Mindfulness in Communication: Examining the Behavioral Trail of Mindfulness Training

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A dissertation

submitted in partial fulfillment of the

requirements for the degree of

Doctor of Philosophy

University of Washington

2024

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Program Authorized to Offer Degree:

Communication

University of Washington

Abstract

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Mindfulness, rooted in ancient tradition and contemporary research, has garnered recognition for its effectiveness in stress reduction and psychological well-being. Recent research expands mindfulness applications to everyday contexts, emphasizing its interpersonal implications. This study sought to explore how mindfulness influences interpersonal communication by addressing a gap in understanding its behavioral manifestations and causal relationships. By testing a brief online mindfulness intervention against control groups, this study found an effect of mindfulness training on behavior in initial interactions, contributing to the growing field of interpersonal mindfulness research. Specifically, results showed support for increased acceptance and awareness behavior in the mindfulness intervention group compared to the passive (i.e., no-task) control group, indicating subtle changes in initial interactions. There were also significant

correlations between observed ratings of attentiveness and awareness gathered from trained raters and post-interaction evaluations completed by conversation partners. While the study provides valuable insights, limitations in experimental design and interpretation highlight the need for further research in this area.

Keywords: mindfulness, meditation, breathing, interpersonal mindfulness, attentiveness, awareness, acceptance, initial interaction, strangers, Buddhism, empathy, compassion, social isolation, connection

For my family

Acknowledgements

There are many who aided me in completing this dissertation, and I am deeply grateful for the support that ferried me to the finish. Among them, I would like to give special thanks to my co-advisors Dr. Valerie Manusov and Dr. John Crowley, both of whom have been a wellspring of inspiration and guidance. Valerie, thank you for your continued dedication to helping me grow as an author, your careful consideration of my work, and sharpening my ideas herein and beyond. John, thank you for your many years of mentorship, your generosity in taking me under your wing and training me, and your profound influence on my approach to interpersonal communication and scholarship.

I also want to give recognition to my family who have stood behind me, motivated me, and built me up from the very beginning. To my wife Lindsey, thank you for encouraging me to forge ahead, helping me make sense of ideas, listening to my tireless musings, and supporting me and our family in innumerable ways so that this project could be completed. To my son Rhodes, thanks for always giving me a reason to smile and come back to the present. To my son on the way, thanks for motivating me to see this project through in preparation of meeting you. To my mother and father, Deb and Ron Whitt, thanks for always nurturing my curiosity, ardently supporting my success, and stoking my interests in communication studies. Lastly, to my siblings Dave, Jenn, Robin, Derek, and John, thanks for sharing with me your assorted brilliances and blazing your distinctive paths—I credit much of who I am, how I think, and the questions I ask, to you.

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Chapter 1: Introduction, Rationale, and Literature Review

Mindfulness is an ancient tradition of "remembering to come back to the present moment" (Hanh, 1998, p. 64). A more contemporary understanding of mindfulness is "the awareness that emerges through paying attention, on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment" (Kabat-Zinn, 2003, p. 145). Ample research demonstrates the efficacy of mindfulness in stress reduction and cultivating psychological well-being (Goyal et al., 2014; Kabat-Zinn, 2013; Segal et al., 2002).

Recently, researchers have moved to investigate the application of mindfulness to everyday contexts (e.g., work, education, parenthood, healthcare) that are tied inherently to relationships with others. This new body of research illustrates that the benefits of mindfulness are not limited to the individual (i.e., the solitary experience of mindful meditation and to the person's state of mind). Rather, the practice of mindfulness cultivates a way of being and relating to the world and to others that has interpersonal implications (Bartlett et al., 2022; Karremans et al., 2017; Kelley & Nichols, 2023; Pratscher et al., 2019). The present study aims to advance the current understanding of the interpersonal enactments of mindfulness, especially as it pertains to how strangers communicate with one another.

This project is a response to multiple calls for further examination of what has been called *interpersonal mindfulness*. The connection between mindfulness and communication and relationships is relatively well-established (Harvey et al., 2019; Jones et al., 2016; Manusov & Huston, 2018; Wachs & Cordova, 2007), though the fundamentals of this connection have not been fully explored or established. Specifically, the extent to which individuals' mindfulness manifests behaviorally in distinct ways (i.e., has a behavioral "trail") remains a pressing inquiry

for this burgeoning field of research (Leavitt & Karramans, 2023), as most of the behavioral connections related to mindfulness come from self-reports.

Moreover, with few random-controlled studies testing interpersonal outcomes (Creswell et al., 2017), communication scholars are constrained in their ability to make claims of *how* interactional and relational outcomes are facilitated or to what extent those effects extend beyond the internal or intra-psychic reality of a person's degree of or cultivated mindfulness. Despite mindfulness being considered a road to connection, insight, and purpose (Dahl & Davidson, 2019), the actual pathway, or behavioral trail, of mindfulness remains un-demarcated. Understanding more fully how interpersonal communication is influenced by mindfulness is therefore necessary to better reveal its interpersonal and relational implications.

Additionally, because mindfulness is a human capacity that can be honed through training and practice (Kabat-Zinn, 2003; Kok & Singer, 2017; Mrazek et al., 2019; Nyanaponika, 1973; Rosenkranz et al., 2019; Singer & Engert, 2019), this study will determine whether a brief, online mindfulness intervention can yield discernible interpersonal communication differences when compared to active and passive control groups. The procedure in this study is among the first to test and observe the interpersonal enactment of mindfulness training experimentally, and it will allow for claims of causality in the mindfulness-communication relationship. The findings will be interpreted within the context of initial interactions but provide useful foundation for future inquiries in the growing body of interpersonal mindfulness research beyond this context.

This dissertation unfolds in the following stages. First, a review of literature situates the need to study interpersonal mindfulness in the context of initial interaction. Second, it explores existing conceptualizations, including Buddhist philosophies, of mindfulness as well as the "interpersonal turn" in mindfulness research to best situate an operationalization of interpersonal

mindfulness that can be studied through observational methods. Third, it describes an experimental procedure aimed at isolating the effect of mindfulness training in interaction before discussing the findings, limitations, directions for future research, and conclusions.

Interacting with Strangers

Embedding the investigation of interpersonal mindfulness in a particular relational context is critical, given that individuals' behavior is mutable across social contexts. As such, any observed behavior should only be made sense of within the context in which it occurs (Clark-Polner & Clark, 2014). Drawing conclusions that generalize beyond a given context without further study comes with risk (Clark-Polner & Clark, 2014). For reasons explained in more detail below, initial interaction with strangers is the focal context for this dissertation.

Situating the study in this context of initial interactions is part of a broader research agenda aimed at understanding ways of promoting social connectedness. Previous research has explored a diverse range of social contexts where mindfulness proves beneficial (Leavitt & Karremans, 2023). Specifically, mindfulness has been examined in romantic relationships (Carson et al., 2004; Karremans et al., 2017), the workplace (Dane & Brummel, 2013; Hulsheger et al., 2013), and parent-child relationships (Chaplin et al., 2021; Zhang et al., 2022).

Despite this breadth of applications, initial interaction, a context ripe for mindfulness applications, has received less scholarly attention (van der Schans et al., 2023). The application of mindfulness to initial interactions is, however, a promising direction. Centering this study of interpersonal mindfulness in the context of initial interactions may offer insight to overcoming interpersonal barriers to building new relationships as well as practical intervention to the growing epidemic of social isolation and its myriad downstream consequences. Each of these reasons is discussed next.

Overcoming Interpersonal Barriers to Building New Relationships

There are cognitive and emotional barriers to initial interactions, such as the prevailing preference of individuals to remain in isolation amongst strangers instead of seeking connection (Epley & Schroeder, 2014). Communicating with a stranger is a social context known for harboring implicit bias, value judgments, uncertainty, anxiety, and social automaticity (Bargh & Williams, 2006; Berger & Calabrese, 1975; Gudykunst, 2005; Leary, 1983; Sunnafrank, 1986). Importantly, though, these are all conditions of mind that prior research suggests can be mitigated through mindfulness practice (Brown & Ryan, 2003; Carpenter et al., 2019; Kabat-Zinn, 2003; Lueke & Gibson, 2015; Nekić & Mamić, 2019; Segal et al., 2002; Tran et al., 2020; Wenk-Sormaz, 2005). This is not to suggest that mindfulness is unequivocally beneficial for everyone, as it can be injurious for some populations (Britton, 2019). But if mindfulness does manifest in behavior, initial interactions are a context that should lend well to detecting differences between those who are trained in mindfulness and those who are not.

Historically, initial interaction research has highlighted signature features like the drive to reduce uncertainty about strangers before meaningful relational development can occur (Berger & Calabrese, 1975). It is conceptualized as the "initiating" phase of coming together into relationship with people where individuals are making first impressions and assessing each other's suitability for further interaction (Knapp, 1978). Moreover, prior research has highlighted the rapidity with which impressions are formed in first encounters (Berg & Clark, 1986) and the quick and accurate assessments people can make regarding others' personality traits like conscientiousness, emotional stability, and openness (Gosling et al., 2002). Taken together, prior research converges around the idea that there is a window of interaction, often brief, where strangers experiment with one another to discern whether there is potential value in deepening

the connection (Sunnafrank, 1986, 1990). This highlights some of what is at stake in many initial interactions.

Decreasing Social Isolation

Initial interactions also carry often overlooked significance in building and maintaining a sense of social connectedness. A recent report published by the U.S. Surgeon General on loneliness and isolation issued a dire advisory about the downward trend of social connection and community as well as its threat to health, community safety, resilience, and prosperity (Murthy, 2023). Additionally, a 2022 study found that only 39% of adults in the U.S. felt very connected to others (Gallup, 2022), and other research demonstrates that nearly half of U.S. adults report experiencing loneliness, and highest among them are young adults (Bruce et al., 2019; Cigna Group, 2021; Shovestul et al., 2020). Thus, research that speaks to increasing the satisfaction with and benefits of more authentic initial interactions, may have real social impact, even if it does not lead to relational development.

Among the several strategies aimed at advancing social connection that U.S. Surgeon General Murthy (2023) posited, two are particularly relevant to the research agenda of this study: deepening our knowledge and building a culture of connection. In terms of deepening our knowledge, Murthy calls for a national research agenda to better understand the effectiveness of interventions that advance social connection. In terms of building a culture of connection, Murthy also suggests finding ways of cultivating values of kindness, respect, service, and commitment to one another. Whether the findings of this study provide answers and direction to these concerns will be addressed in the discussion and areas for future research. The following sections outline, however, the ways mindfulness research is linked to the underlying values guiding this research agenda.

Mindfulness Research

Long before the contemporary concerns with barriers to connection, inquiry, broadly construed, on mindfulness began around the 5th century BCE. This period was when the teachings of Gautama Buddha, first through oral tradition and later transcribed discourses (e.g., the satipaṭṭhāna sutta, the Discourse on the Establishing of Mindfulness), began to proliferate across Asia (Analayo, 2018; Hanh, 1998). Whereas similar practices and conceptions of mindfulness can be traced further back in history and among other cultural traditions, the systematic integration of mindfulness into a comprehensive doctrine aimed at enlightened awareness is attributed to the Buddhist tradition. Mindfulness is described as "the heart" of Buddhist philosophy, due to its centrality and transformative role in achieving Buddha's teachings (Hanh, 1998). Over time, different schools and traditions of Buddhism have emerged, resulting in the development of Theravada, Mahayana, and Vajrayana Buddhism, among others (Hanh, 1998), all of which have contributed uniquely to the perspectives and practice of mindfulness as we now know it today.

Buddhist Teachings Inform the Operationalization of Interpersonal Mindfulness

To better identify specific interpersonal behaviors for measurement in the present study, it is important to further overview Buddhist teachings on mindfulness. Moreover, re-infusing Buddhist frameworks into mindfulness research better ensures integrity in its application (Dunne, 2015; Kang & Whittingham, 2010; Purser & Milillo, 2015). That is, having an additional means of operationalizing and vetting representative behaviors of interpersonal mindfulness is invaluable to the broader aims of this study, and it safeguards against possible misconceptions and misuse by practitioners lacking fundamental knowledge of the practice (Krageloh, 2014).

Additionally, incorporating Buddhist philosophy provides theoretical and ethical grounding often missing in Western frameworks. Mindfulness, as understood from a Buddhist perspective, is less of an objective to achieve and more of a way of being. It is the energy, for instance, that returns us to our bodies to practice mindful breathing (Hanh, 1998). It is through mindfulness that the deeper purposes of the practice are to be realized (Kabat-Zinn, 2019). For example, through mindfulness meditation—meditation aimed at stabilizing present-centered awareness—practitioners generate insight (*vipassana*) into, for instance, the nature of nonself (*anatta*), impermanence (*anicca*), and suffering (*dukkha*) (Dahl & Davidson, 2019). Insights such as these reveal a broader truth (*paramartha satya*) of nonduality, which suggests that individuals' sense of individuality or separateness is illusory (Hanh, 1998). This last point leads to another reason why it is important to include Buddhist conceptualizations of mindfulness into this research: Buddhist philosophy is accustomed to illuminating the interpersonal extensions of mindfulness.

Buddhist philosophy espouses that mindfulness meditation is a pathway to accepting the interconnected nature of existence (i.e., interbeing), and knowing that individuals' well-being is intertwined with the well-being of others (Hanh, 1998). That is, nothing exists independently or in isolation from other beings or phenomena. Rather, everything is dependent on and connected to everything else. In this view, perceiving boundaries between self and other is a social construction that obscures the deeper reality of interconnection (Hanh, 1998). Because Western-based research has been entrenched largely in an intra-psychic (i.e., individualistic) paradigm of mindfulness and has only recently begun to uncover its interpersonal elements, it is useful to return to a perspective that has long acknowledged the reach of mindfulness beyond the

individual and holds that mindfulness cultivates the capacity for compassionate and ethical interpersonal behavior (Kang & Whittingham, 2010).

