					

Intimacy

Burgoon & Hale (1987):

	Strongly Disagree	Disagree	Neither disagree or agree	Agree	Strongly Agree
1. He/she was intensely involved in our conversation.					
2. He/she did not want a deeper relationship between us.					
3. He/she was not attracted to me.					
4. He/she found the conversation stimulating.					
5. He/she communicated coldness rather than warmth.					
6. He/she created a sense of distance between us.					
7. He/she acted bored by our conversation.					
8. He/she was interested in talking to me.					
9. He/she showed enthusiasm while talking to me.					
10. He/she made me feel he/she was similar to me.					
11. He/she tried to move the conversation to a deeper level.					

12. He/she acted like we were good friends.					
13. He/she seemed to desire further communication with me.					
14. He/she seemed to care if I liked him/her.					
15. He/she was sincere.					
16. He/she was interested in talking with me.					
17. He/she wanted me to trust him/her.					
18. He/she was willing to listen to me.					
19. He/she was open to my ideas.					
20. He/she was honest in communicating with me.					

Perceived Similarity

Perceived Homophily in Interpersonal Relationships (McCroskey, Richmond, & Daly, 1975):

Instructions: Indicate where your partner fits along the continuum between statements.

Doesn't think like me	1 2 3 4 5 6 7	Thinks like me
Behaves like me	1 2 3 4 5 6 7	Doesn't behave like me
Similar to me	1 2 3 4 5 6 7	Different from me
Unlike me	1 2 3 4 5 6 7	Like me
From social class similar to mine	1 2 3 4 5 6 7	From social class different from mine
Economic situation different from mine	1 2 3 4 5 6 7	Economic situation like mine
Status like mine	1 2 3 4 5 6 7	Status different than mine
Background different from mine	1 2 3 4 5 6 7	Background similar to mine
Morals unlike mine	1 2 3 4 5 6 7	Morals like mine
Sexual attitudes unlike mine	1 2 3 4 5 6 7	Sexual attitudes like mine
Shares my values	1 2 3 4 5 6 7	Doesn't share my values

		1 2 3 4 5 6 7	
Treats people like I do		1 2 3 4 5 6 7	Doesn't treat people like I do
Looks similar to me		1 2 3 4 5 6 7	Looks different from me
Different size than I am		1 2 3 4 5 6 7	Same size I am
Appearance like mine		1 2 3 4 5 6 7	Appearance unlike mine
Doesn't resemble me		1 2 3 4 5 6 7	Resembles me

Interpersonal Liking

	Strongly Disagree	Disagree	Neither Agree not Disagree	Agree	Strongly Agree
I think he/she could be a friend of mine.					
He/she just wouldn't fit into my circle of friends.					
We could never establish a personal friendship with each other.					

Reciprocity Rate

Instructions: To what extent would you agree with the following statements?

	Strongly Disagree	Disagree	Neither Agree not Disagree	Agree	Strongly Agree
I feel that my partner and I disclosed information about ourselves in a similar manner.					
I feel that I disclosed more information than my partner.					
I chose not to disclose as much information about myself to my partner as my partner disclosed to me.					

APPENDIX E: COVER LETTER

September 8, 2014

Dear Participant,

My name is Joe Whitt, and I am a research from Colorado State University in the Communication Studies Department. We are conducting a research study on initial interactions. The title of the project is Examining Mindfulness-Based Training Effects Upon Uncertainty Reduction in Initial Interaction Between Strangers. The Principal Investigator is Dr. John Crowley, and the Co-Principal Investigator is Joe Whitt.

We would like you to participate in the study by engaging in dialogue with a stranger and completing surveys. Participation will take approximately 10 minutes for scheduling, 40 minutes for completing surveys, and 10 minutes for dialogue. Then, some participants will be asked to complete four 10 minute mindfulness training sessions: one daily session in the three days prior to lab day and one on the day of the lab visit prior to arrival. Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participation at any time without penalty.