Although more connections can be drawn between interpersonal communication and Buddhist philosophy, three principles are highlighted: Right view (*samma ditthi*), nonself (*anatta*), and Right speech (*samma vaca*). To begin, mindfulness meditation bolsters practitioners' realization of Right view (*samma ditthi*). Right view is the ability to distinguish wholesome seeds (*kushala mula*) from unwholesome seeds (*akushala mula*) in our store consciousness (*alayavijñana*): it is "the capacity to wake up and understand things as they are," to discern, for instance, seeds of suffering, fear, or anger, or seeds of happiness and hope (Hanh, 1998, p. 52). Coupled with the tool of right mindfulness (*samma sati*), which "accepts everything without judging or reacting," people become inclusive and loving gardeners—cultivating the soil of consciousness—capable of tending to seeds that grow wholesome roots in our interpersonal lives while allowing unwholesome seeds to remain at rest in the soil of consciousness (Hanh, 1998, p. 64).

S*amma ditthi* is not a promotion of indifference to unwholesome seeds (*akushala mula*) in our store consciousness, but rather an extension of loving kindness toward them and knowing that our non-action with them (i.e., allowing them to remain at rest) is an act of love (Hanh, 1998). Non-action is, in fact, a variation of equanimity (*upeksha*), or letting go, which again is rooted in the practice of mindfulness (Hanh, 1998). Equanimity is considered an "aspect of true love" because maintaining an inner calm whilst engaging with *akushala mula* is a demonstration of loving everything and everyone equally (Hanh, 1998, p. 218). Extending this understanding to interpersonal relationships, when we become more aware of the seeds in our consciousness's storehouse, both wholesome and unwholesome, "we will not be surprised by our own behavior

or the behavior of others" (Hanh, 1998, p. 52). Instead, we better recognize the seeds that are being watered and respond compassionately. This is why mindfulness meditation is practiced traditionally in conjunction with practices that strengthen virtuous qualities like understanding, kindness, and compassion (Dahl & Davidson, 2019; Hanh, 1998). Meditating in these ways waters wholesome seeds that benefit our interpersonal lives.

The concept of nonself (*anatta*) challenges Western notions of fixed identities and autonomous selves but offers an important lens through which to understand interpersonal communication. At its core, *anatta* recognizes the absence of a permanent, independent self within individuals (Hanh, 1998). Thus, rather than viewing communication as an interaction between fixed and autonomous selves, *anatta* offers a perspective that selves are mutually dependent upon the interactions that continually shape them. *Anatta* reinforces views of interpersonal communication as constitutive (Manning, 2009), such that communication builds new realities and definitions of self and relationship which are in a perpetual state of becoming. Moreover, "[w]hen we transcend our idea of a separate self, our love will contain equanimity, knowing that we and others are truly the same" (Hanh, 1998, p. 219). In other words, in adopting the view of *anatta*, interlocutors are more inclined to connect with one another with acceptance, even in challenging situations.

Additionally, a particularly impactful principle of Buddhist philosophy that showcases its interpersonal ethic is Right Speech (*samma vaca*). Positioned within Buddhism's noble eightfold path, Right Mindfulness (*samma sati*) is the cornerstone for *samma vaca*. *Samma sati* is the energy that brings us back to the present moment which is the only moment in which compassion for others can be practiced. At the core of *samma vaca* is awareness of suffering caused by unmindful speech and inability to listen (Hanh, 1998). *Samma vaca* prescribes communication

practices that curb falsehoods, divisiveness, cruelty, and meaninglessness as well as emphasizing a listening style free of judgment, criticism, condemnation, and evaluation (Hanh, 1998). Rather, *samma vaca*-based listening does so "with the single purpose of helping the other person suffer less" (Hanh, 1998, p. 88). Among the many communication behaviors a researcher might examine, listening behavior stands out as particularly significant. Extensive research has been dedicated to understanding listening, and as is explored later, many aspects align closely with the principles of mindfulness.

The incorporation of Buddhist teachings into the study of mindfulness and communication not only provides additional theoretical foundation but also unveils the transformative potential of these practices. By acknowledging the interconnectedness of mindfulness and communication, and the ethic that emerges from their intermingling, we gain a deeper understanding of how these practices can contribute to interactions. Moreover, what is worth noting for later discussion are the various behaviors that are specifically highlighted, or at least can be derived from, Buddhist conceptualizations. In particular, this brief review of Buddhist principles highlights behaviors such as active listening, nonjudgment, equanimity (i.e., calm and "letting go"), and acceptance.

Mindfulness Enters the West

In the mid-to-late-20th century CE, mindfulness gained Western popularity through a variety of influences. Overcoming translational and cultural barriers was instrumental in introducing mindfulness to the West, and early pioneers include D.T. Suzuki (1935, 1959, 1962, 1963), Alan Watts (1957), Aldous Huxley (1956), Thich Nhat Hanh (1975), and individuals such as Jack Kornfield, Sharon Salzburg, and Joseph Goldstein who established the Insight Meditation Society in 1975 (Insight Meditation Society, 2024). Notably in clinical psychology, John Kabat-

Zinn's mindfulness-based stress reduction (MBSR) program (UMass Memorial Health, 2024) paved the way for mindfulness in the social sciences in 1979. The impact of innovators such as these is evident, as in recent years meditation is one the fastest growing health trends in the U.S. (Clarke et al., 2018). Meditation practice has not, however, gained widespread adoption, as only 4.1-5.2% of the U.S. population are estimated to be experienced meditation practitioners (Cramer et al., 2016). Thus, the study and practice of mindfulness and various contemplative practices has blossomed in Western culture, yet relative to Eastern culture, it remains in a nascent phase.

Cultural barriers have played a large role in impeding the diffusion of mindfulness and mindfulness research in the West. Western scholarship is largely entrenched in the philosophical and scientific traditions of the Enlightenment period that include an emphasis on rationality, secularism, individualism, and empirical inquiry (Dupré, 2004; Israel, 2001). Moreover, early social scientific scholarship investigating mindfulness departed intentionally from Buddhist frameworks and avoided spiritual associations to gather scholarly attention. Kabat-Zinn (2011) confirmed this decision, explaining that early mindfulness research was repackaged to avoid "being seen as Buddhist, 'New Age,' 'Eastern Mysticism' or just plain 'flakey'" (p. 282). At that time, using Buddhist terminologies was viewed as a "serious risk that would have undermined our attempts to present it as commonsensical, evidence-based, and ordinary, and ultimately a legitimate element of mainstream medical care" (Kabat-Zinn, 2011, p. 282). Consequently, secularized mindfulness frameworks became the prevailing paradigm within Western research efforts.

Within this body of work, there are a variety of definitions of mindfulness in academic research, many of which converge around a core set of interrelated characteristics. A common perspective of mindfulness, as articulated by Kabat-Zinn (2005), is "paying attention in a

particular way: on purpose, in the present moment, and nonjudgmentally. This kind of attention nurtures greater awareness, clarity, and acceptance of the present-moment reality" (p. 15). Kabat-Zinn's definition underscores two pivotal components: directing attention to present-moment experiences (e.g., mental states, bodily sensations) and observing these experiences with a nonjudgmental attitude (Bishop et al., 2004).

Other researchers describe mindfulness similarly as a state of consciousness characterized by enhanced attention and awareness (Brown & Ryan, 2003). Mindful awareness entails continuous monitoring of inner and outer events, while attention functions to narrow the scope of conscious awareness. Although awareness and attention are interconnected states of consciousness, individuals can be aware of emerging thoughts and feelings without necessarily attending to them. Attention extracts "figures" from the background "radar" of awareness, holding them in focus for varying durations (Brown & Ryan, 2003, p. 822).

Expanding on this foundation, researchers have identified key facets of mindfulness. These include observing internal and external phenomena, describing observations without conceptual analysis, acting with awareness by fully engaging in current activities, accepting experiences without judgment, and letting go of or decentering from intense emotional reactions (Baer et al., 2006). Furthermore, an integral aspect of mindfulness involves nonjudgment or the acceptance of the unfolding present moment. This facet involves observing the emergence and dissolution of various sensory perceptions, thoughts, bodily sensations, and emotions without value judgments or the development of aversion or attachment (Brown & Ryan, 2003). Withholding judgment for the objects of attention encapsulates the concept of bare awareness, characterized by the "receptive spaciousness of our mind" (Siegel, 2007, p. 160). These facets

contribute collectively to a broader understanding of what mindfulness represents as both a mental and lived experience.

Building on these conceptualizations, scholars have begun addressing the ways mindfulness extends to interaction. Because mindfulness can be considered a way of being that we bring into our engagements with others (Hanh, 2013), definitions have evolved to encompass interpersonal elements. This shift recognizes the broader impact of mindfulness on communication with others, emphasizing its dynamic, interactional, and relational nature. The following section outlines what can be understood as an "interpersonal turn" in mindfulness research.

The Interpersonal Turn in Mindfulness Research

In recent years, some mindfulness research has shifted from *intra*personal conceptualizations to an *inter*personal orientation. Even though the terminology for this wave of research varies (e.g., interpersonal mindfulness, relational mindfulness, mindfulness in communication), the scholars engaging in this area of research (e.g., Arendt et al., 2019; Bartlett et al., 2022; Grossman, 2008; Harvey Knowles et al., 2015; Huston et al., Karremans et al., 2017; Kelley & Nichols, 2023; Pratscher et al., 2019) work to understand the ways intrapsychic qualities of mindfulness manifest in interpersonal interactions. This turn or shift is supported by the recognition that, whereas mindfulness is conceptualized conventionally as an individual practice, individuals often engage in mindfulness in the presence of others and are encouraged to do so (Hanh, 2013; Jones & Youngvorst, 2019).

The following discussion provides some of the existing frameworks that define and operationalize interpersonal mindfulness. Importantly, each of the frameworks share common

language and conceptual elements. Each will be reviewed, and ultimately, conclusions will be drawn in how to operationalize interpersonal mindfulness for this study.

To begin, Pratscher et al. (2019) conceptualize interpersonal mindfulness as maintaining "a receptive awareness of what is going on during interpersonal interactions, moment-by-moment" (p. 2). This perspective encompasses awareness of internal experiences (e.g., thoughts, emotions, bodily sensations, intentions, reactions) and attending to the experiences of interactional partners (e.g., apparent mood, verbal tone, body position) during encounters (Pratscher et al., 2019). With the aim of constructing a self-report inventory of interpersonal mindfulness, Pratscher et al. generated items to represent four theoretical categories of interpersonal mindfulness: (1) presence, (2) awareness of self and others, (3) nonjudgmental acceptance, and (4) nonreactivity.

Their subsequent factor analysis of these items was largely consistent with the conceptual categories used to generate them and revealed the underlying characteristics of each category. *Presence* involved "paying attention to the present moment while interacting with another person" (p. 5). *Awareness of self and others* represented "noticing one's own moods and emotions and being aware of the moods and nonverbal cues of others during an interpersonal interaction" (p. 5). *Nonjudgmental acceptance* reflected "listening without judgment and accepting interpersonal experiences as they occur" (p. 5). Lastly, *nonreactivity* indicated "taking time to respond instead of thoughtlessly reacting to another person" (p. 5).

Arendt et al. (2019) operationalized mindfulness in communication (MIC) *a priori* using three key facets: *being present and paying attention*, *displaying an open and non-judging attitude*, and *maintaining calmness without impulsivity* during conversations. Like Pratscher et al., (2019), Arendt and colleagues" (2019) categories are the features of attention, nonjudgmental

acceptance, and nonreactivity, but their conceptualization does not feature awareness. Another distinction is the context in which mindfulness in communication is being applied: The constructed instrument was intended to capture dimensions of MIC as means of assessing leadership communication with followers. For instance, the aspect of being present and attentive involves assessing whether followers feel they have the full attention of their leader in conversations, or in contrast, whether the leader demonstrates impatience or half-listening. The facet of showing an open and non-judging attitude is measured by examining whether the supervisor first listens before forming opinions, as opposed to prematurely forming opinions or holding preconceived notions. The dimension of being calm and non-impulsive in conversations encompasses items addressing the leader's ability to stay calm in tense situations rather than getting easily worked up or letting emotions boil over. Overall, Arendt et al. sought to provide a roadmap for evaluating mindfulness in leaders' communication.

Another framework proposed by Kelley and Nichols (2023) presented three supra-themes of relational mindfulness: *presence with, awareness of*, and *nonjudgment by*. This framework is similar to Prascher et al. (2019), with a main distinction being the folding-in of nonreactivity to the nonjudgment category. The inclusion of prepositions in these supra-themes emphasizes the relational element of the constructs by alluding to the assumed other. An additional aspect of Kelley and Nichols's (2023) study that distinguishes it from the previous frameworks is that the themes emerged qualitatively. That is, they identified features of relational mindfulness from data initially intended to explore descriptive accounts of relational intimacy.

The authors suggest that what is understood commonly as intimate communication may encompass aspects of mindfulness in communication. Moreover, their study implies that scholars in the field might have explored mindfulness-like constructs using different terminologies,

potentially overlooking mindfulness as a supra-theme encompassing various communication patterns. Kelley and Nichols' perspective understands known behaviors *as* mindfulness in communication. This is a critical insight, as it provides a warrant for pursuing conceptually related communication behaviors as potential markers of interpersonal mindfulness.

The three frameworks just reviewed converge on the idea that mindfulness extends beyond inner experiences to influence how individuals engage with and orient towards others in social interactions. Additionally, these approaches collectively highlight the multifaceted (i.e., 3-4 factors) nature of communicated mindfulness and point to known behaviors that adhere to mindfulness constructs. The next framework of interpersonal mindfulness complements the previous operationalizations and emphasizes "observed" mindfulness more directly.

Bartlett et al. (2022) identified three observable elements of interpersonal mindfulness: *attentiveness, awareness*, and *acceptance*. Importantly, these observable elements of interpersonal mindfulness reiterate generally accepted aspects of interpersonal mindfulness that are outlined in the previous frameworks, albeit organized slightly differently. For example, attentiveness aligns closely with the concept of presence highlighted by Pratscher et al. (2019). Presence reflects the extent to which individuals stay focused on the present moment and give undivided attention to the current moment while interacting with another person (Pratscher et al., 2019). As such, attentiveness and presence can both be construed as a unification of oneself (Phelan, 2010); each are indicative of individuals "being with" what is currently happening, similar to how Kelley and Nichols (2023) defined their "presence with" theme.

Furthermore, Bartlett et al.'s (2022) conceptualization of awareness offers recognition to Brown and Ryan's (2003) conceptualization of awareness (i.e., ongoing monitoring of inner and outer events), and in an interpersonal context can involve a variety of behaviors (Pratscher et al.,

2019). These include recognizing others' experiences, listening for meaning in others' messages, noticing others' expressions, recognizing others' intentions, sensing how others are feeling (i.e., empathy), and being observant of others' current situation and mood (Pratscher et al., 2019). Lastly, Bartlett et al.'s (2022) conceptualization of acceptance gracefully integrates the elements of nonjudgment and nonreactivity into a single factor of interpersonal mindfulness.

Bartlett et al. explain that acceptance entails being experientially open to the reality of the present moment, which is consistent with Roemer and Orsillo (2002). It involves a conscious decision to relinquish one's agenda to allow for a different experience and an active process of "allowing" current thoughts, feelings, and sensations (Hayes et al., 1999). This process is characterized by an individual's choice to accept what is offered with an attitude of openness and receptivity to whatever arises in the field of awareness. Thus, the acceptance facet of interpersonal mindfulness can be viewed as a process of engaging openly with experience. Moreover, acceptance encompasses nonreactivity, as outlined by Pratscher et al. (2019). Nonreactivity involves taking time before responding instead of automatically or thoughtlessly reacting to another person. This aspect of interpersonal mindfulness signifies a gap or pause between a person's immediate experience of an event and their reaction to it: a moment when individuals can let go of or decenter from any intense emotional response (e.g., fear/anxiety, anger, contempt/disgust, shame, or sadness) instead of becoming consumed by it (Baer et al., 2006).

Looking across these frameworks, there are common terminologies and conceptualizations being used throughout. On the other hand, an area where there is novel view is collapsing a couple elements (i.e., nonjudgment and nonreactivity) of interpersonal mindfulness into a single marker of acceptance. Whereas each framework offers a unique

perspective and contribution, it is important to rely on one that is designed for observational study. This would mean situating the study closer to frameworks that sought to create an instrument for observer-report (e.g., Arendt et al., 2019; Bartlett et al., 2022).

Using the conceptual terms and framings forwarded Bartlett et al. (2022) seems to be the most fitting choice: It is not context specific (e.g., leadership communication), the conceptual terms are generally consistent with prior research, and it seeks to uncover the noticeable qualities of mindfulness. Thus, the *conceptual* terms Bartlett et al. laid out that center around attentiveness, awareness, and acceptance are adopted for this dissertation. Rather than using their observed mindfulness measure (OMM) to assess behavior, however, this study opted instead to heed the insight of Kelley and Nichols (2023) to derive conceptually aligned behavioral markers from terms that are rooted in communicative behavior.

Deriving Observable Behavior from the Interpersonal Mindfulness Construct

Prior research suggests that mindfulness is a viable approach for transforming behavior and, in some instances, the ways individuals approach their interpersonal relationships. For example, mindfulness-based interventions (e.g., mindful eating exercises) are effective in addressing eating disorders and shifting the ways individuals respond to external cues and lessening the struggles individuals face in controlling their food intake (Warren et al., 2017). Similarly, trait mindfulness is associated with less impulsive eating, reduced calorie consumption, and healthier snack choices (Jordan et al., 2019).

Mindfulness has been found to be tied to engaging in other healthy behaviors (Roberts & Danoff-Burg, 2010) such as increased exercise and eating healthier (Gilbert & Waltz, 2010), and research suggests that such behavioral lifestyle shifts influence broader ecologically friendly behavior as well. For example, the improved health behaviors stemming from mindfulness

mediate the relationship between mindfulness and behaviors that are protective of and avoid harm to the environment (Geiger et al., 2018). From this, it is clear that the behaviors linked to mindfulness can be consequential, posing implications for both micro- and macro-aspects of life and well-being.

More germane to this dissertation, there is also a foundation of research highlighting behavioral shifts related to interpersonal relationships. For instance, mindfulness in the context of family has received attention (Gambrel & Keeling, 2010; Siegel, 2007). Mindful parenting trainings enhance parents' capacity to respond to their children more calmly, with greater consistency, in closer accordance with their parenting goals and values, and with greater warmth and nurturance (Duncan et al., 2009). Mindfulness also appears to be linked with communicative behavior (Harvey et al., 2019; Jones et al., 2016; Manusov & Huston, 2018; Wachs & Cordova, 2007), although research in this area is limited primarily to reported behavior.

Hypothesizing about the communicative behaviors associated with mindfulness requires aligning observable interpersonal behavior with the constructs in mindfulness definitions. From an examination of both Buddhist conceptualizations and mindfulness literature in Western contexts, certain patterns have emerged regarding the class of behavioral indicators that should be observed. The following sections outline the patterns and themes from prior conceptualization that undergird the hypotheses for the study. Additionally, the hypotheses are crafted to include a comparison of a main treatment (i.e., mindfulness training) with two control groups (i.e., active control and passive control), and it is designed so that the hypotheses can be tested through ratings of behavior by trained observers.

The inclusion of both active and passive control conditions is backed by prior research (Davidson, 2010; Goldberg et al., 2019). Active controls often co-linearly predict outcomes in

tandem with the experimental group (Davidson, 2010), which can potentially limit the generalizability of mindfulness-based interventions. As such, it is essential for active control groups to be structurally similar to the experimental (i.e., mindfulness) group in terms of factors like time-commitment and activities. Ideally, these control groups should also incorporate elements hypothesized to yield comparable outcomes (Allen et al., 2012).

The inclusion of active control conditions is crucial for interpreting treatment mechanisms (Allen et al., 2012; Davidson, 2010). To attribute observed changes in mindfulness-based intervention studies to the active ingredient of mindfulness, for example, it is necessary to account for various factors (e.g., positive expectations, confidence in the teacher/teachings) that can influence outcomes (Davidson, 2010), which is what the inclusion of an active control does for interpretation of results. By incorporating comparison conditions, researchers can conduct rigorous comparisons to test the unique effects of mindfulness interventions.

Attentiveness. As stated, attention involves a focused concentration on a specific stimulus or aspect of the present moment. From the prior review of literature, the conceptualizations of attentive provide a foundation to hypothesize that involvement is a suitable candidate to explore as a representative behavioral marker. Involvement broadly refers to the degree of coordination, engagement, and immediacy present in an interaction (Andersen & Andersen, 2005; Cegala et al., 1982), and it is measured through specific micro-behaviors like, for example, facial animation, eye contact, backchanneling, and body orientation (e.g., leaning-in) (Guerrero, 2005). Additionally, in conceptualizing attentiveness, it is important to acknowledge its likeness to features of good listening. Prior conceptualizations of active (Gearhart & Bodie, 2011), competent (Bodie et al., 2012), and attentive (Koenig Kellas et al.,

2017) listening all involve nonverbal and verbal aspects of involvement, though involvement behaviors are used outside the listening process.

Due to the inherent conceptual similarities, listening has received considerable attention from mindfulness-oriented communication researchers. For instance, self-reported active listening scores have been found to be associated with facets of people's mindfulness (Jones et al., 2016; Manusov et al., 2018). There are a variety of behaviors tied to active listening, but some of the broader categories of behavior include nonverbal involvement, paraphrasing speaker's messages, and asking questions that encourage speakers to elaborate on beliefs and feelings (Weger et al., 2010). Moreover, the nonverbal involvement tied to active listening is considered more immediate, meaning that it conveys approachability (e.g., warm, involving, and affiliative behavior (Andersen & Andersen, 2005; Guerrero, 2005).

Because mindfulness has been linked in prior research to active listening behaviors, which include immediacy behaviors, behavioral ratings by trained observers in this study center on specific items that represent these areas. In other words, a variety of markers are chosen to be a representation of participants attentiveness, and they include, but are not limited to, micro-behaviors related to gaze, vocalizations, distractedness, and interest. These markers are borrowed from prior literature outlining involvement and active listening (Andersen & Andersen, 2005; Guerrero, 2005), and it is expected that individuals who receive training in mindfulness will be rated higher on these measures reflecting attentiveness. This set of premises leads to the first hypothesis for this study:

> H_1: Participants assigned to a mindfulness training condition will receive higher ratings on observed markers of attentiveness in initial interactions than participants assigned to both an active control condition (a) and a passive control condition (b).

Awareness. Awareness, as defined by Brown and Ryan (2003), encompasses the continuous monitoring of both internal and external events. In interpersonal settings, awareness can manifest as the conscious recognition of one's own intentions and emotions coupled with noticing the mood-related cues and nonverbal expressions of others within an interpersonal interaction (Pratscher et al., 2019). Being interpersonally aware includes both self-awareness and being sensitive to what is occurring for an interaction partner. Like attentiveness, behaving with awareness may be captured through behaviors linked with active listening (Gearhart & Bodie, 2011).

Many behaviors linked with active listening require awareness, such as expressing understanding, tactfully leading conversations when necessary (e.g., knowing how and when a conversation should be directed or intervened upon), responding with adequate consideration to others' responses (e.g., not being off-hand or hasty), and expanding on others' feelings or emotions (Fassaert et al., 2007). Moreover, albeit unverified through any prior observational research, definitions of awareness forwarded by Brown & Ryan (2003) as well as Pratscher et al. (2019) give the indication that individuals with increased interpersonal mindfulness may verbalize their awareness of their own or others' present experience with more openly, given the increased awareness of internal and external events.

Because awareness involves the recognition of the situation and what is happening for someone else, there are two other markers of involvement that are believed to be fine candidates for measurement: Motor mimicry and interruptions. Motor mimicry is an overt behavior visible to others when individuals mimic the same facial expression or body involvement of another to indicate understanding or shared feeling (Bavelas et al., 1986). For example, when someone exhibits behaviors indicative of pain, to show a shared awareness of that pain, an interlocutor

may express similar nonverbal cues similar to one's expressed by their partner (e.g., grimace, bared teeth, knitted or wrinkled brow, eyes widened or narrowed, vocalizations like "ouch" or "ow" with congruent tone, sharp intake of breath). By mimicking the expressions of others, there is an overt cue that an awareness of other and the other's internal state.

Lastly, interruptions are a marker of involvement that involves talking over or cutting off a conversation partner and, effectively, it demonstrates a disregard for the internal experience of the other and/or limits the extent to which the inner experience of other can be known. In other words, interruptions are an indication of diminished capacity for awareness of other. This set of premises leads to the second hypothesis for this study:

> H_2: Participants assigned to a mindfulness training condition will receive higher ratings on observed markers of awareness in initial interactions than participants assigned to both an active control condition (a) and a passive control condition (b).

Acceptance. Acceptance encompasses embracing the present moment without preconceived agendas, fostering receptivity towards experiences (Arendt et al., 2019; Bishop et al., 2004; Hayes et al., 1999; Hodgins, 2008; Kabat-Zinn, 2013; Roemer & Orsillo, 2002). This mindset encourages nonreactivity and openness to new information (Pratscher et al., 2019). Nonjudgmental acceptance, integral to this process, involves observing experiences without evaluation, facilitating judgment-free responses (Baer et al., 2006; Pratscher et al., 2019). Viewed as an emotional regulation strategy (Troy et al., 2018), acceptance entails actively engaging with emotions without negative evaluation (Segal et al., 2002). Such regulation, coupled with nonreactivity, emphasizes a deliberate pause before responding in interpersonal interactions, allowing individuals to observe intense emotions without being consumed by them (Baer et al., 2006).

Once again, behaviors linked with active listening and involvement are believed to be pertinent candidates for observational rating. Active listening is linked with a variety of behaviors that reflect an openness to the unfolding interaction. For example, active listening involves using exploring questions and allowing partners time to finish thoughts (Fassaert et al., 2007). Active listening also reflects acceptance by using inviting body involvement, remaining relaxed and confident, and creating an open atmosphere for judgment-free expression (Fassaert et al., 2007). Moreover, another marker of involvement—response latency—is believed to be a marker of acceptance. Prior mindfulness research highlights how practicing mindfulness increases one's capacity to pause before reacting (Baer et al., 2006), and response latency is an effective way of measuring the length of time between interlocutor's speaking turns (Guerrero, 2005). This set of premises leads to the third hypothesis for this study:

> H_3: Participants assigned to a mindfulness training condition will receive higher ratings on observed markers of acceptance in initial interactions than participants assigned to both an active control condition (a) and a passive control condition (b).

Effects on Others. Another way to capture the behavioral trail of mindfulness is to assess conversational partners' reports of their experiences of another and an interaction. In particular, previous research indicates that participants' interpersonal mindfulness may impact their partner's reported satisfaction with communicative events and/or relational satisfaction (Barnes et al., 2007; Harvey et al., 2019), their evaluation of the other's communication competence (Manusov & Huston, 2018), their sense of social connectedness or interpersonal closeness with the other (Kok & Singer, 2017), and the perceived openness of the other (Arendt et al., 2019; Bishop et al., 2004; Kabat-Zinn, 2013). Therefore, by using the conversation

partners' reports of the interaction, there is opportunity make more definitive claims about whether mindfulness training translates into discernable patterns of behavior.

There are a variety of established measures that conversation partners completed after the initial interaction, each with conceptual linkage to interpersonal mindfulness. These measures include communication satisfaction (Harwood, 2000; Hecht, 1978), communication competence (Wiemann, 1977), responsiveness (Reis et al., 2011), inclusion of self in other (Aron et al., 1992), openness to experience (Barner & Barner, 2011; Bishop et al., 2004; John, & Srivastava, 1999), predicted outcome value (Sunnafrank, 1988), predicted relationship type (Sunnafrank & Ramirez, 2004), and mindfulness in communication (Arendt et al., 2019). Whereas many of these constructs have conceptual relevance to mindfulness and its outcomes, most have not been specifically tested in a mindfulness context, and therefore, their inclusion is more exploratory than predictive. Additionally, to serve as an additional means of verifying the ratings done by trained observers, these ratings are analyzed by how they correlate with the observational ratings. This leads to final hypothesis for the study:

H_4: Conversational partner's ratings will correlate with the observer ratings of attentiveness (a), awareness (b), and acceptance (c).