All information will remain confidential by assigning a number to each participant that will be used in place of a name on all documents. Some possible benefits from participating in this study include increased mindfulness, newfound insight, and increase social network size. The risks of participation are minimal; however, there is a chance that your interaction partner says something rude or inappropriate within the dialogue which may be offensive. It is not possible to identify all potential risks in research procedures, but the researchers have taken reasonable safeguards to minimize any known risks.

If you have any questions, please contact Joe Whitt at joe.whitt@colostate.edu. If you have any questions about your rights as a volunteer in this research, contact Evelyn Swiss, Senior IRB Coordinator, at 970-491-1381.

Thank you for participating.

Sincerely,

Dr. John Crowley   Joe Whitt
Assistant Professor   Graduate Student

APPENDIX F: VERBAL RECRUITMENT SCRIPT

In conversational style, …

Hello, my name is Joe Whitt and I am a researcher from Colorado State University in the Department of Communication Studies. We are conducting a research study to examine how mindfulness practice may impact how we communicate with strangers. We are specifically examining how mindfulness may benefit the negative affect, relational automaticity, and relational outcomes associated with initial interaction. The title of the project is Examining Mindfulness-Based Training Effects Upon Uncertainty Reduction in Initial Interaction Between Strangers. The Principal Investigator is John Crowley, Department of Communication Studies. The Co-Principal Investigator is Joe Whitt.

We would like you to participate in the study by engaging in dialogue with a stranger and completing surveys. Participation will take approximately 10 minutes for scheduling, 40 minutes for completing surveys, and 10 minutes for dialogue. Then, some participants will be asked to complete four 10 minute mindfulness training sessions: one daily session in the three days prior to lab day and one on the day of the lab visit prior to arrival.

Participation will take approximately 1 hour and 40 minutes in total from the beginning to the end of the study. Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participation at any time without penalty.

We will be collecting your name, but, for this study, we will assign a code to your data so that the only place your name will appear in our records is on the consent and in our data spreadsheet which links you to your code. When we report and share the data with others, we will combine the data from all participants. There are no known risks or direct benefits to you, but we hope to gain more knowledge on ways to help people become more open toward strangers. You can receive 10 points extra credit (upon the discretion of the faculty).

Would you like to participate?

If yes: Proceed.

If no: Thank you for your time.

Offer to give the participant contact information and the Participant's Rights contact information (If you have questions about your rights as a volunteer in this research, contact Evelyn Swiss, Senior IRB Coordinator, at 970-491-1381).

APPENDIX G: INFORMED CONSENT FORM

Consent to Participate in a Research Study

Colorado State University

TITLE OF STUDY:
Examining Mindfulness-Based Training Effects Upon Uncertainty Reduction in Initial
Interaction Between Strangers

PRINCIPAL INVESTIGATOR

John Crowley, Assistant Professor, Department of Communication Studies

Colorado State University, Fort Collins CO 80523-1783 USA

Email: john.crowley@colostate.edu

CO-PRINCIPAL INVESTIGATOR:

Joe Whitt, Department of Communication Studies

Colorado State University, Fort Collins CO 80523-1783 USA

Email: joe1@rams.colostate.edu

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?
You are invited to take part in a research study about stranger communication in initial
interaction. This information sheet gives a general overview of this research opportunity. If you
have questions, please contact Joe Whitt at joe1@rams.colostate.edu *

*Please note that we cannot guarantee the confidentiality of information sent by e-mail.

WHO IS DOING THE STUDY?
The study is being conducted by Joe Whitt of the Department of Communication Studies at the
Colorado State University. Advising this project is Dr. John Crowley (Committee Chair), Dr.
Eric Aoki (Inside Committee Member), and Dr. Kathryn Rickard (Outside Committee Member)

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this study is to examine how mindfulness affects relational outcomes in initial interaction. We are specifically examining how one's degree of mindfulness impacts communicative behavior in initial interaction such as verbal and non-verbal expression, information seeking, regulation of emotion, and interpersonal relationship building.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?
Study procedures will be carried out in laboratory rooms in the Department of Communication Studies at Colorado State University. Involvement will require up to 100 minutes over a 4 day span.