Overall, there is existing research warranting the use of mindfulness training to produce behavioral transformation. The next chapter outlines how this dissertation implemented mindfulness-based training to yield transformation in initial interactions. It also provides further sense making for understanding how much training is needed, as well as why specific kinds of training are needed, to produce observable changes.

Chapter 2: Method

Recruitment

Recruitment efforts began after approval from the University of Washington's institutional review board (STUDY00012757) on April 27th, 2021. Because this study sought to analyze behavior occurring within interactions between two strangers, individuals needed to be recruited from different pools of people (e.g., diverse locations, occupations) to best ensure interlocutors would in fact be strangers, and they were recruited into two different research tracks: (1) a set of participants whose role was to receive one of the study manipulations, and (2) a set of people whose role was to be the conversation partner of those assigned to the first track of participation. The dyads of interlocuters were made of one person from each of these groups. To clarify these roles, "participant" is the term used to exclusively refer to the individuals who were recruited into the experimental groups (treatment, active-control, waitlist control), and "conversation partner" is the term used to refer to the individuals who did not receive any experimental manipulation.

Several strategies were implemented to recruit a broad range of participants and conversation partners. For participants, the recruitment process involved various online and offline methods. Online strategies included posting on platforms like Craigslist, Indeed.com, Facebook, Twitter, and institutional listservs. Offline strategies included distributing flyers in public spaces and using word-of-mouth and snowball recruitment. For conversation partners, most were recruited from class announcements in university courses. That is, most conversation partners were college students, although there were a few individuals who wanted to be involved in the study but could not commit to the involvement necessary for participating in the experimental manipulation so were instead placed into the role of conversational partner.

Participants and conversation partners were recruited from around the University of Washington as well as the greater Seattle-area. Due to the fully remote and socially distanced design of this study (i.e., the study began amidst the COVID-19 pandemic), however, participants and partners could be involved from anywhere in the world, and therefore a call for involvement was cast broadly. With connections at other universities, particularly Wayne State College and California Polytechnic State University, the call for participation was distributed on other campuses and surrounding areas in Nebraska and California. Prospective participants were encouraged to contact the principal investigator to express interest and enroll in the study. Ultimately, participants and conversation partners joined the study from across the United States (e.g., Washington, Nebraska, California, Iowa, Illinois, Texas, Arizona, Idaho, Colorado, Montana) as well as in parts of China.

Incentives for involvement were offered. Participants of each experimental group were offered the same compensation of a $20 e-gift card for completing the study, thereby mitigating the possibility that compensation influenced the level of engagement across conditions. Because conversation partners were primarily university students, they received extra credit from instructors who agreed to offer it as a reward for being in the study. In the few instances where partners were not recruited from college courses (as noted above), a $5 e-gift card was offered as compensation.

Consideration was given to the size of sample to gather for this project. Primarily, it was important to determine the size of effect that mindfulness-based interventions (MBIs) typically yield. Meta-analyses suggest that brief mindfulness trainings are effective yet generally small in effect sizes (Schumer et al., 2018), whereas longer interventions (i.e., larger doses) produce moderate-to-large overall effects (Baer, 2003; Goyal et al., 2014). As evidence of this variation,

Goldberg and colleagues' (2022) meta-analysis indicated MBIs are typically superior to passive controls with effect sizes spanning .10 to .89. Moreover, smaller effect sizes are typically detected between MBIs and active controls, and they are less often statistically significant differences (Goldberg et al., 2022). Because this study implemented a brief mindfulness intervention with both active and passive control groups (as will be described in greater depth below), having enough statistical power to detect a small effect was deemed applicable.

Prior MBI research reveals pre- to post-mindfulness training produces mean difference effect sizes ranging from .28 to .49 (Quaglia et al., 2016). Opting for a conservative estimate, however, an *a priori* power analysis using G*Power was conducted to determine the sample size necessary to detect a small effect size of .25. The result of the analysis was a total sample size of 159, and, accordingly, recruiting 53 participants per experimental condition group was the goal. Due to attrition, which is common in mindfulness training studies (Albertson et al., 2015; Cavanagh et al., 2013), as well as various data collection challenges (e.g., technical difficulties, inconsistencies in recorded data), I successfully completed and gathered consistent data for 39-42 participants per condition ($N = 122$). In total, 358 individuals enrolled in the study, equating to a 34% rate of completion. An *a priori* power analysis in G*Power indicated that a sample size of 120 or greater is adequately powered to detect an effect size of .29. This power analysis is discussed further in the limitations section, however, considering effect sizes and the achieved sample size for the study.

Once participants were enrolled the study, and before engaging in any experimental manipulation, they completed a questionnaire that gathered demographic data and baseline measurements of self-reported mindfulness and prior experience with meditation. Overall, the study's participants exhibited a diverse range of demographic characteristics in some ways and

less in others. Their ages varied widely, ranging from 18 to 72 years, with an average age of 30.4 years (*SD* = 14.7). In terms of ethnicity and race, the majority identified as Caucasian/White (*n* = 103, 84.3%), followed by Latinx/Hispanic (*n* = 7, 5.7%), African American/Black (*n* = 2, 1.6%), Asian (*n* = 2, 1.6%), Middle Eastern (*n* = 1, 0.8%), and mixed heritage (i.e., Caucasian/White and Latinx/Hispanic, *n* = 2, 1.6%). A small percentage (*n* = 2, 1.6%) chose not to disclose their ethnicity or race.

The majority of participants identified as women (*n* = 84, 68.9%), followed by men (*n* = 36, 29.5%), with a small percentage (*n* = 1, 0.8%) identifying as other or choosing not to disclose their gender (*n* = 1, 0.8%). Education levels varied among the primary participants, with the majority having attained a high school diploma (*n* = 63, 51.6%), followed by bachelor's degree (*n* = 28, 23%), Master's degree (*n* = 21, 17.2%), and Ph.D. or higher (*n* = 9, 7.4%). Regarding household income, the distribution was diverse, with 29.5% (*n* = 36) reporting incomes between $50,000 and $100,000, followed by 23.8% (*n* = 29) earning between $100,000 and $200,000, and 15.6% (*n* = 19) earning less than $25,000 annually. Smaller percentages of household income included 10.7% (*n* = 13) reporting between $25,000-50,000, 9% (*n* = 11) reporting more than $200,000, and 11.5% (*n* = 14) preferring not to disclose.

The participants represented various religious affiliations, including non-denominational Christian (*n* = 47, 38.5%), Catholic (*n* = 23, 18.9%), atheist (*n* = 11, 9%), agnostic (*n* = 7, 5.7%), Protestant (*n* = 8, 6.6%), Jewish (*n* = 2, 1.6%), and Latter-Day Saints (*n* = 1, 0.8%). Additionally, some individuals identified as spiritual but not religious (*n* = 12, 9.8%) or preferred not to disclose their religious affiliation (*n* = 6, 4.9%). Finally, 52.5% (*n* = 64) of participants did not have prior experience with meditation whereas 47.5% (*n* = 58) did have prior experience with meditation.

The conversation partners' (n = 122) ages ranged from 18 to 41 years, with an average age of 19.9 years (SD = 3.48). They were predominantly Asian (n = 47, 38.5%), followed by Caucasian/White (n = 46, 37.7%), Latinx/Hispanic (n = 14, 11.5%), African American/Black (n = 2, 1.6%), and Middle Eastern (n = 2, 1.6%), and 5.7% (n = 7) identifying with more than one racial background (e.g., Caucasian/White and Middle Eastern, Caucasian/White and Latinx/Hispanic, Caucasian/White and Native American). The majority identified as women (n = 79, 64.8%), followed by men (n = 37, 30.3%), genderqueer, gender-fluid, or non-binary (n = 4, 3.3%), and a one person choosing not to disclose their gender (0.8%).

Their education levels varied, with most having a high school diploma (n = 106, 86.9%), followed by a bachelor's degree (n = 8, 6.6%), trade school (n = 2, 1.6%), and PhD or higher (n = 1, 0.8%). Household income distribution was diverse, with 18.9% (n = 23) reporting that they earned $50,000-$100,000, 16.4% (n = 20) earning $100,000-$200,000, 10.7% (n = 13) earning less than $25,000, 9.8% ($n$ = 12), earning $25,000-$50,000, 23% (n = 28) earning more than $200,000, and 19.7% ($n$ = 24) preferring not to disclose.

Partners represented various religious affiliations, with non-denominational Christian (n = 28, 23%) being the most common, followed by "spiritual but not religious" (n = 22, 18%), Catholic (n = 16, 13.1%), atheist (n = 16, 13.1%), agnostic (n = 11, 9%), Hindu (n = 3, 2.5%), Buddhist (n = 3, 2.5%), Jewish (n = 3, 2.5%), Protestant (n = 3, 2.5%), Muslim (n = 2, 1.6%), and Hetanist (n = 1, 0.8%). Finally, 49.2% (n = 60) of conversation partners did not have prior experience with meditation whereas 50.4% (n = 61) reported having prior experience with meditation, with one partner not disclosing whether or not they had prior experience.

Procedure

The study aimed to evaluate the impact of mindfulness training on initial interpersonal encounters, utilizing three experimental conditions. The first condition was a mindfulness-based training program that involved a series of guided mindfulness-based meditations and practices in the days prior to the initial interaction with a stranger. The second condition was an active control (i.e., placebo treatment) that involved guided meditations and practices that mimicked the mindfulness-based training program, yet importantly, did not include any specific mindfulness training in the days prior to the initial interaction with a stranger. The third condition was a passive control (i.e., waitlisted treatment), and people assigned to this group did not receive any training of any kind in the days prior to the initial interaction with a stranger and, instead, were offered the mindfulness-based training *after* the initial interaction with a stranger.

Meditation encompasses various practices aimed at transforming the mind. Although not all forms of meditation are necessarily mindfulness-based, many involve stopping (e.g., our habituality, forgetfulness, embroiling emotions), calming, resting, and "looking deeply" at experiences with the understanding that doing so can cultivate a state of optimal wellbeing (Dahl & Davidson, 2019; Hanh, 1998). This dissertation distinguishes between mindfulness and non-mindfulness meditation practices for experimental precision. Mindfulness meditation, exemplified by Kabat-Zinn (2003), emphasizes nonjudgmental awareness of the present moment. Other forms, such as loving-kindness or transcendental meditation, have distinct objectives like cultivating compassion or achieving restful alertness.

Each meditation approach can offer unique pathways to well-being and personal growth, although to reiterate a prior point, it should not be assumed that there is a ubiquitous, positive and linear link between meditation and wellbeing (Britton et al., 2019). Instead, a more fitting

description is that meditative practices, including mindfulness meditation, are potent in instigating shifts in mind and body. For the purposes of this study, however, it is important to differentiate the types of meditation that may preclude individuals to behave with more attentiveness, awareness, and acceptance in initial interaction and those that may be less fit to do so.

Two meditation programs were designed for this study. One was designed in the likeness of a standard mindfulness-based program (i.e., MBSR) although tailored to be brief. The other was designed in the likeness of a popular breathing meditation (i.e., tummo, Wim-Hof breathing technique) in addition to various resting meditation (e.g., relaxing in silence, leisure, slowing down). The general idea guiding this design is that trainings that are uniquely mindfulness-based have transformative qualities pertinent for interpersonal interactions that mere relaxation and non-mindfulness based breathing meditations do not. This contention is demonstrated in the following paragraphs outlining how behavioral shifts are achievable through mindfulness-based intervention.

The duration and content of the experimental manipulation were also carefully considered. Previous mindfulness interventions vary in the amount of "dosage" (i.e., length and concentration of mindfulness training) as well as in the general nature of the guided exercises. For example, studies have implemented interventions that are four days (Zeidan et al., 2011), five days (Hafenbrack et al., 2019), six days (Chen & Jordan, 2020), one week (Nurfadhilah et al., 2017), two weeks (Cavanagh et al., 2013; Jones & Hansen, 2015; Karremans et al., 2020), three weeks (Albertson et al., 2014), and eight weeks (Baer et al., 2012; Boettcher et al., 2014; Nyklicek & Kuijpers, 2008; Santorelli et al., 2017). Multiple studies have congregated around a two-week (10-14 days of brief exercises) length of intervention (Economides et al., 2018; Gluck

& Maercker, 2011; Howells et al., 2016; Hulsheger et al., 2013, 2015; Kappen et al., 2019; Lim et al., 2015; Lindsay et al., 2019; Mrazek et al., 2013). Because it is the most common format, and this makes this dissertation more comparable to other studies using a mindfulness intervention, a two-week intervention (i.e., 10-days, Monday through Friday), similar to the Karremans et al. (2020) design, was implemented in this study.

The contents of mindfulness interventions also vary. Some studies, for instance, opt to borrow exercises from Mindfulness-Based Stress Reduction (MBSR) curriculum (Kappen et al., 2019; Mrazek et al., 2013), mindfulness-based cognitive therapy (Harnett et al., 2010), mind-body skills training (Kemper & Khirallah, 2015), or from popular mindfulness meditation platforms like Headspace (Economides et al., 2018; Howells et al., 2016; Lim et al., 2015). Although many programs of mindfulness training are effective, this study was modeled after the Mindfulness-Based Stress Reduction (MBSR) curriculum (Santorelli et al., 2017). Not only is this curriculum readily accessible (Santorelli et al., 2017), but it has been adapted and condensed into a two-week intervention (Mrazek et al., 2013).

MBSR has proven efficacy and centrality in the field of mindfulness research (Santorelli et al., 2017). It is traditionally an 8-week (10 session) course that includes weekly guided sessions with a trained facilitator as well as informal practices (e.g., hatha yoga, eating meditation, mindful listening/speaking), which train individuals to cultivate mindfulness in various areas of everyday life (Santorelli et al., 2017). Similar to the procedure of Mrazek et al. (2013), an effort was made to condense the 8-week (10 session) curriculum into a 10-day intervention, following the same general pattern and introduction of exercises as the full 8-week curriculum.

The following section will explain how the mindfulness treatment unfolded across a timespan (i.e., 10 days of exercises, delivered Monday through Friday) as well as how the two training programs (i.e., mindfulness-based training vs. active control) deviated from one another.

Daily Exercises

Over the course of the 10-day intervention, participants in the mindfulness and active control conditions were asked to engage in daily activities that mirrored one another in time commitment and, as much as possible, in theme. For example, in the mindfulness-based intervention, daily activities included mindful breathing, mindful body scan, mindful walking, mindful stretching and movement, mindful eating, and mindful practices of nonjudgment, acceptance, loving-kindness, bare-attention, and insight.

In contrast, the active control program centered on the Wim Hof breathing method (Hof, 2020), which is an adaptation of tummo meditation (Nestor, 2020) involving cyclical breathing with breath retention. The active control program aimed to mimic the general nature and level of involvement (e.g., duration) of the mindfulness-based meditation program by engaging in similar activities, but not with the aim of cultivating mindfulness (e.g., relaxing in silence, leisurely walk, guided stretch, slow eating, mental cataloguing of social network). The Wim Hof breathing method was chosen for inclusion in the active control to distinguish whether outcomes associated with the intervention were due to factors beyond simply breathing and relaxation, which is a focal exercise in both the mindfulness and active control conditions. The distinction centers on the way that participants were instructed to either attend to their breath mindfully (as was the instruction in the experimental condition, described in greater detail below) or not (as is consistent with the Wim Hof method).

Whereas the daily life of the passive control group was not tracked, participants in the mindfulness condition and the active control condition were actively monitored during their two-week intervention to better promote engagement with the activities and assess their adherence to their experimental condition. Specifically, to gain access to the webpage where each recording was hosted, participants were first emailed a link to an online instrument (i.e., Qualtrics) that required that they enter their unique participant identifier code. By entering their participant identifier code, participants were effectively logging each time they entered the online space where the exercises were housed and served as a means of monitoring which participants were engaged with the study materials. The extent to which participants engaged meaningfully with the entirety of each guided exercise is unknown, but if participants' unique identifiers were not being logged each day, the principal investigator encouraged them to catch up (e.g., two exercises spread out across a day, or over the weekend) in an email.

On the daily exercise webpage, participants were presented with basic instructions to prepare them for the exercise (e.g., find a quiet and comfortable place to sit on a chair or cushion) and a streamable audio recording. Each recording began and ended with a meditation bell. At the end of the daily practices, participants in the mindfulness condition were instructed to continue practicing mindfulness throughout the day by briefly focusing on their breath, body, thoughts, and emotions. This prompt emphasized the ability to intentionally sustain awareness throughout daily activities, especially during interpersonal interactions. It encouraged observing thoughts, feelings, and bodily sensations as passing events, fostering a sense of mindfulness.

On day 1, those in the mindfulness condition delved into mindful breathing and awareness, cultivating a focused and intentional approach to their breath and surroundings. In contrast, the active control group were instructed to relax in silence without any further guidance

in facilitating a state of calm. On day 2, participants in the mindfulness condition engaged in mindful body scan, exploring sensations within their bodies. The active control condition shifted to a more dynamic practice, involving four rounds of cyclical breathing with breath retention, followed by moments of silence and relaxation.

On day 3, the mindfulness group engaged in mindful acceptance and nonjudgment meditation (i.e., fostering an attitude of acceptance toward their thoughts and feelings). Simultaneously, the active control group practiced two rounds of cyclical breathing with breath retention, followed by instruction to relax in silence. Day 4 involved mindful bare attention, insight, and acceptance meditation for the mindfulness participants, encouraging curiosity and nonjudgment. The active control group, on the other hand, engaged in a single round of cyclical breathing with breath retention, accompanied by instruction to relax in silence.

On day 5, the mindfulness condition emphasized mindful awareness and acceptance meditation, promoting nonreactivity to thoughts and emotions. In parallel, the active control group continued with a single round of cyclical breathing, followed by instruction to relax in silence. On day 6, participants in the mindfulness condition underwent a mindful walking, awareness, and “beginner’s mind” meditation, encouraging a heightened sense of awareness during a short walk. The active control group was instructed to simply take a leisurely walk outside. On day 7, the mindfulness participants focused on mindful stretching and movement meditation. The active control group, in contrast, engaged in a simple guided stretch. On day 8, the mindfulness group underwent a mindful eating meditation, instructing participants to take each bite with heightened awareness. In comparison, the active control group participated in a guided slow eating exercise.

Day 9 involved mindful breathing and loving-kindness meditation for the mindfulness condition, fostering a sense of compassion for self and others. Meanwhile, the active control group undertook a mental cataloging (i.e., counting) exercise related to their social network. The 10-day intervention finished with the mindfulness group engaging in a mindful breathing, awareness, acceptance, and gratitude meditation. Simultaneously, the active control group engaged in a final round of cyclical breathing with breath retention, followed by instruction to relax in silence.

The final daily exercise (i.e., day 10) was the culmination of the intervention for the mindfulness-based intervention and active-control condition before their initial interaction with a stranger. The wait-list control condition participants who had not been completing any daily activities were simply instructed to arrive for their scheduled initial interaction. All participants were asked to complete a questionnaire assessing self-reported mindfulness just prior to the initial interaction to serve as a manipulation check (i.e., to determine whether self-reported mindfulness changed from baseline levels of self-reported mindfulness collected 2-weeks prior).

Initial Interaction Data Collection

Upon joining the study, all participants/partners scheduled a 10-minute interaction on Zoom. Before the session, they received a Zoom link and waited in a virtual waiting room. Prior to the interaction, the participants and conversation partners were paired in ways that best ensured that they would be strangers. Primarily, because participants and partners were recruited from different pools of people and through different recruitment strategies, pairing individuals based on differing locations or occupations was among the simpler options for decreasing the likelihood that interlocutors would know each other. Despite there being a chance that the pairs were previously acquainted, all dyads reported in the post-interaction questionnaire that they

were, in fact, strangers with one another at the onset of the interaction, although one dyad discovered they had a mutual friend.

Data collection was streamlined by scheduling interactions during designated time slots, enabling multiple interactions simultaneously. A computer lab was utilized to facilitate video capture for each interaction occurring simultaneously. This was necessary due to Zoom's limitation of not allowing breakout rooms to be recorded from a single host device. That is, the only way to have a breakout room recorded is to have a user logged in from a separate computer and joined in the breakout room to initiate the recording. Thus, each computer in the lab was logged into the zoom session and served as a muted dummy-user to join each breakout room. Once participants, conversation partners, and the muted dummy-users were distributed to the breakout rooms, recordings were initiated from the muted dummy-user accounts by the principal investigator, instructing participants to activate their cameras and microphones once recording started. After the 10-minute interaction transpired, the breakout rooms were closed, and participants and conversation partners returned to the main Zoom session before being dispersed to complete their respective post-interaction questionnaires independently.

Behavioral Rating Training

After the conversations were complete, three teams, each comprising the principal investigator and two independent research assistants, were assembled to train in and then conduct observational rating of the video and audio recorded discussions. The ratings were utilized to measure markers of attentiveness, awareness, and acceptance, and all recordings were rated for each of these categories of interpersonal mindfulness by the respective designated team. Extensive training and reliability checks were conducted before rating behavioral outcomes from the actual dataset. As there were some videos from the data collection that were not fit for

inclusion in the dataset due to, for instance, two conversation partners being paired for conversation (e.g., no-show experimental condition participants) or an error in recording (i.e., speaker view instead of gallery view in Zoom), there were ample practice videos.

Research assistants were blind to participants' experimental assignments. For the principal investigator, intentional effort to remain blind to participants' experimental condition and prevent underlying bias in behavioral rating was done by non-memorable participant identifiers and separate spreadsheets for participant tracking and identification key. I cannot be considered truly blind to the experimental conditions, as I conducted essential components of the study's procedure (e.g., recruitment of participants, the initial random assignment, correspondence with participants). A considerable length of time (i.e., several months to over a year) transpired between the time data were collected and the time the tapes were rated, however, so recollection of the experimental condition to which each participant was assigned was in fact non-specific. Perhaps most crucially, a research assistant not involved with the behavioral rating volunteered to create a spreadsheet for raters demarcating which individual was the participant and which was the conversation partner in each recorded interaction. This required the use of identifiers from the participant key to discern. Once the entirety of data rating was complete, the ratings were matched with the corresponding participants' other data, including their assigned condition.

Using existing rating schemes adapted from prior research on active listening (Fassaert et al., 2007) and immediacy/involvement (Guerrero, 2005) as well as items derived for this study using prior conceptualization for motor mimicry (Bavelas, 1986) and mindful awareness (Brown & Ryan, 2003; Pratscher et al., 2019), I orchestrated at least four meetings (approximately 1.5 hours each) to train raters in each team. During these meetings, raters were first provided with

definitions and examples of the behaviors of interest. Then, raters independently practiced rating the recorded interactions. The ratings were segmented into two 5-minute intervals to align with established practices for accurate rating in interactions exceeding three minutes (Guerrero, 2005). Raters therefore assessed each behavior twice per interaction: one to reflect the behavior from the start of the video to the halfway point, and then another to reflect the behavior from the halfway point to the end of the video.

Practice videos were viewed as a group during training sessions yet rated independently, pausing the video at the halfway mark to give raters time to consider their evaluations. After ratings were complete for the two time segments (i.e., first half, second half), raters reviewed their scores together to discuss discrepancies. In the process of resolving discrepancies, raters refined the rating manual by adding logic and description to better calibrate one another for future rating. After each training session, ratings were compiled into a spreadsheet and assessed for interrater reliability (IRR) using ReCal OIR (Freelon, 2010, 2013) to identify items in need of additional training. In the subsequent training sessions, any assessments with low reliabilities were discussed to make sense collectively of how to improve the rating manuals and better understand the underlying nature of the problematic items where agreement was challenging to achieve. Alternatively, items with high reliabilities were discussed in ways that reiterated the successful rating consistency.

Notably, interrater reliability incrementally improved on most behavioral markers from one training to the next. Items related to the pre-established rating systems for active listening and immediacy were easier for raters to reach satisfactory levels of interrater reliability than other items (e.g., motor mimicry, markers of awareness), however. Unfortunately, the training could not be prolonged with hopes of establishing satisfactory interrater reliability on all items

before transitioning to the independent rating phase in the process, as there was a limited budget for compensating independent raters for their labor.

In the next phase, raters independently rated 10 videos from the dataset, again rating the interactions twice (i.e., beginning to halfway and halfway to completion). Interrater reliability was recalculated. Krippendorff's *alpha* (α) values range from 0 to 1, where 0 is perfect disagreement and 1 is perfect agreement among raters. While $\alpha \geq .800$ is customary, tentative conclusions are still acceptable with $\alpha \geq .667$ (Krippendorff, 2004). Therefore, items that achieved $\alpha \geq .67$ were retained for analysis. Raters were then assigned the remaining videos and tasked with rating them separately.

Due to insufficient interrater reliability (i.e., $\alpha \leq .67$), multiple items were dropped from subsequent data analysis, but raters continued to rate the items, nevertheless. Five items in the awareness category of behaviors, "expresses understanding nonverbally," "is not off-hand or hasty," "demonstrates motor mimicry," "verbalized awareness of self," and "verbalized awareness of other," were excluded from analysis due to insufficient interrater reliability. For the same reason, three items in the acceptance category of behavior were dropped: "uses exploring questions," "uses inviting body involvement," and "marked by long response latencies to disclosures." Conversely, an acceptable interrater reliability was reached across all items in the attentiveness category and, therefore, all items of attentiveness were kept for analysis with their α reported below. In sum, the attentiveness category initially included six items and resulted in six items after rating was completed. The awareness category initially included eight items and resulted in three items after rating was completed. The acceptance category initially included six items and resulted in three items after rating was completed. For the full list of behavioral rating items and their respective interrater reliabilities, see Table 4 in Appendix A.

Analyzing the Underlying Structure of Interpersonal Mindfulness from Rated Behaviors

Factor analysis was conducted to examine the underlying structure of interpersonal mindfulness using the observational data yielded from trained raters. The average rating across the two rating intervals (i.e., first half [five minutes] of the interaction and second half [five minutes] of the interaction) was used to provide a broader snapshot of what occurred across an interaction. In accordance with the prior rationale, participants were rated on behavioral items believed to correspond with specific dimensions of interpersonal mindfulness, yet because the observational items were derived theoretically and not yet empirically, it was important to assess how the items corresponded with the expected categories of attentiveness, awareness, and acceptance. Moreover, because there were considerably fewer items that reached satisfactory interrater reliability that originally expected, determining whether there were sufficient items coalescing around a distinct factor (e.g., attentiveness, awareness, acceptance) was of similar importance.

The Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy for the analysis, yielding a value of .86, indicating a suitable dataset for factor analysis (Field, 2018). Principal Axis Factor (PAF) with Promax rotation was used to extract factors from the behavioral data. The scree plot from the analysis revealed a clear inflection point after the second factor, although three factors had an Eigenvalue greater than one, suggesting a 3-factor solution. These three factors accounted for 57.9% of the total variance, indicating a substantial portion of variance explained by the extracted factors. The third factor only had two items that loaded onto it above the .5 criterion, however, and only one of those items loaded exclusively to the third factor (i.e., one item cross loaded above .5 criterion). Because at least three measured variables

are needed for identification of a factor (DeVellis & Thorpe, 2021), another PAF was conducted, with two extracted factors.

The 2-factor solution accounted for 51.2% of the total variance. Reliability analyses were conducted to determine the internal consistency for each factor, taking into consideration improved Cronbach's *alpha* coefficients when deleting an item as well as identifying low inter-item correlations (i.e., below .3). One item was removed from factor 1 due to low inter-item correlation and an improved *alpha* when deleted. The resulting *alphas* of the two factors ranged from.87 to .89, suggesting that the factors had strong internal consistency and measure adequately distinct dimensions of interpersonal behavior.

The items adhered to the factors in expected ways. Factor 1 was composed of items that were included as markers of attentiveness and, therefore, factor 1 was labeled "attentiveness." The items within the attentiveness factor were "shows not to be distracted," "is not detached," "exhibited steady gaze while listening," and "exhibited steady gaze while speaking," all of which relate to giving undivided attention to the current moment while interacting (Pratscher et al., 2019). Factor 2 was composed of items that were expected to be markers of acceptance and, therefore, it was labeled "acceptance." The items loading on the acceptance factor were "gives partner time and space to present their perspective," "is obviously relaxed and confident," and "creates an open atmosphere during the conversation," all of which reflect being experientially open to the reality of the present moment (Roemer & Orsillo, 2002).