WHAT WILL I BE ASKED TO DO?
If you agree to participate, we will schedule a time for you to come into the lab for a ten minute conversation with a stranger. Also, in the 3 days prior to the lab visit, you may be asked to engage daily in ten-minute mindfulness exercises which you can complete in your free time as well as one final ten-minute exercise on the day of the lab visit prior to arrival. Before and after the dialogue, you will be asked to complete a survey.

ARE THERE REASONS WHY I SHOULD NOT TAKE PART IN THIS STUDY? There are a few factors that would exclude you from participation in this study. You could be excluded from participating in this study if you:
  ➤ are not 18 years or older
  ➤ cannot attend one of the designated lab days
  ➤ are already acquainted with all of the potential dialogue partners

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?
  * Engaging in initial interaction can lead to feelings of awkwardness.
  * Additionally, you may experience discomfort or resentment of your partner's particular views, beliefs, opinions, and demeanor.
  * It is not possible to identify all potential risks in research procedures, but the researcher has taken reasonable safeguards to minimize any known and potential, but unknown, risks.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?
There may be no direct benefit to you from being in this research, but taking part in this study may help others to become more effective in fostering positive interpersonal relationships.

DO I HAVE TO TAKE PART IN THE STUDY? Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

WHO WILL SEE THE INFORMATION THAT I GIVE? We will keep private all research records that identify you, to the extent allowed by law.

For this study, we will assign a code to your data (e.g., 01-Male, 01-Female) so that the only place your name will appear in our records is on the consent and in our data spreadsheet which links you to your code. Only the research team will have access to the link between you, your code, and your data. The only exceptions to this are if we are asked to share the research files for audit purposes with the CSU Institutional Review Board ethics committee, if necessary. When we write about the study to share with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

Your identity/record of receiving compensation (NOT your data) may be made available to CSU officials for financial audits.

CAN MY TAKING PART IN THE STUDY END EARLY? If you fail to show up to the laboratory session you may be removed from the study. As noted, the study requires you to participate in one lab session and a daily exercise in the three days prior to the lab visit.

WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY? You can receive nominal extra credit for a course taught by cooperating instructors.

WHAT HAPPENS IF I AM INJURED BECAUSE OF THE RESEARCH? The Colorado Governmental Immunity Act determines and may limit Colorado State University's legal responsibility if an injury happens because of this study. Claims against the University must be filed within 180 days of the injury.

WHAT IF I HAVE QUESTIONS?
Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the co-principal investigator, Joe Whitt at joe1@rams.colostate.edu. If you have any questions about your rights as a volunteer in this research, contact the IRB at: RICRO_IRB@mail.colostate.edu; or 970-491-1553. We will give you a copy of this consent form to take with you.

WHAT ELSE DO I NEED TO KNOW?
Permission to re-contact:

Do you give permission for the researchers to contact you again in the future to follow-up on this study or to participate in new research projects? Please initial next to your choice below.

☐ Yes _____ (initials)
☐ No _____ (initials)

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing <u>3</u> pages.

_____   _____
Signature of person agreeing to take part in the study   Date

_____
Printed name of person agreeing to take part in the study

_____   _____
Name of person providing information to participant   Date

_____
Signature of Research Staff

APPENDIX H: SOCIAL MEDIA RECRUITMENT BLURB

REQUEST FOR RESEARCH PARTICIPANTS
Researchers from the Department of Communication Studies at Colorado State University are recruiting participants for a study to examine the effects of mindfulness training on individuals' communicative behavior in initial interaction with strangers. If you are above 18 years of age and can attend a designated lab day, then you may be eligible to participate.

To find out more about who can join this study, what you'll be asked to do, the benefits associated with this study, and how you can join, please contact Joe Whitt by e-mail, joe1@rams.colostate.edu, or by phone at (402)-369-3285.

Eligible participants who are in classes with cooperating teachers will receive 10 points extra-credit for their participation.