Notably, the items that were expected to be markers of awareness did not load adequately onto a single factor and, therefore, no subsequent analysis of an awareness factor of interpersonal mindfulness was conducted. Rather than drop hypothesis 2 from analysis, however, there was one awareness item "expands verbally upon partner's feelings or emotions" that loaded

exclusively to a factor, and therefore analysis of this singular item derived for the awareness construct is used for testing hypothesis 2. The next phase of data analysis used these two factors and the single item as dependent variables in statistical tests aimed at detecting behavioral differences across experimental groups.

Measures

Attentiveness. To assess attentiveness, six observation-based items were retained with adequate levels of interrater reliability ($\alpha \geq .67$) in this category of behavioral data, all based on a 5-point rating scale (e.g., 1 = not at all, 5 = all the time) as suggested by Chorney et al. (2015). Three items were sourced from the Active Listening Observation Scale (ALOS-global) and included "shows not to be distracted" ($\alpha = .81$), "listens attentively" ($\alpha = .76$), and "is not detached" ($\alpha = .74$). Two items were sourced and adapted from Guerrero's (2005) measures of nonverbal involvement and included an item assessing gaze, "exhibited steady gaze while listening" ($\alpha = .90$), sustained eye contact "exhibited steady gaze while speaking" ($\alpha = .73$). The item "used vocalizations while listening" was also included ($\alpha = .73$).

Awareness. In order to assess awareness, three observation-based items were retained with adequate levels of interrater reliability ($\alpha \geq .67$), all based on a 5-point rating scale (e.g., 1 = not at all, 5 = all the time). Two items were taken from the Active Listening Observation Scale (ALOS-global): "is good in leading the conversation" ($\alpha = .67$) and "expands verbally upon partner's feelings or emotions" ($\alpha = .80$). One item was adapted from Guerrero's (2005) measures of nonverbal involvement: "marked by interruptions" ($\alpha = .87$).

Acceptance. Acceptance was assessed with three observation-based items that achieved adequate levels of interrater reliability ($\alpha \geq .67$) in this category of behavioral data, all based on a 5-point rating scale (e.g., 1 = not at all, 5 = all the time). These items were drawn from the

Active Listening Observation Scale (ALOS-global): “gives partner time and space to present perspectives” (α = .72), “is obviously relaxed and confident” (α = .72), and “creates an open atmosphere during the conversation” (α = .77).

Prior Experience with Meditation. This variable was measured with a self-reported dichotomous (i.e., yes/no) item (“Do you have prior experience with meditation?”), consistent with previous research (Bergomi et al., 2015). If a participant responded with yes, they were then asked a series of questions that sought to quantify their experience. These follow-up questions probed, for instance, into how many years of meditation experience they had, the average number of months in a year that they engaged in meditation, the average frequency within a week in days, and the average duration of their meditation sessions in minutes.

Self-Reported Mindfulness. To serve as a manipulation check, participants completed three separate assessments of self-reported mindfulness on two occasions: a baseline measurement (i.e., before experimental manipulation) and two weeks later before initial interaction with stranger (i.e., after experimental manipulation). Specifically, a measurement of participants’ interpersonal mindfulness was gathered by using the Interpersonal Mindfulness Scale (IMS), which has reported *alphas* between .84 and .88 (Pratscher et al., 2019) (observed α = .80 for this study). The Mindful Attention Awareness Scale (MAAS) (reported α = .82; Brown & Ryan, 2003) accounts for participants’ level of trait-mindfulness (observed α = .86), and the Five-Facet Mindfulness Questionnaire (FFMQ) (Baer et al., 2006) measures subcomponents of mindfulness and has reported strong internal consistency (i.e., observing α = .83, describing α = .91, nonjudging α = .87, nonreactivity α = .75, and acting with awareness α = .87). Observed alphas in this study for these subcomponents include observing (α = .79), describing (α = .90), nonjudging (α = .90), nonreactivity (α = .69), and acting with awareness (α = .88).

Effects on Others. Partners completed a questionnaire after their initial interaction that assessed behavioral and communication patterns of the participant with whom they conversed. To determine how conversation partners experienced the interaction with the participant, they completed the following: (a) a shortened version of the Interpersonal Communication Satisfaction Scale (reported α = .90; Harwood, 2000) (observed α = .82), (b) the Communication Competence Scale (reported α = .96; Wiemann, 1977) (observed α = .93), (c) a single-item measuring Inclusion of Other in Self (Aron et al., 1992) (d) the Perceived Responsiveness scale (reported α = .93; Reis et al., 2011) (observed α = .93), (e) the openness scale of the Big Five Inventory (reported α = .81; John, & Srivastava, 1999) (observed α = .75), (f) a single-item measuring predicted relationship type (Sunnafrank & Ramirez, 2004), (g) predicted outcome value (Sunnafrank, 1988) (observed α = .95), (h) eight global items measuring affective presence (Eisenkraft & Elfenbein, 2010), (i) mindfulness in communication (Arendt et al., 2019) (observed α = .74), and (j) state mindfulness scale (Tanay & Bernstein, 2013) (observed α = .91).

Chapter 3: Results

Preliminary Analyses and Manipulation Checks

Prior to analysis, variables were first screened for deviations from normality. None of the scales showed significant skew or kurtosis and, as a result, no transformations were required. Additionally, bivariate correlations between the primary variables were evaluated for multicollinearity. There were no problematic relationships among the primary variables in the analysis ($r > .90$; Tabachnick & Fidell, 2013).

Inclusion of Covariate

A potential covariate was identified *a priori*: prior experience with meditation. Prior research demonstrates that experience with meditation is positively associated with self-reported mindfulness and accurate recognition of internal experiences (Bergomi, Tschacher, & Kupper, 2015; Fox et al., 2012). Especially when experienced meditators are more frequently engaging in their current meditation practice (i.e., versus accumulation of meditation across months or years), reported mindfulness is highest (Bergomi et al., 2015). Moreover, prior meditation experience confers advantages to sustaining mindfulness because, like all training, it benefits from repeated practice. Experience with meditation lends toward more quickly grasping or remembering the essential concepts and techniques of mindfulness, navigating its inherent challenges, and reaping its benefits. Moreover, individuals with previous meditation experience often find themselves facing fewer initial challenges, such restlessness or difficulty focusing, due to the mental discipline they have built through past training (Bergomi et al., 2015).

Initial analysis was conducted to determine whether prior experience with meditation may explain variance in the models. To test this relationship, point-biserial correlations were run, and prior meditation experience was found to be positively correlated with attentiveness: $r_{pb}(120)$

= .21, p = .022 as well as with acceptance: $r_{pb}(120) = .26$, p = .004. There was not a significant point-biserial correlation between prior meditation experience and "expands verbally upon partner's feelings or emotions" (i.e., the singular item representing the awareness category of interpersonal mindfulness): $r_{pb}(120) = .12$, p = .173. To further explore these relationships and compare means on outcome variables, independent samples t-tests were assessed. There were significant differences between individuals with prior meditation experience (M = 3.91, SD = .65) than those without (M = 3.55, SD = .71) on acceptance: $t(120) = 2.90$, p = .004. Similarly, there were significant differences between individuals with prior meditation experience (M = 4.19, SD = .53) compared to those without (M = 3.92, SD = .73) on attentiveness: $t(114.80)$ = 2.36, p = .020. There was not a significant difference between individuals with prior meditation experience (M = 1.45, SD = .65) compared to those without (M = 1.32, SD = .44) on the awareness item: $t(120) = 1.37$, p = .173.

As a result of these analyses, prior experience with meditation was included as a covariate through analyses of covariance (ANCOVA) for all of the following tests of hypotheses. Even though there was not a significant correlation between prior meditation experience and expanding verbally upon partner's feelings or emotions, it was included as a covariate for H_2 to provide consistency across each tested model in addition to its theoretical tie to mindfulness outcomes (Bergomi et al., 2015).

Manipulation Check

Participants' engagement (i.e., for the mindfulness condition and active control condition) with the experimental manipulation was tracked by how days they entered the portal (i.e., by entering their unique participant identifier) to access the guided exercises. On average, participants entered the portal to the exercises nine (M = 9.0, SD = 1.8) of the ten days. Similarly,

participants were also given an opportunity to self-report how many of the guided exercises they completed at the end of study. The self-report mirrors the results of the tracking data. Participants reported completing around nine (M = 9.1, SD = 1.8) of the ten guided exercises. Considering the two data points are nearly the same, the self-report measure may be more informative as to whether participants actually engaged with the exercises since they reported how many of the exercises they "completed." Overall, these averages suggest that participants completed most of the exercises.

Additionally, to examine whether the mindfulness training had the intended effect of increasing mindfulness, participants' self-reported pre- to post-test scores on the Interpersonal Mindfulness Scale (Pratscher et al., 2019), the Mindful Attention Awareness Scale (Brown & Ryan, 2003), and subscales of the Five-Facet Mindfulness Questionnaire (Baer et al., 2006) were used in separate ANCOVAs to determine whether the experimental condition accounted for between-subjects changes in self-reported mindfulness. Results for these analyses were nonsignificant, indicating that the mindfulness training did not have a significantly different effect on participants' self-reported mindfulness when compared to the other experimental groups.

Even though there was not support for a successful manipulation check using self-report measures, it does not negate that the manipulation may have caused a variation in dependent variables, especially as behavioral shifts were the aim of this study (Hauser et al., 2018). As well, there are limitations to self-reported mindfulness (Davidson & Kaszniak, 2015; Grossman, 2008). The way in which respondents orient to mindfulness questionnaires varies depending on whether they have experience and familiarity with mindfulness practice and principles (Davidson & Kaszniak, 2015). For example, self-report scores may be misleading if respondents are not

generally aware or accurate in their self-perceptions which is often true of individuals with low levels of mindfulness (Davidson & Kaszniak, 2015; Grossman, 2008). Rather, in such cases of low mindfulness respondents, self-report mindfulness scores may be prone to "socially desirable responding," which refers to "the presentation of oneself in an overly favorable light on self-report questionnaires" (Tracey, 2016, p. 224; see, also, Goldberg et al., 2019).

Hypothesis Testing

To test H_1, ANCOVA was used to assess the effect of condition (i.e., mindfulness training, active control, and control) on attentiveness, with the inclusion of prior meditation experience as a covariate. The results of the ANCOVA indicate a nonsignificant main effect of condition on attentiveness: $F(2, 118) = .32$, $p = .729$. Thus, H_{1a} and H_{1b} received no support. These results are represented in Table 1 in Appendix A and Figure 1 in Appendix B.

ANCOVA was similarly used to test H_2, which assessed the effect of condition (i.e., mindfulness training, active control, and control), with the inclusion of prior meditation experience as a covariate. The results of the ANCOVA indicate a nonsignificant main effect of condition on awareness (i.e., expanding verbally upon partner's feelings or emotions), $F(2, 118) = 2.54$, $p = .083$, with an effect size calculated as *eta* squared (η^2) of .04. Because the main effect of condition was nearing significance, an inspection of pairwise comparisons was done using LSD criterion for significance which indicated that individuals in the mindfulness-based meditation condition ($M = 1.51$, $SE = .09$) demonstrated significantly more awareness ($p = .028$) across the 10-minute interaction than did participants in the waitlist control condition ($M = 1.24$, $SE = .08$), but they were not significantly different from participants in the active control condition ($M = 1.41$, $SE = .09$), $p = .408$. Hence, support was found for H_{2b}, but not for H_{2a}. These results are represented in Table 1 in Appendix A and in Figure 2 in Appendix B.

A third ANCOVA was used to test H_3, which postulated that the mindfulness condition will be rated higher than the two control conditions on acceptance, with condition (i.e., mindfulness, active control, passive control) as the between subjects factor and prior experience with meditation as the covariate. The findings demonstrate a significant main effect of condition: $F(2, 118) = 4.44$, $p = .014$ with an effect size calculated as *eta* squared (η^2) of .07, indicating a small effect from the experimental condition. Pairwise comparisons using LSD criterion for significance reveal that this significant difference ($p = .005$) exists between the mindfulness condition ($M = 3.90$, $SE = .10$) and the passive control ($M = 3.48$, $SE = .10$), and not between the mindfulness condition and the active control ($M = 3.79$, $SE = .11$), $p = .437$. Therefore, H_{3b} received support, but H_{3a} did not receive support. These results are represented in Table 1 in Appendix A and Figure 3 in Appendix B.

To analyze H_4, which predicted that conversation partners' reports would positively correlate with trained observer ratings of attentiveness, awareness, and acceptance, bi-variate correlations were conducted. The results show that there were not any significant correlations between observer ratings of acceptance and conversation partner reports, but there were significant correlations between conversation partner reports and attentiveness and awareness (i.e., expanding verbally upon partner's feelings or emotions). Attentiveness was positively correlated with the level of predicted relationship, $r(120) = .18$, $p < .05$, positively correlated with making their partner feel happy, $r(120) = .23$, $p < .05$, and negatively correlated with making their partner feel bored, $r(120) = -.21$, $p < .05$. Awareness was positively correlated with communication competence, $r(120) = .18$, $p < .05$, communication satisfaction, $r(120) = .31$, $p < .01$, level of predicted relationship, $r(120) = .18$, $p < .05$, and negatively correlated with making

their partner feel bored, $r(120) = -.19$, $p < .05$. For a full list of correlations between primary variables and conversation partner reports, see Table 2 and Table 3 in Appendix A.

Chapter 4: Discussion

The overarching goal of this study was to determine whether a mindfulness intervention predicted observable patterns of behavior (leaving a "behavioral trail") in brief online encounters with strangers as compared to active and passive control groups. An experiment designed to distinguish training effects was used to provide answers to this inquiry. It was hypothesized that individuals engaging in mindfulness training in the days prior to interacting with a stranger would more likely demonstrate markers of attentiveness (H_1), awareness (H_2), and acceptance (H_3) relative to individuals engaging in non-mindfulness-based meditations (i.e., active control) or no training (i.e., passive control). There was support for H_2 through a single item (i.e., there was no analysis of a latent factor of awareness due to insufficient factor stability), support for H_3, and no support for H_1 regarding the effect of mindfulness meditation training on outcomes. Each of these findings will be discussed in more detail.

To begin, there is evidence to support H_3. The brief mindfulness intervention explained an increase in acceptance behavior compared to the passive control condition (i.e., no significant difference was detected between the mindfulness intervention and the active control). This finding is important, suggesting that even a brief mindfulness intervention can alter initial interactions with strangers, albeit with a relatively small effect size. Although there likely are multiple ways in which individuals can behave in an accepting manner, this study showed that individuals in the mindfulness-based program did so through a subtle combination of (1) providing relatively more time and space for their partners to present their thoughts, (2) exuding more relaxation and confidence, and (3) creating an open atmosphere in the conversation.

Each of these macro-assessments of behavior was rated through observations of corresponding micro (i.e., specific) expressions. For example, providing time and space to

partners involved specific behaviors such as refraining from interrupting and allowing partners to finish their sentences and thoughts before responding as well as using nonverbal cues such as eye contact, nodding, and smiling to encourage their partner to continue speaking. Further, participants who were rated higher on providing time and space to their partner to present thoughts were more apt to pause before responding, which is an indication of thoughtful consideration of the partner's words, and they may have also encouraged elaboration when the partner seemed hesitant or concluded their response quickly.

Likewise, a variety of micro behaviors were observed to signify whether a participant was exuding relaxation and confidence. Specifically, participants in the mindfulness condition were more likely to maintain a posture that was upright, yet easeful and self-assured. Facial expressions also tended to be calm and composed, avoiding signs of stress such as furrowing the brow or frowning, while potentially incorporating a genuine smile to convey confidence and approachability. Consistent and comfortable eye contact was also a specific indicator of this facet of interpersonal mindfulness. Fluid gestures and movements were specific indicators of this category, too, as were clear and steady vocal qualities. Further, the participants in the mindfulness treatment were less apt to demonstrate signs of nervousness such as fidgeting or tapping, a lack of relaxation regarding the topic, shallow or rapid breathing patterns, restlessness or jitteriness, and uncomfortable silences.

There were also specific behaviors that were observed to reflect creating an open atmosphere in the conversation. For example, participants in the mindfulness condition used behaviors that were more likely to foster an environment where the partner felt comfortable, respected, and encouraged to freely express themselves. This was evidenced by behaviors communicating participants' accepting attitude, maintaining a calm and friendly demeanor, and

treating the partner with kindness and courtesy, even in the face of any potential disagreements. Additionally, high scorers maintained behaviors suggestive of a nonjudgmental attitude, exhibited seeming genuine curiosity, validated their partner's emotions, and demonstrated understanding. Moreover, creating an open atmosphere included the use of respectful and considerate language, encouragement of active participation, and reciprocity in sharing thoughts. By contrast, participants in the mindfulness program were less likely to use derogatory or dismissive language, listen to respond, create tension between perspectives, interrupt to disagree, shut down a partner's perspective, offer blunt responses, and uphold rigid opinions.

Next, there was support for $H_{2,}$ which predicted that participants in the mindfulness training condition would be rated higher on markers of communicated awareness relative to participants in the active and passive controls. Specifically, there was significant difference between the mindfulness training condition and the passive control (H_{2b}) on the behavioral item selected to represent the awareness category of interpersonal mindfulness (i.e., expanding verbally upon partner's feelings or emotions) which demonstrates that mindfulness training has a small, yet positive, effect on participants proclivity to acknowledge and/or explore their partner's feelings and emotions verbally in initial interactions (e.g., naming their emotions, validating their emotions, probing for deeper meaning, inviting partner to expand on or share more context about their experience of feeling or emotion).

The lack of statistical significance detecting an effect of mindfulness training on attentiveness (H_1) went against predictions. Research highlighting attention as a component of mindfulness is pervasive (Arendt et al., 2019; Brown & Ryan, 2003; Kabat-Zinn, 2003, 2005; Pratscher et al., 2019), and trait mindfulness, which involves engaged attention, has also been found to be tied to reports of active listening behavior (Jones et al., 2016; Manusov et al., 2018).

Therefore, not finding an indication of increased attentiveness behavior after mindfulness training in this dissertation gives rise to a variety of interpretations.

One interpretation for this null result is that initial interaction is a context where mindfulness training may be less applicable for enhancing attention. Because initial interactions are fraught with uncertainty (Berger & Calabrese, 1975), and uncertainty is associated with increased selective attention (Dieterich et al., 2016), initial interactions may inherently be prone to elevated levels of attentiveness. In other words, initial interaction may require relatively more attention from interlocutors than other social contexts (e.g., ongoing relationships) due to the inherent motivations including the reduction of uncertainty (e.g., seeking information) and assessing interpersonal compatibility (Berger & Calabrese, 1975; Sunnafrank, 1988). The participants' high scores on attentiveness across all experimental conditions support this claim (see Table 1 and Figure 1). Specifically, participants averaged around four on a five-point scale, meaning that the majority of participants were “often” engaging in the rating criteria for attentiveness items.

A second interpretation of non-significant differences across experimental conditions for attentiveness is that the behavioral rating scheme was not sensitive enough to detect differences, especially considering the pattern of higher ratings, on average, for participants across conditions. For example, a rating scale with more increments (e.g., seven- or nine-point scale vs. five-point scale) can capture more subtle variations in behavior and better differentiate participants’ behavior (Finstad, 2010). There was a moderate negative skewness to attentiveness ratings (-0.67) in this study, meaning there was a slight pileup of cases on the right side of the distribution (Tabachnick & Fidell, 2013), so a rating scheme that is better equipped for yielding a normal distribution of observational measurements would be beneficial.

Looking across the results for the hypotheses, however, one of the more remarkable outcomes of the experiment is that the behavior that was detected was not manipulated as part of the experimental conditions. Mindfulness training, at its core, assists individuals in directing attention to present-moment experiences and observing experiences with a nonjudgmental attitude (Bishop et al., 2004), and these data reveal this training may alter the way active practitioners engage with others, albeit subtly. That is, the results indicate that the behaviors that emerge from mindfulness arise in the communication context of initial interactions.

Moreover, the findings give credence to Buddhist conceptualizations that mindfulness itself is less of an objective to attain than it is a way of being (Hanh, 1998; Kabat-Zinn, 2019). This idea is echoed by experienced practitioners who say that the purpose of various daily practices and mindfulness exercises "is not necessarily in the doing, just as the goal of meditation isn't in the meditating. The purpose is to evolve the way we see the world when we're not engaged in these acts. We are building the musculature of our psyche to more acutely tune in" (Rubin, 2023, p. 45). For Rubin, "your life off the cushion changes. And it changes because you're building a new reality within yourself" (Tippett, 2023, [podcast]). The findings of this dissertation indicate that part of the "musculature" being built through mindfulness practice is communicative in nature and instills within practitioners a greater capacity for acceptance and awareness in initial interactions.

There are a few important ways of situating these findings within existing literature and discussing both theoretical and practical implications. To begin, these findings are a noteworthy extension of existing literature related to initial interaction. These data indicate that actively practicing mindfulness may be favorable to extending relationships beyond the initiating phase, even though that was not the aim of these interactions. But applied to real-world interactions, it

may have this outcome. Creating warm and positive interactions is a highly desirable trait (Albada et al., 2002) that increases the likelihood of continued engagement, relational development, and relational longevity (Marek et al., 2004; Sunnafrank & Ramirez, 2004). Active listening and immediacy behaviors are highly regarded in their potential for creating warm and positive interactions, and identifying mindfulness as a reliable intervention capable of cultivating these behaviors is a valuable takeaway for practitioners and academics alike. This is corroborated by conversation partners' accounts of their initial interaction with participants. Specifically, results stemming from H_4 show how conversation partners predicted that they would have a closer type of relationship future encounters with participants who demonstrated greater attentiveness and awareness.

An additional implication of these findings is that they provide answer to the calls of Murthy (2023) to deepen our knowledge about interventions that can advance social connection as well as to find ways of cultivating values of kindness, respect, service, and commitment to one another. In short, frequent mindfulness practice is a promising direction. Further inquiry is needed to better validate this claim (e.g., replicating these findings, designing longitudinal studies, experimenting with longer duration or more frequent mindfulness practice). Based on these data, however, it seems that mindfulness training might contribute to the larger goal of reducing social isolation and loneliness by improving the likelihood that individuals have more satisfying encounters which may, in turn, lead toward advancing relationships beyond their initial stages. This claim is supported by results from H_4 showing the positive association between observed awareness and conversation partners reporting greater satisfaction with the interaction, closer predicted relationship level, and rating the participant as more a more competent communicator.

Another important discovery of this study is that the only significant differences to emerge were between the mindfulness condition and the passive control (i.e., not the active control). This has important implications for future manipulations of mindfulness training and inclusion of active control conditions. One interpretation is that the individuals in the active control condition engaged in similar activities to those in the mindfulness condition, just without mindfulness instruction, and a lot of the active control condition involved silent alone time for relaxation. Importantly, it is not known how individuals approached this time. If they had prior experience with meditation, for instance, it is possible that they used the time to engage in meditative practice at their own behest.

Alternatively, there are several shared components of the guided trainings that the mindfulness condition and active control condition had in common, and additional research needs to continue isolating the variables that could explain the lack of differentiation between the two conditions. Both the mindfulness and the active control conditions involved, for example, guided breathing. Intentional breathing techniques have long been used to alter the physiological and mental states (Nestor, 2020). Given its potency in altering individuals' state of being, more needs to be known about breathing techniques and social outcomes.

Overall, an important contribution of this research is that a shift in communicative behavior was detected in individuals who engaged in a short intervention. It is also notable that some conversation partners' accounts of the initial interaction correlate with the observational ratings of awareness. This correlation bolsters the validity of the observational ratings and supports the idea that there is a behavioral trail of mindfulness which is interpreted positively by conversation partners. Much of our behavior is habitual, and research suggests that forming new habits can range anywhere from 18 to 254 days (Lally et al., 2009). Therefore, to alter

individuals' behavior with any effect size in this short amount of time and with low dosage of mindfulness training (i.e., 10 days of approximately 10 minutes of guided training) is a promising discovery. Certainly, more research is needed to validate these findings, and the following section outlines areas of limitation and consideration for future inquiries into this area.

Limitations and Future Research

The primary interpretation of these findings is brief mindfulness training influences interpersonal behavior, specifically related to acceptance and awareness. Although the study's results provide valuable insights, caution should be taken in interpreting the results. To begin, the sample size for this study did not meet *a priori* power analysis recommendations. Consequently, it is possible that some results may be type II errors (i.e., false negatives), and there is a risk of failing to detect true effects. For instance, even though behavioral shifts related to attentiveness were not significantly different across condition groups in this study, it is unknown whether an adequately powered study (i.e., sufficient sample size) would be able to detect an effect comparable to the ones found for acceptance and awareness.

Moreover, small effect sizes coupled with insufficient sample size increase the risk that observed differences are due to chance or random variability rather than a true effect (i.e., type I error, false positive) because small sample sizes provide less reliable estimates of population parameters. Even though behavioral shifts related to acceptance were significantly different across condition groups in this study, it is unclear whether this distinction would remain if a more representative sample of the population was gathered. Therefore, replication with a larger, adequately powered study is necessary to validate and perhaps extend the current findings.

To achieve stronger effects, longer mindfulness interventions (e.g., 8-week MBSR) should be studied. Sustained and frequent mindfulness training may be more impactful to

individuals' daily communication practices and habitual behavior. Thus, future research should examine if there is a tipping point (e.g., frequency, duration) in mindfulness training that instills reliably larger shifts in communication behavior. Even if larger effects in behavioral differences were detected in this study, follow-up studies are needed to determine whether this brief mindfulness intervention has lasting, longitudinal effects.

Alternatively, if seeking to further explore the effect of brief mindfulness interventions, there are a few additional recommendations to potentially bolster their impact. First, although the trainings for this study were modeled from reputable meditations and trainings, the principal investigator is not a credentialed meditation instructor, so the training may be benefitted if delivered from an individual with more experience and education in guiding meditation. Second, the guided meditations for this study were not pretested to determine their efficacy. Future research could better dial-in the ideal durations, frequencies, types, and sequence of training to implement in brief interventions by testing manipulations beforehand. Third, the guided exercises were not delivered in a live-setting or in a consistent environment in this study, and therefore there may have been considerable variability in the impact of the training (e.g., distractions, diminished ability to immerse into the exercise). Brief interventions, especially those done remotely such as in this study, may benefit from having more specific guidelines for conducive environments as well as having participants join a live session (e.g., Zoom) where the instructor is present.

Additionally, even though adequate interrater reliability was achieved for 12 of the 20 observational markers chosen to study, more time and more funds to accommodate more extensive training and assessment of the raters would be beneficial. More in-depth training for the rating process would likely increase reliability and ensure raters remain at satisfactory levels

of agreement so that more behavioral markers can be included in analyses. With fewer behavioral markers to analyze, there is less opportunity to capture variability accurately in the data. Fewer measurements can oversimplify the complexity or obscure patterns that may be present in the data, which ultimately decreases statistical power as it is more difficult detect effects especially if they are small or subtle.

Even though brief mindfulness interventions are shown to be efficacious in enhancing individuals' mindfulness, it is likely that longer interventions (e.g., 8-week MBSR) and sustained, long-term mindfulness practice may be more impactful to individuals' communication practices and habitual behavior. Thus, even if larger effects in behavioral differences were detected in this study, follow-up studies are needed to determine whether this brief mindfulness intervention has lasting, longitudinal effects. Future research should examine if there is a tipping point (e.g., frequency, duration) in mindfulness training that instills reliably larger shifts in communication behavior.

Future research should continue to prioritize recruiting diverse samples of participants. Research highlights the positive impact of mindfulness on various populations, especially those facing diverse challenges and disadvantages. Studies have demonstrated its effectiveness in enhancing the quality of life for disabled individuals (Grossman et al., 2010), supporting sexual-orientation minorities (Vosvick & Stem, 2018) and benefiting inner city communities (Roth & Robbins, 2004). Mindfulness research has often skewed its focus toward middle-to-upper class, Caucasian women (Waldron et al., 2018). This study prioritized inclusivity and placed a significant emphasis on recruiting a diverse sample, but the range of demographically dissimilar participants can be bolstered in future analysis.

Another promising direction for future research is addressing why behavioral shifts stem from both meditation experience and mindfulness practice. Inability to detect differences between participants in the mindfulness-practice program and the active-control program suggests that there may be commonality in the conditions that co-linearly predicts the outcomes. Specifically, future research should explore how varying breathing patterns and techniques may, in part, be responsible for the observed outcomes. Prior work has connected breathing patterns and social outcomes, such as pranayama (Jerath et al., 2006) and diaphragmatic (Howe & Dwyer, 2007), and their activation of different branches of the autonomic nervous system (Nestor, 2020). For example, depending on the technique, breathing can trigger both sympathetic and parasympathetic responses and dictate whether individuals exhibit fight-or-flight reactions or maintain a state of calmness (Nestor, 2020; Sapolsky, 2017).

Polyvagal Theory, which provides a neurophysiological framework for understanding human behavior in social contexts, points to the integral role of the ventral vagus nerve. This nerve is intricately connected to various systems throughout the body including the respiratory system and influences feelings of safety and connection (Dana, 2018). Activation of the ventral vagus pathway is linked with prosocial behavior and promotes the co-regulation and secretion of positive hormones like serotonin and oxytocin (Dana, 2018; Nestor, 2020). Linkage between breathing practices and the activation of the ventral vagus pathway as a means of altering social behavior presents a promising direction for future exploration. In other words, understanding how meditation and mindfulness techniques specifically stimulate parasympathetic responses via the ventral vagus nerve could provide valuable insights into fostering interpersonal connection and social behaviors conducive to well-being. Thus, further research in this area holds great potential for elucidating the underlying mechanisms driving positive social interactions.

Conclusion

This study investigated the effects of a mindfulness intervention on observable behaviors during brief online interactions with strangers compared to active and passive control groups as well as conversation partners' judgments of the interaction. Notably, individuals in the mindfulness-based intervention demonstrated heightened markers of acceptance and awareness when compared to the passive control group suggesting that mindfulness practice influences interpersonal behavior positively. The study had limitations, such as sample size and effect sizes of brief mindfulness-based interventions, however, suggesting the need for larger samples and higher-dosage mindfulness interventions to yield more robust effects. Overall, the findings underscore the potential of mindfulness practice to enhance social interactions and emphasize the importance of further research in this area.

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Appendix A: Tables of Results

Table 1.

Comparison of adjusted means and standard errors for primary variables

	Mindfulness		Active Control		Passive Control	
	M_{adj}	*SE*	M_{adj}	*SE*	M_{adj}	*SE*
Attentiveness	4.12	.10	4.01	.10	4.04	.10
Awareness	1.51	.09	1.41	.09	1.24	.08
Acceptance	3.90	.10	3.79	.11	3.51	.10

Note. Significant differences were detected between the mindfulness condition and passive control condition only, not between mindfulness condition and active control condition, for outcomes of awareness and acceptance.

Table 2.

Bi-variate correlations between primary variables and conversation partner reports

	Variable	1	2	3	4	5	6	7	8	9	10	11	12
1.	CC	—											
2.	Responsive	.52**	—										
3.	Open	.55**	.39**	—									
4.	Satisfying	.63**	.33**	.36**	—								
5.	Relationship	.26*	.39**	.18*	.27**	—							
6.	IoSiO	.23*	.34**	.31**	.28**	.34**	—						
7.	State mf	.22*	.35**	.31**	-.03	.19*	.04	—					
8.	POV	.62**	.59**	.51**	.53**	.42**	.31**	.21*	—				
9.	MIC	.39**	.05	.09	.25**	.08	.07	.17	.18	—			
10.	Accepting	.05	.10	.06	.14	.10	.14	.15	.03	.14	—		
11.	Attentive	.07	.16	.16	.17	.18*	.15	.23*	.14	.01	.59**	—	
12.	Awareness	.18*	.14	.12	.31**	.18*	.08	.15	.14	.09	.41**	.13	—

Note. CC = Communication competence, Responsive = Responsiveness, Open = Openness, Satisfying = Communication satisfaction, Relationship = Predicted relationship type, IoSiO = Inclusion of Self in Other, State mf = State Mindfulness, POV = Predicted outcome value, MIC = Mindfulness in Communication, Awareness = Expanded verbally on partner's emotions.
*$p < .05$, **$p < .01$

Table 3.

Bi-variate correlations between primary variables and conversation partner reports (continued)

	Variable	1	2	3	4	5	6	7	8	9	10	11
1.	Angry	—										
2.	Bored	.24**	—									
3.	Calm	-.21*	-.12	—								
4.	Enthusiastic	.03	-.49**	.32**	—							
5.	Happy	-.10	-.39**	.27**	.60**	—						
6.	Relaxed	-.21*	-.29**	.56**	.43**	.48**	—					
7.	Sad	-.02	.07	-.13	.02	.04	-.05	—				
8.	Stressed	-.04	.28**	-.23*	-.24**	-.12	-.25**	.33**	—			
9.	Accepting	.04	-.09	.02	.07	.17	-.12	.04	.13	—		
10.	Attentive	.08	-.21*	-.04	.13	.23*	-.08	-.03	.05	.58**	—	
11.	Awareness	-.06	-.19*	.01	.10	.13	-.02	.01	-.05	.40**	.33**	—

Note. *$p < .05$, **$p < .01$

Table 4.

Behavioral rating items and interrater reliabilities

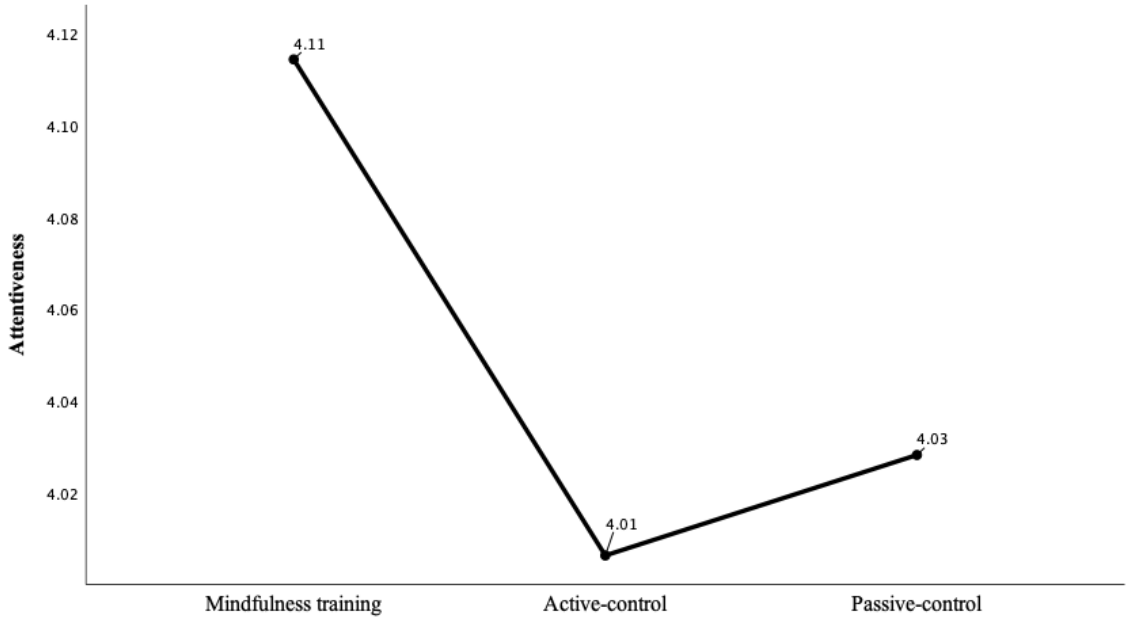
Behavioral ratings	Interrater reliability
Attentiveness items	
Shows not to be distracted	.81*
Listens attentively	.76*
Is not detached	.74*
Exhibited steady gaze while listening	.90*
Exhibited steady gaze while speaking	.73*
Used vocalizations while listening	.73*
Awareness items	
Expresses understanding nonverbally	.57
Is good in leading the conversation	.67*
Is not off-hand or hasty	.33
Expands verbally upon partner's feelings or emotions	.80*
Demonstrates motor mimicry	.19
Verbalized awareness of self	.23
Verbalized awareness of other	.44
Interrupted partner	.87*
Acceptance items	
Uses exploring questions	.26
Gives partner time and space to present their thoughts	.72*
Uses inviting body involvement	.35
Is obviously relaxed and confident	.72*
Creates an open atmosphere during the conversation	.80*
Marked by long response latencies to disclosures	.13

Note. * demarcates the items that achieved adequate interrater reliability and were included in analysis.

Appendix B: Figures of Results

Figure 1.

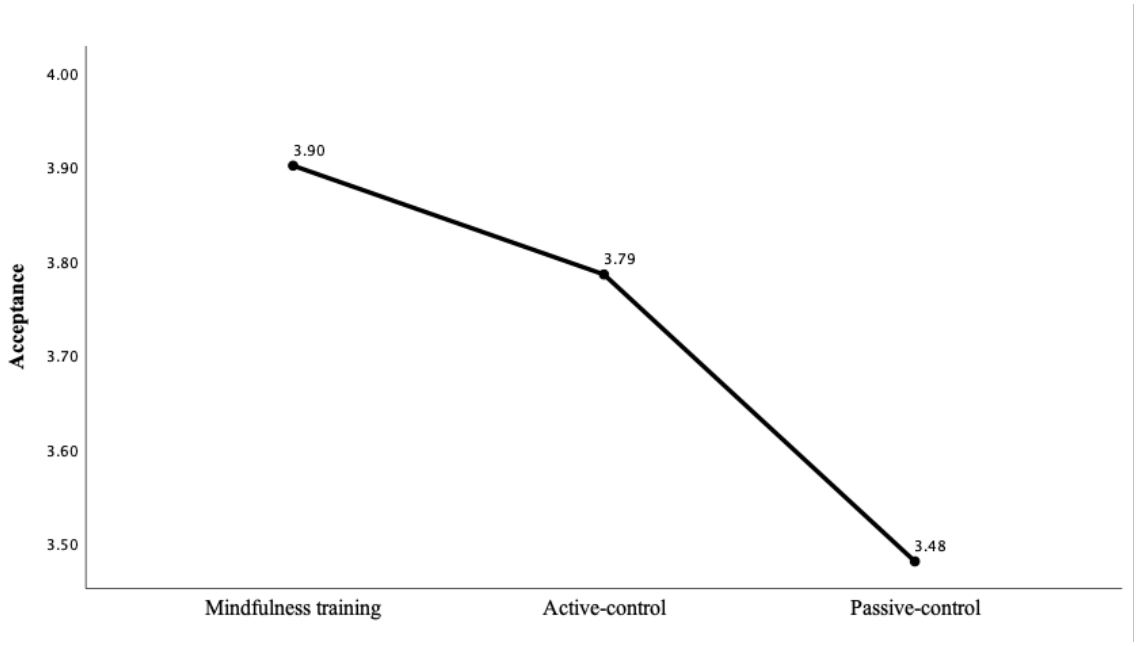
Estimated marginal means of attentiveness by condition



Note. The covariate prior meditation experience appearing in the model is evaluated at 0.48. No mean differences are significant.

Figure 2.

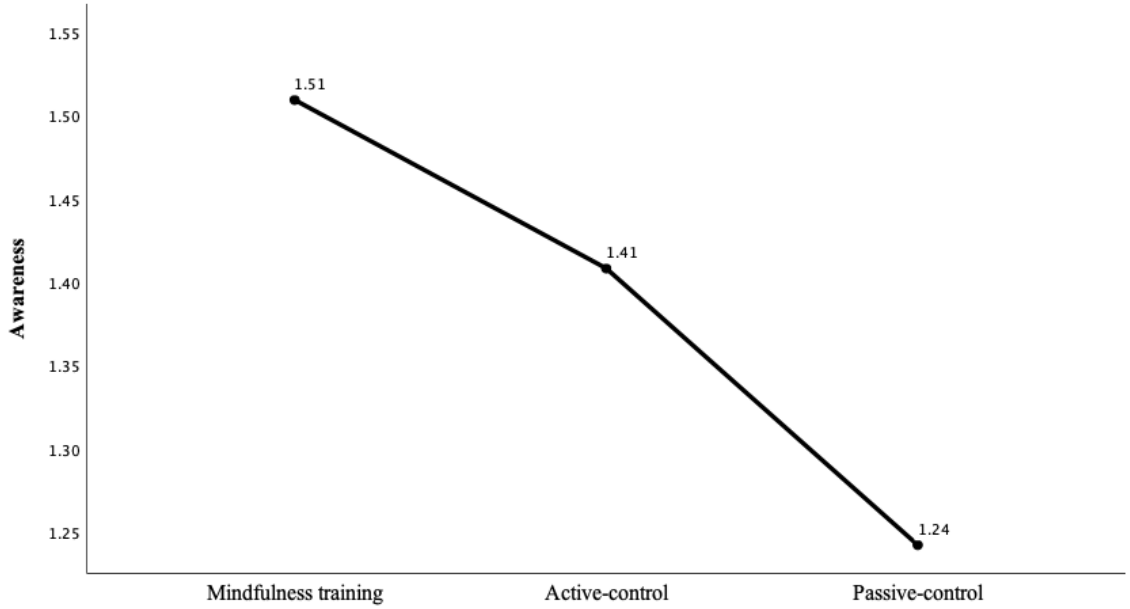
Estimated marginal means of acceptance by condition



Note. The covariate prior meditation experience appearing in the model is evaluated at 0.48. The mean difference of 0.42 (*SE* = .15) between mindfulness training and passive-control is significant (p = .005).

Figure 3.

Estimated marginal means of awareness by condition



Note. The covariate prior meditation experience appearing in the model is evaluated at 0.48. The mean difference of 0.28 (*SE* = .12) between mindfulness training and passive-control is significant (p = .028).